Surface Water Supply of Hawaii 1949-50

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

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PREFACE

This report was prepared by the Geological Survey in cooperation with the Territory of Hawaii by personnel of the Water Resources Division under the direction of:

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SURFACE WATER SUPPLY OF HAWAII, JULY 1, 1949, TO JUNE 30, 1950

SCOPE OF WORK

This volume contains results of measurements of the flow of streams and ditches in the Territory of Hawaii during the year ending June 30, 1950. Since the beginning of stream-gaging work in Hawaii, in 1910, records of flow of streams and ditches have been obtained at about 560 stations for periods ranging from a few months to 39 years. In addition, hundreds of miscellaneous measurements have been made, and rather extensive studies of ground water have been made on most of the islands.

In this volume are given the records of daily flow obtained at stations that were operated during the year ending June 30, 1950, and the results of miscellaneous measurements of streamflow made during that year. Most of the results of ground-water studies have been published in bulletins of the Territorial Division of Hydrography.

COOPERATION

The work during the year ending June 30, 1950, was done under cooperative agreement with the Territory of Hawaii through the commissioner of public lands. Assistance in collecting records was rendered also on the island of Kauai by the Kekaha Sugar Co. Ltd., the McBryde Sugar Co. Ltd., the East Kauai Water Co. Ltd., the Kilauea Sugar Co. Ltd., and the Lihue Plantation Co. Ltd.; on the island of Oahu by the Wahiawa Water Co. Ltd.; on the island of Maui by the Pioneer Mill Co. Ltd., and the East Maui Irrigation Co. Ltd., and the Maui County Engineer; and on the island of Hawaii by the City of Hilo Water Works, the Kohala Ditch Co. Ltd., and the Olaa Sugar Co. Ltd.

Acknowledgment of records collected by individuals or corporations is made in connection with the description of each station for which such records were furnished.

DIVISION OF WORK

The stream gaging was done by the Water Resources Division of the Geological Survey, Carl G. Paulsen, chief hydraulic engineer, and Joseph V. B. Wells, chief of the Surface Water Branch. The data were collected and prepared for publication under the direction of M. H. Carson, district engineer, Honolulu. The records were reviewed and the manuscript prepared for publication under the direction of B. J. Peterson, chief, Annual Reports Section.

Information of a more detailed nature than that published for most of the gaging stations given in this report is on file in the district office, Room 225, Federal Building, Honolulu. Provisional records of discharge prior to publication, and other unpublished data concerning the gaging-station records may usually be obtained from the district office.

DEFINITION OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, a long reach of the channel, or an artificial structure.

The drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface runoff from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Acre-foot is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet. The term is commonly used in relation to 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 cubic feet per second, million gallons a day, and acre-feet: 1 cubic foot per second flowing 24 hours equals about 2 acre-feet; 1,000,000 gallons equals about 3 acre-feet; and 1,000,000 gallons a day equals about 1.55 cubic feet per second.

NEW DOWNSTREAM ORDER OF LISTING GAGING STATIONS

Beginning with this report, the order of listing gaging-station records has been changed. Proceeding in a downstream direction along the main stem, all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. Tributary streams are indicated by indention. This new downstream order and the system of indention show which gaging stations are on tributaries between any two stations on a main stem.

The order of listing used in previous reports listed first all stations on the main stem from headwaters toward mouth, then all stations on the uppermost tributary to the main stem from the tributary's source to mouth.

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. All records of stage are obtained from water-stage recorders that give continuous records of fluctuations. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge. Occasionally discharge is determined from a weir or rating flume, using standard formulas, and for several stations the high-water discharge has been determined from ratings developed by the use of models.

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

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge and runoff of the stream.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types of gages, locations, and datums of previous gages for which discharge records are generally equivalent to those at the present site. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height and the minimum discharge. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (fiscal years)" has been

added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the fiscal years for which figures are revised in that report. In listing the report number, "W" means water-supply paper. In listing the fiscal years only one number is given; for instance, 1933 stands for the fiscal year July 1, 1932, to June 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given.

Skeleton rating tables are published for all stations except for ditch or spring stations.

The daily table gives, in general, the discharge corresponding to the daily mean gage height. For stations subject to sudden or rapid diurnal fluctuation, the daily mean gage height may not indicate the true daily mean discharge, which must be obtained by averaging the discharge for parts of the day or by using the graphic integrator.

Records of daily discharge are published on the basis of Hawaiian standard time.

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

Peak discharges and the times of their occurrence and corresponding gage heights of most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for canals, ditches, springs, or for any stream for which the peaks are subject to substantial control by man.

Footnotes to the table of daily discharge indicate periods when discharge was computed or estimated by unusual or special methods during periods of no gage-height record or by other effects that reduce the degree of accuracy of the records.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

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

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

PUBLICATIONS

The following table lists, by years and numbers, the papers on the surface-water supply of Hawaii published during the period 1903-50 and, used in conjunction with the list of stations maintained, which is given in Water-Supply Paper 795, provides a convenient index for finding the data for any station. Except as indicated, the year or years covered by each report begin July 1 and end on June 30. The data for any particular station will be found in the reports covering the years during which that station was maintained, unless, owing to undeveloped rating curves, publication was postponed. Occasionally data are revised and republished in later papers. Miscellaneous discharge measurements made during any year at points other than regular gaging stations are included in the data published for that year.

Numbers of water-supply papers containing data on the surface water supply of Hawaii, 1903-50

Year	W.S.P. no.	Year	W.S.P. no.	Year	W.S.P. no.	Year	W.S.P. no.	Year	W.S.P. no.
1903	*77	1918-19	515	1926-27	655	1934-35	795	1942-43	985
1909-11†	318	1919-20	516	1927-28	675	1935-36	815	1943-44	1015
1912†	336	1920-21	535	1928-29	695	1936-37	835	1944-45	1045
1913†	373	1921-22	555	1929-30	710	1937-38	865	1945-46	1065
1913-15	430	1922-23	575	1930-31	725	1938-39	885	1946-47	1095
1915-16	445	1923-24	595	1931-32	740	1939-40	905	1947-48	1125
1916-17	465	1924-25	615	1932-33	755	1940-41	935	1948-49	1155
1917-18	485	1925-26	635	1933-34	770	1941-42	965	1949-50	1185

* This paper, entitled "Water resources of Molokai," by Waldemar Lindgren, contains data on both the surface and ground-water supplies of the island named.

† Calendar years. Data for the last half of the calendar year 1913 appears not only in Water-Supply Paper 373 but also in Water-Supply Paper 430, the first of the reports covering a year ending June 30.

A summary of records of flow in streams and ditches in the Territory of Hawaii was published in 1939 by the Territorial Planning Board. This report, entitled "Surface-water resources of the Territory of Hawaii, 1901-38," gives, by gaging stations for the periods of record, (1) monthly-discharge tables, which show for each month the maximum, minimum, and mean daily discharge and the total discharge, and (2) duration-discharge tables. Nearly all available records of flow in the Territory up to December 1938 were considered in making the summary. Some of these records are not contained in publications of the Geological Survey; some are revisions of records published in the Survey's water-supply papers.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table lists the gaging stations in the Territory of Hawaii at which records of discharge were collected during the fiscal year July 1949 to June 1950 by agencies

other than the Geological Survey. The records for these stations are not contained in the publications of the Geological Survey and, except as indicated, have not been published elsewhere.

Records of discharge collected by agencies other than the Geological Survey

ISLAND OF KAUAI

Stream	Location	Period	Operated by
East Lawai storm ditch..	Near Government Road, near Kalaheo.	1924-50	McBryde Sugar Co.
Eleele ditch.....	....do.....	1924-50	Do.
Hanalei ditch.....	Above Kalihiwai Reservoir, near Kilauea.	1923-50	Kilauea Sugar Plantation Co.
Hanamaulu ditch.....	Below intake, near Hanamaulu.....	1925-50	Lihue Plantation Co.
Hanapepe field ditch....	Below Hanapepe River intake, near Eleele.	1924-50	McBryde Sugar Co.
Hanapepe Stream.....	At tidewater, near Eleele.....	1924-50	Do.
Kamooloa ditch.....	Below Kauai Belt Road crossing, near Koloa.	1924-50	Do.
Kealia River.....	1 mile west of Kaneha Reservoir and 5½ miles northwest of Kealia.	1936-50	Lihue Plantation Co.
Koloa ditch.....	4½ miles north of Koloa and 6½ miles west of Lihue.	1927-50	Do.
Koula ditch.....	In Hanonui Valley, near Makaweli...	1949	Gay & Robinson.
Lawai Stream.....	½ mile above cannery, near Kalaheo.	1924-50	McBryde Sugar Co.
Lihue lower ditch.....	Below intake, near Lihue.....	1925-50	Lihue Plantation Co.
Lihue upper ditch.....	....do.....	1925-50	Do.
Olokele ditch.....	At powerhouse, near Makaweli.....	1926-50	Gay & Robinson.
Wahiawa main stream.....	Above Alexander Reservoir, near Kalaheo.	1924-50	McBryde Sugar Co.
Wahiawa Stream, East Branch.	....do.....	1929-50	Do.
West Lawai ditch.....	Near camp 12, near Kalaheo.....	1924-50	Do.

ISLAND OF OAHU

Alewa Heights Spring....	Below reservoir 3.....	1932-50*	Board of Water Supply, City and County of Honolulu.
Booth Springs.....	In Pauoa Valley, at altitude 685 feet.	1929-50*	Do.
Helemano ditch.....	About 3 miles below Upper Helemano Reservoir.	1933-50	Waialua Agricultural Co.
Hering Springs.....	In Makiki Valley, at altitude 970 feet.	1925-50*	Board of Water Supply, City and County of Honolulu.
Kahuawai Springs.....	In Pauoa Valley, at altitude 618 feet.	1925-50*	Do.
Kalihi tunnels.....	At diversion, at altitude 650 feet.	1926-50*	Do.
Kamananui ditch.....	In Kawailoa Gulch about 500 yards above third siphon from Government Road.	1934-50	Waialua Agricultural Co.
Kipapa Stream.....	At altitude 375 feet.....	1917-50	Waiahole Water Co.
Makiki Springs.....	In Makiki Valley, at altitude 350 feet.	1926-50*	Board of Water Supply, City and County of Honolulu.
Manoa tunnels.....	Upper Manoa Valley.....	1925-50*	Do.
Nuuanu tunnels.....	At Lower Luakaha.....	1926-50*	Do.
Nuuanu tunnel 3.....	At overflow, in upper Nuuanu Valley	1931-50*	Do.
Palolo tunnel.....	Upper Palolo Valley.....	1926-50*	Do.
Wahiawa Reservoir Outlet	About 1,200 feet below dam.....	1912-50*	Wahiawa Water Co.
Waiahole tunnel.....	At adit 8.....	1916-50	Waiahole Water Co.
Waiawa Stream.....	At altitude 750 feet.....	1917-50	Do.
Waikakalaua Stream.....	....do.....	1917-50	Do.
Waimalu Stream.....	At altitude 535 feet, near Aiea....	1947-50	Do.

* Published in biennial reports of Honolulu Sewer & Water Commission and of Honolulu Board of Water Supply.

ISLAND OF MAUI (WEST MAUI)

Everett ditch.....	Below intake, near Wailuku.....	1935-50	Wailuku Sugar Co.
Honokohau tunnel.....	At outlet of tunnel, at Mahinahina weir.	1917-50	Pioneer Mill Co.
Iao-Waikapu ditch.....	At lower end of tunnels, near Wailuku.	1923-50	Wailuku Sugar Co.
Kahoma tunnel.....	2,000 feet upstream from outlet, above Lahaina.	1920-50	Pioneer Mill Co.
Kama ditch.....	Below intake, near Wailuku.....	1933-50	Wailuku Sugar Co.
Kanaha ditch.....	At intake in Kanaha Gulch, above Lahainaluna.	1921-50	Pioneer Mill Co.
Kauaula tunnel.....	At outlet, above Lahaina.....	1920-50	Do.
K-3 flume.....	Above Lahainaluna.....	1931-50	Do.
Launiupoko ditch.....	At outlet, above Lahaina.....	1921-50	Do.
Maniania ditch.....	Below intake, near Wailuku.....	1923-50	Wailuku Sugar Co.
North Waiehu Stream.....	Near end of Waiehu Camp road, near Wailuku.	1922-50	Do.
South Waikapu ditch.....	Above second lateral, near reservoir 1, near Waikapu.	1935-50	Do.
Spreckels ditch.....	Below intake, near Waihee.....	1931-50	Do.
Ukumehame ditch.....	At outlet in Ukumehame Gulch, near Olowalu.	1931-50	Pioneer Mill Co.
Waihee ditch.....	Below intake, near Waihee.....	1931-50	Wailuku Sugar Co.

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

ISLAND OF MAUI (EAST MAUI)

Stream	Location	Period	Operated by
Hanawi Stream.....	Below Government Road, near Nahiku.	1927-32 1947-50	East Maui Irrigation Co.

ISLAND OF HAWAII

Hionamoa Gulch.....	Below all development tunnels, near Pahala.	1926-50	Hawaiian Agricultural Co.
Honokaape ditch.....	At Kukuihaele Village.....	1923-50	Hawaiian Irrigation Co.
Keaiwa Gulch.....	Below all development tunnels, near Pahala.	1926-50	Hawaiian Agricultural Co.
Kohala ditch.....	At Awini weir in Honokane, near Niulii.	1917-50†	Kohala Ditch Co.
Do.....	At Niulii weir, near Niulii.....	1917-50†	Do.
Lower Hamakua ditch.....	At main weir, near Kukuihaele.....	1921-50†	Hawaiian Irrigation Co.
Moaula Gulch.....	Below all development tunnels, near Pahala.	1929-50	Hawaiian Agricultural Co.
Noguchi tunnel 19.....	5.3 miles from Pahala, at altitude 3,500 feet.	1928-50	Do.
Pololu Inlet 1.....	At Pololu, near Niulii.....	1929-50	Kohala Ditch Co.
Pololu Inlet 2.....	In Waiakalae Gulch at Pololu, near Niulii.	1929-50	Do.
Pololu Inlet 3.....	In Opaepilau Gulch, above Kohala ditch, near Niulii.	1937-50	Do.
Pololu Inlet 5.....	In Niulii Gulch, above Kohala ditch, near Niulii.	1937-50	Do.
Pololu Inlet 6.....	In Waikane Gulch, above Kohala ditch, near Niulii.	1937-50	Do.
Puwaiole Stream.....	Above Kohala ditch, near Halawa....	1937-50	Do.
Waiapuka Stream.....	Above Kohala ditch, near Niulii....	1929-50	Do.
Waipuhi Stream.....	Above Kohala ditch, near Halawa....	1933-50	Do.
Waipunalau Stream.....	....do.....	1929-50	Do.

† Records for some earlier years published in water-supply papers of Geological Survey.

ISLAND OF KAUAI

Kawaikoi Stream near Waimea

Location.--Lat 22°08'00", long. 159°37'15", on left bank at old trail crossing, 12.5 miles northeast of Waimea.

Drainage area.--4.1 sq mi.

Records available.--April 1909 to December 1916, July 1919 to June 1950.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,420 ft (by barometer). Prior to May 26, 1910, staff gage at site 300 ft downstream at different datum.

Average discharge.--31 years (1919-50), 21.2 mgd (32.8 cfs).

Extremes.--Maximum discharge during year, 1,930 mgd (2,990 cfs) probably occurred Jan. 6 (gage height, 8.78 ft, from recorded range in stage), from rating curve extended above 200 mgd as explained below; minimum, 1.57 mgd (2.43 cfs) Oct. 30.

1909-17, 1919-50: Maximum discharge, 6,900 mgd (10,700 cfs) Dec. 18, 1916 (gage height, 15.2 ft), from rating curve extended above 200 mgd on basis of slope-area determination at gage height 13.43 ft; minimum, 1.2 mgd (1.9 cfs) Sept. 29 to Oct. 2, Oct. 9-12, 1944, Feb. 19-25, 1945.

Revisions.--The figures of maximum discharge for some fiscal years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Year ending June 30	Date	Gage height (feet)	Discharge	
				Million gallons a day	Cubic feet per second
430.....	1914-15†	Jan. 26	7.7	1,450	2,240
445.....	1916	Jan. 8	8.15	1,700	2,630
465.....	1917	Dec. 18	15.2	6,900	10,700
516.....	1920	Mar. 19	8.89	1,950	3,020
535.....	1921	Jan. 16	10.35	2,980	4,610
555.....	1922	Jan. 31	9.06	2,160	3,340
575.....	1923	Jan. 10	10.59	3,120	4,830
595.....	1924	Dec. 23	10.05	2,700	4,180
615.....	1925	Dec. 13	12.11	4,170	6,450
635.....	1926	Jan. 31	5.56	560	866
655.....	1927	Mar. 5	10.35	2,980	4,610
675.....	1928	Dec. 24	9.85	2,580	3,990
695.....	1929	Nov. 4	11.11	3,470	5,370
710.....	1930	Feb. 27	8.02	1,600	2,480
725.....	1931	Nov. 18	9.58	2,460	3,810
740.....	1932	Aug. 3	11.49	3,750	5,800
755.....	1933	(‡)	9.00	2,100	3,250
770.....	1934	June 4	8.40	1,800	2,790
795.....	1935	Feb. 26	8.57	1,900	2,940
815.....	1936	Dec. 9	10.30	2,910	4,500
835.....	1937	Mar. 18	9.07	2,110	3,260
865.....	1938	Dec. 23	11.20	3,440	5,320
905.....	1940	Nov. 27	10.17	2,770	4,290
935.....	1941	Oct. 2	12.00	4,000	6,190
965.....	1942	Feb. 19	9.53	2,350	3,640
985.....	1943	Mar. 9	9.98	2,650	4,100
1095.....	1947	Dec. 22	10.85	3,020	4,670

† Two-year period July 1913 to June 1915.

‡ Occurred sometime during period Mar. 5-6.

Note.--Maximum discharge computed from rating curve extended above 200 mgd on basis of slope-area determination at gage height 13.43 ft.

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

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.9	1.4	3.0	51
2.0	2.25	3.5	69
2.1	3.4	4.0	141
2.3	6.6	4.5	241
2.5	11.2	5.0	355
2.7	17.8		

Kawaikoi Stream near Waimea--Continued

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.3	14.2	2.95	2.35	18.7	19.8	5.2	6.8	18	35	21.5	6.2
2	16.3	7.0	2.7	2.15	19.3	23	12.2	6.6	9.0	20	19.0	5.5
3	25	4.8	2.6	2.1	28	42	12.5	6.2	7.5	14	23.5	5.0
4	14.0	4.3	2.25	2.1	103	14.8	8.0	5.9	7.0	12.1	19.8	4.7
5	8.9	3.85	2.5	4.2	38.5	8.4	5.9	48	20	10.4	14.0	4.6
6	6.2	8.9	2.5	7.1	71	6.6	130	66	30	9.4	10.7	4.3
7	4.8	6.3	4.5	3.05	180	5.5	70	29.5	9.0	10.6	15.6	4.1
8	4.3	4.3	2.8	2.25	29	5.5	170	15.4	7.4	16.4	25	4.1
9	4.1	3.7	2.5	4.5	11.8	5.7	150	11.5	100	10.4	13.7	4.1
10	3.4	4.8	2.35	6.6	8.0	5.2	175	9.4	45	9.1	9.1	3.85
11	3.05	3.85	2.8	3.7	6.6	4.7	300	8.0	21	7.8	8.0	3.7
12	3.4	3.4	2.95	4.6	133	4.4	100	7.2	15	7.2	9.4	3.4
13	12.6	3.05	11.5	3.55	55	5.4	50	7.0	11	6.8	7.4	3.4
14	7.3	3.4	6.4	2.6	62	10.4	30	27.5	9.0	29.5	6.4	3.3
15	29.5	3.4	9.8	2.35	69	5.7	18	18.6	8.0	21.5	6.2	3.15
16	10.4	2.95	9.7	2.15	23	34.5	12	13.4	7.0	127	30.5	3.05
17	4.8	7.4	8.0	2.35	28.5	33	10	14.2	6.5	60	18.1	3.05
18	3.55	15.4	6.5	3.1	30.5	44	8.0	20.5	6.0	18.2	10.7	2.95
19	3.3	17.2	7.1	7.2	22.5	11.2	7.3	8.9	5.5	15.4	10.6	2.8
20	3.05	24	15.9	6.3	16.4	7.6	6.2	7.6	5.5	9.9	11.1	2.7
21	2.95	17.1	6.1	3.2	10.7	6.6	8.0	73	35	14.4	11.0	2.95
22	2.7	40	3.55	2.5	8.2	11.5	250	104	10	18.6	8.0	3.4
23	3.8	22.5	2.8	2.6	7.0	27	130	15.4	11	56	6.0	14.8
24	10.6	9.7	5.1	2.5	6.2	15.3	35	10.4	70	18.0	5.4	21
25	33.5	10.2	7.4	2.1	6.0	8.2	25	8.6	15	28.5	12.8	51
26	55	8.2	12.0	1.91	5.4	7.0	20	7.8	11	13.4	78	42
27	10.6	8.0	9.4	1.82	5.0	6.2	14	7.6	30	244	51	20.5
28	5.2	5.2	4.6	1.74	5.0	5.7	12	16	32	240	10.9	17.2
29	4.1	4.1	3.15	1.66	4.8	5.5	11	-	130	45	7.6	7.4
30	51	3.55	2.6	1.57	43	6.2	9.0	-	28	30.5	6.4	5.0
31	10.0	3.15	-	1.82	-	6.2	7.6	-	32	-	6.4	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	55	2.7	12.1	18.7	375	1,150
August	40	2.95	8.96	13.9	278	853
September	15.9	2.25	5.50	8.51	165	506
October	7.2	1.57	3.15	4.87	97.7	300
November	180	4.8	35.2	54.5	1,060	3,240
December	44	4.4	13.0	20.1	403	1,240
Calendar year 1949	621	1.57	20.2	31.3	7,400	22,700
January	300	5.2	58.1	89.9	1,800	5,530
February	104	5.9	20.8	32.2	581	1,780
March	130	5.5	24.2	37.4	751	2,310
April	244	6.8	38.6	59.7	1,160	3,560
May	78	5.4	15.9	24.6	494	1,520
June	51	2.7	8.77	13.6	263	808
Fiscal year 1949-50	300	1.57	20.3	31.4	7,430	22,800

Peak discharge (base, 1,300 mgd).--Probably Jan. 6 (about 6 p.m.) 1,930 mgd (2,990 cfs), 8.78 ft; Apr. 27 (11 p.m.) 1,870 mgd (2.890 cfs), 8.70 ft.

Note.--No gage-height record Jan. 5 to Feb. 1, Feb. 28 to Apr. 3; discharge estimated on basis of records for nearby streams.

Mohihi Stream near Waimea

Location.--Lat 22°07'05", long. 159°36'15", on left bank at upper trail crossing, 3.8 miles northeast of confluence of Waiahulu and Poomau Streams and 12 miles northeast of Waimea.
Drainage area.--1.6 sq mi.
Records available.--June 1920 to October 1926, October 1936 to June 1950. Prior to July 1947, published as Mohihi Stream at altitude 3,500 ft, near Waimea.
Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from topographic map).
Average discharge.--19 years (1920-26, 1937-50) 5.02 mgd (7.77 cfs).
Extremes.--Maximum discharge during year, 440 mgd (681 cfs) Jan. 6 (gage height, 5.06 ft), from rating curve extended above 21 mgd; minimum, 0.24 mgd (0.37 cfs) Oct. 30 to Nov. 1.
1920-26, 1936-50: Maximum discharge, 915 mgd (1,420 cfs) Oct. 2, 1940 (gage height, 6.40 ft, from floodmarks), from rating curve extended above 21 mgd; minimum, 0.05 mgd (0.08 cfs) May 3, 4, 1941.
Remarks.--Records good except those above 25 mgd and those for periods of no gage-height record, which are poor.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.9	0.20	1.5	3.2
1.0	.37	1.7	5.6
1.1	.64	2.0	11.3
1.2	.99	2.5	27
1.3	1.51	3.1	60
1.4	2.25		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	3.4	0.61	0.39	0.86	3.5	1.70	2.15	3.55	13.4	5.5	1.51
2	2.9	1.86	.58	.37	2.65	2.5	3.0	2.0	2.1	5.3	4.7	1.27
3	4.8	1.22	.53	.35	6.6	6.0	3.75	1.86	1.70	3.4	5.1	1.17
4	3.2	.99	.50	.37	21	2.2	2.4	1.70	1.51	2.7	5.6	1.12
5	5.4	.91	.50	.39	12.1	1.4	1.86	13.1	3.45	2.25	4.6	1.07
6	2.5	.86	.50	.53	16.6	1.2	39	27.5	4.6	1.93	3.4	.99
7	1.51	1.03	.50	.53	28.5	1.1	22	15.3	2.15	2.55	2.7	.91
8	1.17	.91	.44	.44	7.1	1.12	34.5	6.6	1.63	3.65	4.3	.91
9	1.03	.81	.44	.44	2.5	1.51	31.5	4.7	19.4	2.7	3.4	.91
10	.91	.78	.44	1.03	1.51	1.39	33	3.55	8.7	2.25	2.4	.88
11	.85	.78	.44	.74	1.22	1.12	45	2.8	4.3	1.86	2.1	.88
12	.85	.74	.44	.64	19.4	.99	18.3	2.4	3.0	1.63	1.86	.85
13	.85	.71	.44	.58	13	1.18	10.2	2.1	2.15	1.51	1.70	.85
14	1.17	.71	.44	.50	12	4.1	6.4	3.15	1.78	7.0	1.63	.81
15	1.45	.71	.47	.44	18	2.0	4.7	3.55	1.57	8.5	1.57	.81
16	2.3	.71	.53	.42	4.0	12.3	3.75	2.8	1.39	24.5	1.78	.81
17	1.22	.67	.58	.42	2.8	18.6	3.2	2.6	1.27	17.4	4.8	.78
18	.91	1.07	.64	.42	3.5	16.5	2.7	3.1	1.22	6.9	3.55	.78
19	.81	2.7	.64	.64	2.8	4.7	2.5	2.5	1.17	5.8	3.55	.78
20	.74	4.6	.96	.74	2.3	2.7	2.25	4.2	1.17	3.3	2.9	.74
21	.71	4.6	1.07	.59	2.1	2.1	2.7	10.9	6.9	2.6	2.9	.78
22	.67	6.9	.67	.47	1.8	2.5	58	14.3	3.1	6.2	2.35	.81
23	.64	6.1	.53	.39	1.6	10.8	30	4.4	3.45	21	1.70	.99
24	1.03	2.4	.50	.35	1.4	7.7	10.9	2.8	15.1	6.8	1.51	2.7
25	2.1	1.86	.53	.33	1.3	3.2	7.6	2.15	5.0	7.8	1.63	8.0
26	8.3	1.51	.64	.29	1.3	2.25	5.9	1.86	3.4	4.6	2.9	9.1
27	3.1	1.39	.67	.27	1.3	1.93	4.4	1.70	11.3	29	10.1	5.6
28	1.39	.99	.61	.27	1.2	1.78	3.75	3.3	12.3	43	2.9	3.3
29	1.07	.85	.50	.26	1.2	1.78	3.55	-	38.8	13.8	1.86	1.78
30	5.1	.71	.44	.24	4.0	3.9	3.0	-	9.2	7.2	1.51	1.22
31	2.6	.64	-	.24	-	2.5	2.5	-	11.8	-	1.45	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.3	0.64	2.12	3.28	65.7	202
August	6.9	.64	1.75	2.71	54.1	166
September	1.07	.44	.559	.865	16.8	51
October	1.03	.24	.454	.702	14.1	43
November	28.5	.66	6.51	10.1	195	599
December	18.6	.99	4.08	6.31	127	388
Calendar year 1949	167	.24	4.70	7.27	1,720	5,260
January	58	1.70	13.0	20.1	404	1,240
February	27.5	1.70	5.32	8.23	149	457
March	38.5	1.17	6.06	9.38	188	577
April	43	1.51	8.68	13.4	260	799
May	10.1	1.45	3.16	4.89	98.0	301
June	9.1	.74	1.77	2.74	53.1	163
Fiscal year 1949-50	58	.24	4.45	6.89	1,620	4,990

Peak discharge (base, 200 mgd).--Jan. 6 (10 p.m.) 440 mgd (681 cfs), 5.06 ft; Apr. 27 (11 p.m.) 235 mgd (364 cfs), 4.37 ft.
Note.--No gage-height record Nov. 13 to Dec. 7; discharge estimated on basis of records for Kawaikoi Stream.

Kokee ditch near Waimea

Location.--Lat 22°06'25", long. 159°40'45", on left bank 1,000 ft west of road and 10.5 miles north of Waimea.

Records available.--September 1926 to June 1950.

Gage.--Water-stage recorder and suppressed weir. Altitude of gage is 3,310 ft (by barometer).

Average discharge.--23 years (1927-50), 16.6 mgd (25.7 cfs).

Extremes.--1926-50: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

Remarks.--Records excellent. Kokee ditch diverts water at altitude 3,400 ft from all streams tributary to Waimea River west of Mohihi Stream for irrigation near Kekaha. Flow regulated by headgates.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.5	17.5	4.6	3.8	13.7	24.5	8.8	20	25	30	29.5	12.0
2	17.5	11.3	4.4	3.55	18.8	17.4	13.0	18.8	18.8	20	26.5	10.1
3	24	8.4	4.1	3.4	24	31	15.1	18.8	16.3	22.5	29.5	9.6
4	17.5	7.0	3.95	3.15	35	18.8	11.3	17.5	14.9	20	26.5	9.2
5	13.3	6.5	3.8	4.1	31.5	12.0	9.6	34.5	24.5	17.5	22.5	8.8
6	10.3	10.0	3.8	9.2	32.5	9.4	29.5	49	26.5	16.3	20	8.4
7	8.3	9.2	6.0	4.8	39	8.1	33.5	41	18.8	17.5	20.5	8.1
8	7.2	6.8	4.4	3.8	28	7.9	18.2	34	16.3	22.5	26.5	7.9
9	6.8	5.8	4.1	4.2	17.5	8.8	16.2	29.5	34	17.5	21	7.9
10	6.3	6.5	3.8	8.4	11.8	7.9	13.2	26.5	31	16.3	17.5	7.7
11	5.8	6.2	3.95	5.2	9.4	7.0	18.0	25	21.5	14.8	15.1	7.4
12	5.8	5.8	4.4	5.5	32	6.3	19.2	22.5	20	13.5	16.3	7.2
13	11.8	5.2	10.8	4.8	39	6.5	12.8	21	21	12.8	14.8	7.0
14	11.5	5.0	8.7	3.95	37.5	12.2	14.5	31	20	19.1	13.5	6.7
15	13.4	5.3	9.4	3.55	41	8.3	20	28	17.5	23	13.3	6.5
16	15.9	4.8	11.8	3.3	28	22	24	25	16.3	25	22.5	6.5
17	8.8	7.7	9.2	3.3	28	28	22.5	22.5	15.1	36	22.5	6.3
18	7.0	14.6	8.4	3.4	29.5	38	21	29.5	14.9	25	18.8	6.2
19	6.5	16.3	8.4	7.4	24	18.8	20	21	14.2	22.5	17.5	6.2
20	6.2	21	13.8	7.4	20	13.3	18.8	16.8	14.7	17.5	16.3	6.0
21	5.8	17.5	8.8	4.6	14.9	11.5	20	32.5	41	20.5	17.5	5.8
22	5.5	26	5.6	3.4	11.8	16.8	29.5	45	21	24	14.8	6.3
23	5.5	23.5	4.4	3.3	10.1	23	33.5	26.5	25	34.5	12.2	12.0
24	12.8	14.0	5.5	3.15	9.0	15.5	39	21	37.5	25	11.1	20
25	22	12.8	8.3	2.8	8.6	15.1	34	20	21	28.5	16.5	35.5
26	32.5	10.7	10.5	2.65	7.9	12.4	31	17.5	24	20	28	32
27	16.7	11.1	12.0	2.55	7.2	11.1	28	17.5	33	28	38.5	22.5
28	9.6	7.9	6.7	2.55	7.0	10.3	28	32	31	37.5	18.8	20
29	7.5	6.2	5.0	2.3	7.0	9.8	28	-	34	36	14.0	12.0
30	30.5	5.5	4.2	2.3	23.5	10.1	24	-	32.5	25	12.2	8.8
31	15.1	4.8	-	2.45	-	10.1	21	-	37.5	-	11.8	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	32.5	5.5	12.4	19.2	385	1,180
August	26	4.8	10.3	15.9	321	984
September	13.8	3.8	6.75	10.4	203	622
October	9.2	2.3	4.14	6.41	128	394
November	41	7.0	21.6	33.4	647	1,990
December	38	6.3	14.6	22.6	452	1,390
Calendar year 1949	46	2.3	13.8	21.4	5,040	15,470
January	39	8.8	21.8	33.7	675	2,070
February	49	17.5	26.6	41.2	746	2,290
March	41	14.2	23.8	36.8	739	2,270
April	37.5	12.8	22.9	35.4	688	2,110
May	38.5	11.1	19.5	30.2	604	1,850
June	35.5	5.8	11.0	17.0	331	1,010
Fiscal year 1949-50	49	2.3	16.2	25.1	5,920	18,160

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Waiahulu Stream near Waimea

Location.--Lat 22°04'45", long. 159°39'15", on right bank, in Waimea Canyon, 0.5 mile upstream from confluence with Koaie Stream and 8.8 miles north of Waimea.

Drainage area.--20.0 sq mi.

Records available.--February to October 1916, October 1917 to June 1918, May 1925 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 890 ft (by barometer). Prior to May 25, 1925, water-stage recorder at same site at datum 1.55 ft lower.

Average discharge.--23 years (1925-48), 29.0 mgd (44.9 cfs).

Extremes.--Maximum discharge during year, 1,860 mgd (2,880 cfs) Apr. 27 (gage height, 6.23 ft), from rating curve extended above 400 mgd; minimum not determined.
1916, 1917-18, 1925-50: Maximum discharge, 16,000 mgd (24,800 cfs) Feb. 7, 1949 (gage height, 17.0 ft, from floodmark), from rating curve extended above 400 mgd; minimum, 5.2 mgd (8.0 cfs) Nov. 4, 1927.

Remarks.--Records poor. Kokee ditch diverts water above station for irrigation near Kekaha (see p. 14).

Revisions (fiscal year).--W 1095: 1928(M).

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			-	a10	11.4	24	11.1	a14	24.5	82	28.5	e12
2			-	a9.5	13.8	16.8	11.4	a13	15.4	26.5	23.5	e12
3			-	a9	23	39.5	14.8	a12	14.4	17.6	24	e11
4			-	a9	113	15.8	11.7	a11	13.8	15.1	24	e11
5			-	a16	56	11.7	18.4	143	a75	14.1	21	e10
6			-	a11	90	10.2	257	269	a30	13.5	17.6	e10
7			-	a10	243	9.8	125	94	a16	14.8	15.4	e10
8			-	a9	34.5	10.0	306	50	a14	18.4	22	e10
9			-	a10	13.5	10.8	284	34	a170	14.8	20.5	e9.5
10			-	a12	10.8	10.3	314	27	a30	13.8	15.1	e9.5
11			-	a11	9.8	9.8	509	23	a24	13.1	14.1	e9.5
12			-	a10	162	9.5	199	21	a22	a12	13.8	e9
13			-	a9.5	73	9.5	102	21	a18	a12	13.5	e9
14			-	a9	65	12.5	62	26.5	a16	36.5	13.1	e9
15			-	a9	125	11.4	38	22.5	a15	32	13.5	e9
16			a13	a8.5	27	71	24	19.5	a14	203	24	e8.5
17			a12	a9	21.5	109	19.5	20.5	a13	98	22	e8.5
18			a11	a10	25	104	16.5	20.5	a12	25	21	e8.5
19			a11	a13	19.9	23.5	a14	16.9	a11	21	16.1	e8.5
20			a17	a12	17.6	15.1	a12	a18	a11	15.4	14.8	e8.5
21			a13	a11	15.8	12.8	216.5	a75	a55	19.4	15.4	e9
22			a11	a10	14.4	15.4	a462	a130	18.8	24	14.4	e10
23			a10	a9.5	13.5	57	a253	a22	18.0	86	13.5	12.2
24			a11	a9	12.0	47	a65	a17	113	26.5	12.8	16.9
25			a12	a9	11.1	17.6	a40	a16	23	30	13.1	46
26			a13	a8.5	10.8	14.4	a32	15.1	21	19.5	19.2	41
27			a12	a8	10.8	12.5	a24	14.4	48	223	123	22.5
28			a11	a8	10.3	12.0	a21	31	31.5	455	21	18.0
29			a10	a8	10.0	11.4	a19	-	240	92	e16	12.8
30			a10	a8	28	12.8	a16	-	42	45	e14	11.7
31			-	9.5	-	12.5	a15	-	54	-	e13	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
October	16	8	9.84	15.2	305	936
November	243	9.8	43.0	66.5	1,290	3,960
December	109	9.5	24.5	37.9	760	2,330
Calendar year	-	-	-	-	-	-
January	509	11.1	107	166	3,310	10,170
February	269	11	42.7	66.1	1,200	3,670
March	240	11	39.5	61.1	1,220	3,750
April	455	12	57.3	88.7	1,720	5,280
May	123	12.8	21.1	32.6	653	2,000
June	46	8.5	13.1	20.3	393	1,210
Fiscal year	-	-	-	-	-	-

Peak discharge (base, 1,200 mgd).--Jan. 6 (8 p.m.) 1,620 mgd (2,510 cfs), 5.86 ft; Jan. 22 (9:30 a.m.) 1,400 mgd (2,170 cfs), 5.61 ft; Apr. 27 (10:30 p.m.) 1,860 mgd (2,880 cfs), 6.23 ft.
a No gage-height record; discharge estimated on basis of records for nearby streams.
e Stage-discharge relation indefinite; discharge estimated as in note "a."

Kekaha ditch at camp 1, near Waimea

Location.--Lat 22°02'35", long. 159°38'30", on right bank 0.2 mile downstream from lower intake and 6.2 miles northeast of Waimea.

Records available.--November 1907 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 520 ft (by barometer). Prior to July 12, 1921, staff gages at several sites within 1 mile of present site at various datums.

Average discharge.--31 years (1918-24, 1925-50), 35.7 mgd (55.2 cfs).

Extremes.--1907-50: Maximum daily discharge, 67 mgd (104 cfs) Jan. 6, Mar. 3, 6, 7, 17, 18, 24-26, 29-31, 1921; no flow at times.

Remarks.--Records good except those for period of shifting control, which are fair. Ditch diverts water from Waiahulu Stream and Koaie River, 3 miles above lower intake, for hydroelectric plant. Lower intake is on Waimea River, 300 ft downstream from powerhouse and 1 mile downstream from confluence with Waialae River. Flow regulated by headgates. Water used for irrigation in vicinity of Kekaha.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	51	44	30	26	28	56	34.5	0.51	28	41	44	37.5
2	34	36.5	28	26	36.5	48	34.5	.63	28	39.5	46	34.5
3	34	30	28	26	53	44	34.5	.58	26	48	48	32
4	34	28	28	26	56	44	34.5	0	25	44	46	34.5
5	48	28	28	28	41	41	34.5	.58	30	39	46	32
6	48	30	28	34.5	51	33	29	.78	34.5	36.5	39	32
7	34	34.5	28	30	56	32	28	.32	28	41	39	32
8	29.5	30	28	28	56	34	27.5	.18	25	39	46	30
9	27	28	28	36.5	46	39	28	.05	29.5	41	48	30
10	25	28	28	53	36.5	32	27	0	30	39	46	32
11	25	28	28	41	32	34.5	30	0	30	36.5	41	34.5
12	25	28	28	41	39	32	30	4.0	28	36.5	39	34.5
13	39	28	28	34.5	51	46	28	18.0	28	41	39	34.5
14	39	28	28	32	58	56	28	26	28	51	41	32
15	39	28	28	30	56	56	25	28	28	41	46	32
16	34	26	30	30	56	28	20	28	26	41	48	30
17	29.5	36.5	30	32	58	28	2.6	26	28	53	51	30
18	27	51	32	32	56	41	0	26	28	53	51	30
19	25	53	30	32	41	34.5	0	26	28	51	51	30
20	24	39	34.5	36.5	44	34.5	0	25	28	48	41	30
21	24	39	34.5	32	44	34.5	0	28	41	51	41	30
22	24	56	30	30	36.5	34.5	.88	30	39	41	48	32
23	24	56	28	28	34.5	34.5	.28	28	41	44	41	39
24	34	53	28	28	32	34.5	.05	25	46	53	39	44
25	41	41	30	28	32	34.5	1.34	26	36.5	53	39	44
26	53	44	30	26	30	34.5	1.29	26	36.5	53	44	51
27	46	39	32	26	30	34.5	.23	26	46	47	46	51
28	32	36.5	30	26	32	34.5	.68	28	46	39	41	51
29	32	34.5	28	26	30	34.5	.05	-	53	39	41	39
30	34.5	32	28	26	41	34.5	0	-	51	39	36.5	34.5
31	34.5	30	-	26	-	34.5	.33	-	53	-	36.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	53	24	33.9	52.5	1,050	3,220
August	56	26	36.2	56.0	1,120	3,450
September	34.5	28	29.2	45.2	877	2,690
October	53	26	30.9	47.8	957	2,940
November	58	28	43.1	66.7	1,290	3,970
December	56	28	37.8	58.5	1,170	3,600
Calendar year 1949	-	0	26.9	41.6	9,820	30,160
January	34.5	0	15.5	24.0	481	1,480
February	30	0	15.3	23.7	428	1,310
March	53	25	34.0	52.6	1,050	3,230
April	53	36.5	44.0	68.1	1,320	4,050
May	51	36.5	43.5	67.3	1,350	4,140
June	51	30	35.3	54.6	1,060	3,250
Fiscal year 1949-50	58	0	33.3	51.5	12,150	37,330

Note.--Shifting-control method used July 25 to Oct. 9.

Waimea River below Kekaha ditch intake, near Waimea

Location.--Lat 22°02'40", long. 159°38'35", on right bank, in Waimea Canyon, 500 ft downstream from Kekaha ditch lower intake and 6.5 miles northeast of Waimea.

Drainage area.--45.0 sq mi.

Records available.--July 1921 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 490 ft (by barometer). Prior to May 7, 1926, at datum 3.85 ft higher.

Average discharge.--24 years (1925-47, 1948-50), 43.9 mgd (67.9 cfs).

Extremes.--Maximum discharge during year, 4,880 mgd (7,550 cfs) Jan. 6 (gage height, 13.80 ft), from rating curve extended above 500 mgd by test on model of station site; no flow at times.
1921-50: Maximum discharge, 18,000 mgd (27,900 cfs) Feb. 7, 1949 (gage height, 24.2 ft, from floodmark), from rating curve extended above 500 mgd by test on model of station site; no flow at times owing to regulation.

Remarks.--Records poor. Kokee and Kekaha ditches divert practically all flow below medium stages for irrigation near Waimea and Kekaha.

Revisions (fiscal years).--W 740: 1921-31. W 1125: 1947.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32.5	0.4	0	0	0.1	54	1.2	66	31.5	104	78	1.3
2	10.8	.2	0	0	1.8	17.4	76	62	23.5	22.5	87	1.0
3	13.5	0	0	0	38.5	50	36.5	59	23	7.7	107	1.3
4	11.2	0	0	0	236	14.0	2.8	56	22	5.1	115	1.4
5	54	0	0	0	158	7.2	7.8	332	40	4.7	73	.2
6	23	0	0	.6	187	1.8	576	780	38.5	2.9	50	.1
7	1.0	.3	0	.2	350	.4	250	468	23	1.4	29.5	.1
8	.4	0	0	0	105	.4	774	215	22	15.1	149	0
9	.2	0	0	49	17.6	48	819	135	434	4.4	53	0
10	.1	0	0	34	5.5	12.0	797	111	149	2.8	20.5	.1
11	0	0	0	10.7	3.8	1.8	1,060	87	39	.9	16.8	.1
12	0	0	0	9.4	231	.5	462	78	25	.4	14.2	.4
13	16.8	0	0	4.0	241	54	230	58	20.5	1.7	7.9	.4
14	8.9	0	0	2.0	178	82	121	51	18.0	105	3.3	.4
15	20	0	0	1.2	343	25	79	51	16.8	46	24	.4
16	16.9	0	0	1.1	83	228	52	39	16.8	310	30.5	.4
17	.5	0	0	1.7	60	515	50	35	16.8	194	115	2.2
18	.2	6.6	.4	1.4	62	253	44	34	11.7	28	49	.4
19	.2	16.5	0	1.1	49	30	40	32.5	9.4	16.8	54	.2
20	0	15.5	.2	3.1	25.5	3.6	38	142	9.0	2.3	35	.1
21	0	25.5	.9	2.2	9.0	.4	56	112	39	3.4	30	.1
22	0	95	0	1.4	5.1	1.2	1,480	260	14.8	131	19.9	.4
23	0	102	0	1.0	2.4	130	679	44	22.5	319	5.0	1.0
24	1.0	22	0	.5	1.3	81	245	29.5	171	66	.4	27
25	5.4	2.2	0	.3	.8	19	185	25.5	25.5	93	.4	153
26	80	2.3	0	.2	.5	3.3	152	23.5	27	46	16.9	86
27	14.0	5.6	.4	.2	.4	1.0	105	23.5	87	321	191	56
28	.4	1.4	0	.2	.6	9.1	94	29	40	1,050	22.5	24
29	.4	.9	0	.1	.7	25.5	89	-	335	226	7.4	4.5
30	106	.4	0	0	17.5	46	78	-	46	102	3.0	.4
31	12.3	.1	-	0	-	9.6	72	-	58	-	.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	106	0	13.9	21.5	430	1,320
August	102	0	9.58	14.8	297	911
September	.9	0	.063	.098	1.9	5.t
October	49	0	4.05	6.27	126	385
November	350	.1	80.5	125	2,410	7,410
December	515	.4	55.6	86.0	1,720	5,290
Calendar year 1949	4,500	0	100	155	36,520	112,100
January	1,480	1.2	282	436	8,750	26,860
February	780	23.5	123	190	3,440	10,550
March	434	9.0	59.8	92.5	1,860	5,690
April	1,050	.4	108	167	3,230	9,920
May	191	.4	45.5	70.4	1,410	4,320
June	153	0	12.1	18.7	363	1,110
Fiscal year 1949-50	1,480	0	65.9	102	24,040	73,770

Peak discharge (base, 5,000 mgd).--No peak above base.

Waimea River near Waimea

Location.--Lat 21°58'55", long. 159°39'50", on right bank 1.2 miles upstream from confluence with Makaweli River and 1.8 miles north of Waimea.
Drainage area.--57.8 sq mi.
Records available.--July 1910 to October 1919, November 1943 to June 1950.
Gage.--Water-stage recorder. Altitude of gage is 25 ft (by hand levels from estuary at confluence with Makaweli River). Prior to Oct. 5, 1911, staff gage at site 1 mile downstream at different datum. Oct. 5, 1911, to June 30, 1918, staff gage at same site at different datum.
Average discharge.--6 years (1944-50), 68.3 mgd (106 cfs).
Extremes.--Maximum discharge during year, 3,590 mgd (5,550 cfs) Jan. 6 (gage height, 9.10 ft), from rating curve extended above 3,300 mgd as explained below; minimum, 0.35 mgd (0.54 cfs) Oct. 14-16.
1943-50: Maximum discharge, 24,000 mgd (37,100 cfs) Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 3,300 mgd on basis of slope-area determinations at gage heights 10.28, 13.6, and 18.7 ft; minimum, less than 0.01 mgd (0.02 cfs) Sept. 27, 1948.
Remarks.--Records good above 1 mgd and poor below. Several ditches divert most of low flow for irrigation of sugarcane.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.2	0.25	1.8	7.6	3.2	160
1.3	.48	2.0	14.6	3.6	270
1.4	1.04	2.2	25	4.2	500
1.5	1.97	2.4	40	5.0	820
1.6	3.35	2.6	60	6.0	1,320
1.7	5.2	2.9	102	6.3	1,500

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.1	6.4	0.70	0.70	0.83	17.2	13.2	62	48	142	58	1.12
2	18.5	2.2	.70	.70	.70	9.3	57	58	20.5	49	60	1.12
3	15.1	1.12	.70	.76	4.4	18.4	63	54	15.1	11.1	75	1.12
4	18.5	.90	.65	.83	158	13.2	24	52	15.5	4.6	86	1.31
5	47	.90	.65	.97	144	1.61	13.0	353	33.5	4.0	48	1.36
6	26.5	.90	.70	1.20	116	.65	327	801	46	4.6	34	1.36
7	5.7	3.1	.76	1.28	276	.48	437	530	14.6	5.0	20.5	1.20
8	2.1	2.75	.70	.90	78	.48	609	240	12.6	24.5	105	1.20
9	1.36	1.12	.83	5.5	9.7	22	693	160	441	22.5	38	1.20
10	1.04	.97	.76	27.5	1.21	18.2	816	120	183	5.0	11.3	1.36
11	.97	1.04	.70	2.55	.76	6.9	915	97	72	2.6	5.2	1.45
12	.97	1.12	.60	.97	175	1.66	520	82	48	1.86	4.0	1.86
13	2.85	1.12	.60	.45	159	7.8	274	66	35	1.54	3.35	1.97
14	16.4	1.04	.60	.37	108	54	155	50	26	48	2.6	2.1
15	2.75	1.12	.60	.35	328	10.0	100	53	23.5	95	7.5	2.1
16	30	.97	.56	.42	66	181	75	44	20.5	223	13.7	1.86
17	4.5	.90	.60	.48	27	408	71	43	16.5	208	79	1.86
18	1.28	4.5	.65	.60	30	362	66	44	15.5	47	37	1.86
19	1.94	13.5	.76	.60	27.5	58	59	41	15.1	21	36	1.64
20	.97	17.0	.70	.70	22	27.5	53	136	8.9	6.2	17.9	1.64
21	.90	36	.90	.83	4.7	17.6	56	135	49	2.75	25	1.75
22	.90	50	.83	.76	1.58	16.2	1,450	275	24	134	9.6	1.86
23	1.12	83	.65	.70	.76	109	688	68	16.0	299	3.35	1.45
24	2.95	23.5	.65	.70	.65	131	264	41	189	94	2.1	7.1
25	4.4	3.5	.70	.70	.56	37.5	210	33.5	42	97	1.97	108
26	58	1.20	.90	.60	.52	22	160	27.5	42	57	1.97	57
27	26	5.2	.97	.65	.52	16.5	118	25	100	201	153	35
28	2.5	4.1	.97	.65	.60	17.5	101	33.5	37	864	20	12.8
29	1.20	1.40	.90	.60	.60	37	91	-	361	205	3.2	3.25
30	85	.83	.83	.65	.56	50	79	-	66	83	1.75	1.34
31	38	.70	-	.83	-	29.5	68	-	49	-	1.28	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	85	0.90	14.1	21.8	436	1,340
August	83	.70	8.78	13.6	272	835
September	.97	.56	.727	1.12	21.8	67
October	27.5	.35	1.79	2.77	55.5	170
November	328	.52	58.1	89.9	1,740	5,350
December	408	.48	54.9	84.9	1,700	5,220
Calendar year 1949	6,110	.35	109	169	39,930	122,500
January	1,450	13.0	278	430	8,630	26,470
February	801	25	133	206	3,720	11,430
March	441	12.6	67.3	104	2,090	6,400
April	864	1.54	98.8	153	2,960	9,090
May	153	1.28	31.1	48.1	965	2,960
June	108	1.12	8.67	13.4	260	800
Fiscal year 1949-50	1,450	.35	62.6	96.9	22,850	70,130

Peak discharge (base, 5,600 mgd).--No peak above base.

Makaweli River near Waimea

Location.--Lat 21°58'15", long. 159°38'55", on left bank 0.7 mile upstream from mouth, 1.9 miles northeast of Waimea, and 3.8 miles northwest of Makaweli.

Drainage area.--25.0 sq mi.

Records available.--October 1911 to June 1917, July 1943 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 30 ft (hand levels from estuary at confluence with Waimea River). Oct. 6, 1911, to June 30, 1917, staff gage at site 0.2 mile downstream at different datum.

Average discharge.--11 years (1912-17, 1944-50), 60.7 mgd (93.9 cfs).

Extremes.--Maximum discharge during year, about 4,600 mgd (7,100 cfs) Dec. 17 (gage-height record faulty), from rating curve extended above 150 mgd as explained below; minimum, 5.6 mgd (8.7 cfs) Sept. 30.
1943-50: Maximum discharge, 7,700 mgd (11,900 cfs) Feb. 7, 1949 (gage height, 10.66 ft), from rating curve extended above 150 mgd on basis of slope-area determination at gage height 9.46 ft; minimum, 3.4 mgd (5.8 cfs) Oct. 21-24, 1944.

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

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	60	12	8	5.8	8.0	23	22	24	19	42	53	12.5
2	30	10	8	5.8	8.0	12.1	130	22	18	20	53	11.7
3	26	18	8	5.8	8.9	10.7	50	21	17	19.5	86	11.7
4	38	16	8	6.0	85	12.8	35	20	16	36	75	12.9
5	170	12	8.5	8.7	51	10.4	25	300	17	15.5	52	11.7
6	40	24	8	11.1	52	9.6	220	290	16	13.2	26	11.0
7	22	14	8	8.0	60	8.9	170	150	14.5	29.5	20.5	10.6
8	17	12	8	11.6	33	21.5	320	80	14.5	118	163	10.2
9	14	20	7	90	12.8	55	230	55	270	19.8	36.5	20.5
10	12	22	6.5	33.5	9.2	17.2	180	40	99	13.6	23	19.7
11	11	40	6.8	13.2	8.0	11.3	220	37	49	12.1	19.0	23
12	18	15	6.8	12.0	55	9.9	120	33	37.5	11.3	17.0	16.9
13	55	13	6.5	8.9	34.5	92	70	30.5	28	57	34.5	16.4
14	16	14	6.5	8.0	31	101	50	42	24	114	21	11.3
15	55	11	7.2	8.0	80	59	40	29	20.5	50	86	10.2
16	17	11	8.0	8.5	23	126	36	26.5	17	85	53	10.2
17	11.3	40	7.6	12.6	15.0	772	32	24	16	55	282	10.6
18	11	44	7.6	9.2	15.5	260	28	24.5	15.5	26.5	135	9.9
19	10	35	6.8	11.3	12.1	50	25	22	14.5	20.5	56	9.6
20	9.5	20	13.5	11.3	10.2	33	23.5	180	14	15.5	73	9.2
21	9.5	50	8.0	10.2	9.6	23	35	60	34	16.1	57	12.4
22	10	160	6.3	8.9	8.3	20	180	80	15.5	150	22	14.0
23	13	150	5.8	8.0	8.0	90	60	52	44	320	16.5	20.5
24	15	30	6.5	8.0	8.0	62	70	30	98	100	14.5	31
25	20	17	7.6	8.0	7.6	20	65	23	32.5	193	19.9	122
26	19	15	6.5	7.6	7.6	19	240	20	40	117	16.5	64
27	11	13	6.3	7.0	19.8	20	62	18	82	155	93	40
28	12	11	6.0	7.0	10.8	50	48	23	23	422	19.0	20
29	15	10	6.0	7.0	8.0	65	35	-	77	127	14.5	12.9
30	120	8.5	5.8	7.0	8.0	90	30	-	23.5	54	13.2	11.0
31	20	8	-	8.0	-	30	26	-	38	-	12.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	170	9.5	29.3	45.3	907	2,780
August	160	8	28.2	43.6	876	2,690
September	13.5	5.8	7.34	11.4	220	675
October	90	5.8	12.1	18.7	376	1,150
November	85	7.6	23.6	36.5	708	2,170
December	772	8.9	70.5	109	2,180	6,700
Calendar year 1949	2,530	5.8	66.9	104	24,410	74,940
January	320	22	92.8	144	2,880	8,830
February	300	18	62.7	97.0	1,760	5,390
March	270	14	40.1	62.0	1,240	3,820
April	422	11.3	80.9	125	2,430	7,450
May	282	12.9	53.7	83.1	1,660	5,110
June	122	9.2	20.3	31.4	608	1,860
Fiscal year 1949-50	772	5.8	43.4	67.1	15,840	48,820

Note.--Faulty or no gage-height record July 1 to Sept. 10, Dec. 17 to Jan. 18, Jan. 21 to Feb. 3, Feb. 5-12, Feb. 20 to Mar.1, Apr. 16, 17, 22, 23; discharge estimated on basis of records for nearby streams.

Hanapepe River at Koula, near Eleele

Location.--Lat 21°57'20", long. 159°33'15", on left bank just downstream from confluence with Manuahi Stream, 4 miles northeast of Eleele.
Drainage area.--18.8 sq mi.
Records available.--May 1917 to January 1921, December 1926 to June 1950. August 1910 to December 1916 at site half a mile upstream; records not equivalent due to inflow.
Gage.--Water-stage recorder. Altitude of gage is 150 ft (by barometer). Prior to Dec. 15, 1926, staff gage at same site and datum.
Average discharge.--26 years (1917-20, 1927-50), 56.5 mgd (87.5 cfs).
Extremes.--Maximum discharge during year, 10,400 mgd (16,100 cfs) Dec. 17 (gage height, 11.74 ft), from rating curve extended above 2,400 mgd by test on model of station site; minimum, 10.4 mgd (16.1 cfs) Oct. 26.
1910-21, 1926-50: Maximum discharge, that of Dec. 17, 1949; minimum, 6.2 mgd (9.6 cfs) Oct. 4, 5, 1939.
Remarks.--Records good except those for period of no gage-height record, which are poor. Hanapepe ditch diverts water from river 3 miles above station for irrigation in vicinity of Makaweli.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Dec. 16				Dec. 17 to June 30			
-0.2	9.0	0.6	69	-0.4	10.8	2.0	360
-.1	13.5	.8	92	-.2	18.8	3.0	710
0	18.5	1.2	158	0	30	4.0	1,260
.2	31	1.6	250	.5	74	5.0	1,930
.4	48			1.0	145		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	108	23.5	17.0	13	13.5	32.5	35	46	27.5	31	74	25
2	54	19.7	16.5	13	12.6	15.0	197	45	25	24	69	24
3	46	33	16.5	13	13.0	14.0	83	43	24	32	98	24
4	66	28.5	17.5	14	100	16.6	57	42	23.5	27	103	24.5
5	183	21.5	18.5	18	52	13.5	37.5	358	24	24	97	23
6	70	44	17.0	20	59	12.6	350	346	22.5	22.5	57	21.5
7	39	26.5	16.5	16	56	12.6	252	213	23	124	42	21
8	29.5	22	17.2	24	53	20	442	115	21.5	289	156	21
9	24.5	36.5	16.2	100	17.0	38.5	346	80	283	48	59	30
10	22	38.5	14.5	44	13.5	20	263	64	82	30	40	46
11	21	62	17.0	26	13.5	17.5	316	58	36.5	25	35	28.5
12	33.5	28	15.0	24	35	22.5	186	53	29	23.5	32	23.5
13	76	23.5	14.0	16	16.5	140	113	50	25	74	52	25.5
14	28	26.5	14.0	14	15.0	90	86	64	24	300	35.5	17.0
15	76	20.5	15.5	14	20.5	48	69	50	22.5	75	160	14.0
16	34	20.5	17.0	15	13.5	176	64	50	22	139	174	13.7
17	25	57	18.5	20	13.5	1,620	59	48	21.5	74	317	14.4
18	24	67	16.5	16	17.0	240	54	53	21	38	172	13.3
19	21	50	15.0	19	13.5	88	51	45	21	31.5	105	13.3
20	19.7	34.5	22	19	13.5	49	50	195	21.5	25	136	13.0
21	19.7	82	15.0	16	13.5	34	61	72	30	78	123	17.3
22	20.5	182	13.5	14	12.6	29.5	197	93	21	201	62	14.4
23	27	176	13.5	11.7	12.6	61	92	62	38.5	398	46	22
24	29	54	17.5	11.7	12.2	37	108	50	73	164	35.5	35
25	36.5	33	16.0	11.7	12.6	27	104	39.5	37	229	36.5	107
26	35	30.5	14.0	11.7	12.2	27.5	259	32	46	166	33	74
27	21.5	26.5	13.5	12.2	62	31	86	28	87	263	98	52
28	23	22	13.5	12.2	17.2	70	69	34	29	484	35.5	29
29	40	19.7	13.5	12.6	12.2	90	59	-	40	140	30	17.5
30	135	17.5	13.5	12.6	19.3	130	52	-	24	77	28	14.4
31	33.5	17.0	-	14.5	-	46	49	-	31.5	-	27	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	183	19.7	45.8	70.9	1,420	4,360
August	182	17.0	43.3	67.0	1,340	4,120
September	22	13.5	15.8	24.4	475	1,460
October	100	11.7	19.3	29.9	599	1,840
November	100	12.2	24.9	38.5	748	2,290
December	1,620	12.6	105	162	3,270	10,030
Calendar year 1949	1,640	11.7	73.1	113	26,700	81,910
January	442	35	137	212	4,250	13,030
February	358	28	86.7	134	2,430	7,450
March	283	21	40.5	62.7	1,260	3,860
April	484	22.5	122	189	3,660	11,220
May	317	27	82.8	128	2,570	7,880
June	107	13.0	27.3	42.2	819	2,510
Fiscal year 1949-50	1,620	11.7	62.5	96.7	22,840	70,050

Peak discharge (base, 2,300 mgd).--Dec. 17 (2 p.m.) 10,400 mgd (16,100 cfs), 11.74 ft; Jan. 6 (9:30 p.m.) 3,330 mgd (5,150 cfs), 6.50 ft; Apr. 14 (2:30 p.m.) 3,130 mgd (4,840 cfs), 6.33 ft.
Note.--No gage-height record Oct. 1-22; discharge estimated on basis of recorded range in stage and record for nearby streams.

South Fork Wailua River near Lihue

Location.--Lat 22°02'10", long. 159°22'55", on right bank 0.3 mile upstream from Wailua Falls and 5 miles north of Lihue.
Drainage area.--22.4 sq mi.
Records available.--December 1911 to June 1950.
Gage.--Water-stage recorder. Altitude of gage is 230 ft (by barometer). Prior to Nov. 18, 1918, at site 0.3 mile upstream at different datum.
Average discharge.--28 years (1921-24, 1925-50), 67.4 mgd (104 cfs).
Extremes.--Maximum discharge during year, not determined; minimum, 1.53 mgd (2.37 cfs) Oct. 30, 31, Nov. 2.
1911-50: Maximum discharge, 29,000 mgd (44,900 cfs) Jan. 16, 1920 (gage height, 11.25 ft), from rating curve extended above 9,000 mgd; minimum, 1.15 mgd (1.78 cfs) June 9-11, 1947.
Remarks.--Records good except those for period of no gage-height record, which are poor.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.5	1.16	1.2	7.4	3.0	225
.6	1.69	1.4	11.6	3.5	395
.7	2.3	1.6	18.9	4.0	640
.8	3.05	1.8	29.5	4.5	950
.9	3.9	2.0	44	5.0	1,340
1.0	4.9	2.3	77		
1.1	6.0	2.6	125		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	40	2.85	2.45	2.0	1.67	3.1	14	38	44	14.1	90	4.1
2	7.7	2.4	2.3	2.0	1.58	3.45	150	26.5	26.5	10.3	91	3.35
3	21.5	7.5	2.2	2.1	1.72	2.9	36	5.1	4.4	41	134	3.35
4	49	5.6	2.2	2.05	18.8	2.65	20	4.2	3.7	20	141	8.7
5	62	2.65	2.45	2.1	21	2.55	4.9	540	4.0	7.4	112	7.8
6	16.0	2.45	2.55	2.25	8.6	2.4	603	458	4.8	3.7	76	3.35
7	4.1	2.75	2.45	2.1	9.5	2.3	704	298	4.3	359	62	2.8
8	3.6	2.45	2.3	2.05	14.6	2.45	744	182	3.8	428	127	2.55
9	3.2	2.55	2.25	2.05	5.3	3.75	548	105	422	100	44	11.3
10	2.95	7.0	2.1	3.9	3.8	2.95	350	83	148	46	6.2	23.5
11	2.9	42	2.1	2.55	3.1	2.65	341	70	82	13.8	5.8	57
12	2.9	10.8	2.1	2.65	21.5	9.8	214	80	46	4.3	5.4	21.5
13	7.3	3.2	2.05	2.2	5.3	52	132	44	39.5	55	8.1	6.7
14	4.2	3.35	2.0	2.0	3.6	86	99	47	36.5	484	26.5	3.8
15	6.7	2.9	2.05	1.94	3.3	29.5	82	53	31	133	157	2.6
16	5.3	2.55	2.0	2.8	2.9	171	54	48	25	276	216	2.2
17	2.9	2.8	2.1	3.45	2.8	1,200	40	52	20.5	180	383	2.0
18	2.65	21	2.1	3.1	2.8	350	59	56	19.4	94	239	1.88
19	2.65	5.7	2.05	3.55	2.75	150	57	47	17.7	80	144	1.94
20	2.6	4.5	2.4	25	2.55	100	47	288	12.0	59	159	1.88
21	2.55	82	2.2	16.4	2.45	80	50	98	6.0	89	198	1.81
22	2.45	147	2.05	2.8	2.3	70	198	86	4.4	225	92	1.81
23	2.45	150	2.05	2.25	2.2	75	118	119	4.3	355	77	1.88
24	2.65	20.5	2.2	1.94	2.2	60	129	188	52	160	62	2.1
25	2.8	5.3	2.2	1.75	2.2	50	149	99	6.2	230	56	59
26	2.8	4.4	2.2	1.69	2.2	60	193	72	10.4	175	26.5	52
27	2.75	3.5	2.1	1.81	66	65	89	59	44	242	107	9.2
28	2.6	2.95	2.05	1.81	14.4	80	82	47	12.4	453	62	3.25
29	7.7	2.75	2.2	1.64	5.7	110	53	-	34.5	145	31	2.2
30	23	2.6	2.05	1.58	3.3	120	48	-	11.8	91	43	1.81
31	5.8	2.6	-	1.69	-	26	44	-	4.6	-	36.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	62	2.45	9.93	15.4	308	944
August	150	2.4	18.1	28.0	581	1,720
September	2.55	2.0	2.18	3.37	65.5	201
October	25	1.58	3.46	5.35	107	328
November	66	1.58	8.00	12.4	240	737
December	1,200	2.3	98.0	149	2,980	9,130
Calendar year 1949	2,270	1.58	75.1	116	27,420	84,110
January	744	4.9	176	272	5,450	16,730
February	540	4.2	115	178	3,230	9,920
March	422	3.7	37.6	58.2	1,170	3,580
April	484	3.7	152	235	4,570	14,040
May	383	5.4	97.4	151	3,020	9,280
June	59	1.81	10.2	15.8	307	943
Fiscal year 1949-50	1,200	1.58	80.3	93.3	22,010	67,530

Peak discharge (base, 2,900 mgd).--Dec. 17 (time and discharge unknown); Jan. 6 (10 a.m.) 4,820 mgd (7,460 cfs), 7.80 ft; Apr. 14 (4:30 p.m.) 3,580 mgd (5,540 cfs), 6.97 ft.
Note.--No gage-height record Dec. 17 to Jan. 4; discharge estimated on basis of records for East Branch and North Fork Wailua River and cooperating party's notes on Hanamaulu ditch.

Hanalei tunnel outlet near Lihue

Location.--Lat 22°05'00", long. 159°28'15", on right bank at end of Hanalei tunnel, 2.2 miles downstream from intake on Kaapoko Stream and 9.8 miles northwest of Lihue.

Records available.--July 1932 to June 1950.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,210 ft (from tunnel-profile).

Average discharge.--18 years, 23.5 mgd (36.4 cfs).

Extremes.--1932-50: Maximum daily discharge, 64 mgd (99.0 cfs) Apr. 11, 25, 26, 1942; no flow Aug. 27, 1938, Apr. 4-9, 1945, June 23, 1948.

Remarks.--Records good. Tunnel diverts water from Kaapoko Stream and Hanalei River and empties it into north branch of North Fork Wailua River, from which it is later diverted and used for irrigation in vicinity of Lihue and Kapaa. Flow regulated by spillway and headgates.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21.5	16.4	18.4	15.2	24	25.5	12.6	4.3	8.4	14.5	1.73	2.5
2	18.4	12.7	18.0	15.2	20.5	22.5	20.5	4.0	11.1	12.2	1.55	2.5
3	19.2	24	17.6	16.0	22	21.5	15.2	4.0	11.1	16.6	2.15	2.5
4	19.2	23.5	17.6	15.6	32.5	21.5	13.7	4.0	10.8	17.7	1.73	2.7
5	26.5	18.8	17.6	21.5	27	18.8	11.8	13.1	15.5	12.9	1.55	2.5
6	19.2	25.5	18.0	16.8	29	18.0	22	12.3	11.8	12.2	1.04	2.5
7	17.6	20.5	17.2	18.8	30	17.2	8.4	7.4	11.1	22.5	1.37	2.4
8	16.8	18.8	19.2	21	27.5	25.5	14.0	7.9	10.8	21	3.9	2.4
9	16.4	25.5	17.2	25.5	23	25.5	17.2	7.2	18.7	13.3	1.04	2.9
10	15.6	24.5	16.8	23	21	21.5	9.6	5.7	13.3	11.8	.89	3.75
11	15.6	28	18.0	21	21.5	19.2	11.6	5.4	12.9	11.8	.75	3.3
12	16.8	21.5	16.8	21.5	29	21	6.0	4.8	11.1	11.1	.75	3.6
13	20	21	17.2	19.2	28	32	4.6	5.1	10.8	21.5	1.62	3.25
14	16.4	22	16.8	18.4	27.5	32	4.0	6.3	10.4	23.5	.75	2.5
15	20	19.2	18.2	18.4	29	28	3.8	5.1	10.4	5.4	2.95	2.5
16	16.8	21	18.8	23	24	a30	3.55	4.8	10.1	8.5	7.2	2.5
17	15.6	25.5	19.6	24.5	24.5	a22	3.55	4.8	10.1	7.8	6.7	2.5
18	15.6	27	17.6	22	25	a16.0	3.35	5.1	10.1	3.8	5.7	2.4
19	15.6	29.5	16.8	24	23	a12.0	3.35	4.6	10.1	3.1	1.73	2.4
20	15.6	29	22.5	28.5	21	a11.5	3.1	15.5	11.8	2.7	2.35	2.4
21	15.2	28	16.8	26	19.2	11.5	8.3	6.6	12.6	4.7	2.35	2.5
22	15.2	32	16.4	21.5	18.4	11.1	17.4	6.9	10.8	9.1	1.04	2.5
23	16.8	32	16.4	19.2	18.0	11.5	7.5	11.6	12.9	13.2	.89	3.1
24	16.0	28	19.6	18.0	17.6	10.4	7.7	9.5	13.3	5.8	1.93	3.55
25	17.2	24.5	17.2	17.6	17.2	10.1	8.9	6.3	12.6	8.1	3.45	5.4
26	16.8	26.5	16.8	16.8	16.8	11.1	13.6	5.4	13.7	7.2	4.8	3.55
27	15.2	23.5	16.8	16.8	30.5	11.5	6.3	5.1	15.2	7.4	4.0	3.8
28	17.0	20.5	16.4	16.8	24.5	15.2	5.7	5.7	14.6	10.0	2.9	3.55
29	17.2	19.2	15.6	16.4	20	17.5	5.4	-	17.8	2.5	2.7	3.1
30	20	18.8	15.6	15.6	23.5	19.6	4.8	-	13.3	1.55	2.9	2.9
31	16.4	18.4	-	16.8	-	12.2	4.6	-	14.8	-	2.7	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	26.5	15.2	17.5	27.1	541	1,660
August	32	12.7	23.4	36.2	725	2,230
September	22.5	15.6	17.6	27.2	528	1,620
October	28.5	15.2	19.7	30.5	611	1,870
November	32.5	16.8	23.8	36.8	715	2,190
December	32	10.1	18.8	29.1	583	1,790
Calendar year 1949	44	.09	14.4	22.3	5,270	16,160
January	22	3.1	9.10	14.1	282	866
February	15.5	4.0	6.73	10.4	188	578
March	18.7	8.4	12.3	19.0	382	1,170
April	23.5	1.55	10.8	16.7	323	993
May	7.2	.75	2.49	3.85	77.1	237
June	5.4	2.4	2.93	4.53	88.0	270
Fiscal year 1949-50	32.5	.75	13.8	21.4	5,040	15,470

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

North Wailua ditch near Lihue

Location.--Lat 22°03'40", long. 159°27'55, on left bank 300 ft downstream from intake diversion dam on North Fork Wailua River, 8 miles west of Wailua, and 8.5 miles northwest of Lihue.

Records available.--July 1932 to June 1950 in reports of Geological Survey. 1926 to June 1932 in files of Lihue Plantation Co.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,105.45 ft above mean sea level (levels by Lihue Plantation Co.).

Average discharge.--18 years, 12.2 mgd (18.9 cfs).

Extremes.--1932-50: Maximum daily discharge, 38 mgd (58.8 cfs) Dec. 21, 1933, and Apr. 24, 1934; no flow Apr. 1, 7, 13, 1938, Jan. 24, Dec. 19, 20, 1944.

Remarks.--Records good except those below 3 mgd, which are fair. Flow regulated by gates. Ditch diverts water from North Fork Wailua River for power and irrigation in vicinity of Lihue.

Revisions (fiscal years).--W 770: 1933.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.8	13.7	12.8	10.7	13.6	15.9	11.6	12.2	13.4	11.9	15.0	13.6
2	10.5	13.4	12.5	10.5	13.4	14.6	13.7	11.9	12.8	11.6	14.3	13.4
3	15.7	17.5	12.2	10.6	15.3	14.0	12.5	11.6	12.2	13.5	14.3	13.7
4	16.2	18.0	12.2	10.5	23.5	14.6	11.9	11.3	11.9	12.8	14.3	14.1
5	16.0	15.3	12.5	13.3	16.2	12.8	11.7	18.2	13.3	13.1	14.3	14.0
6	11.6	17.2	11.9	11.0	17.8	12.2	7.0	10.4	12.8	12.8	13.7	13.1
7	11.6	15.3	11.6	12.5	18.2	11.7	1.70	.44	11.9	14.8	13.7	12.4
8	11.6	15.3	13.8	14.6	15.6	16.2	2.45	5.0	11.6	13.4	15.2	13.0
9	14.4	18.4	12.2	19.2	14.9	15.9	2.75	10.6	15.8	13.1	14.3	15.1
10	14.6	19.6	11.6	16.6	13.7	14.9	3.6	12.3	14.1	14 9	14.0	15.2
11	14.0	16.4	12.8	14.7	14.6	14.9	4.2	14.0	14.6	15.6	14.3	15.0
12	16.1	14.9	11.9	15.0	18.6	15.3	6.3	13.1	14.0	14.3	14.6	14.6
13	16.3	17.0	11.9	13.1	16.2	16.7	8.0	11.7	13.4	16.4	16.7	14.6
14	13.8	17.2	11.6	12.2	15.9	12.2	8.0	14.5	13.4	14.2	15.3	13.8
15	14.1	14.9	12.9	12.5	16.5	11.3	9.2	14.0	12.3	9.2	15.5	13.4
16	11.6	16.6	13.7	15.6	14.9	12.0	13.7	14.3	11.9	12.9	13.5	13.7
17	11.3	19.8	14.0	16.5	15.3	5.8	13.1	13.4	11.9	11.6	4.4	13.4
18	11.8	19.7	13.1	15.3	15.6	.02	12.8	13.7	11.6	14.9	.36	12.5
19	13.1	17.0	11.9	17.2	14.3	0	12.5	13.1	11.3	15.3	.73	12.5
20	13.1	15.3	14.6	21	13.1	0	12.2	7.4	12.5	14.9	10.5	12.2
21	12.8	15.9	11.8	17.6	12.5	6.4	15.7	8.8	13.7	16.0	14.0	13.2
22	13.1	15.2	11.3	15.3	11.9	15.0	10.7	10.0	12.9	16.5	13.6	12.9
23	14.1	12.2	11.6	13.4	11.6	16.8	10.5	12.5	14.4	17.0	14.3	14.2
24	13.7	11.6	14.0	12.5	11.6	13.7	11.6	8.0	11.4	14.9	14.5	14.6
25	15.3	11.3	12.5	12.2	11.3	12.5	8.8	8.5	14.9	15.3	14.7	15.8
26	14.3	11.6	11.3	11.6	11.8	14.6	9.6	11.1	14.6	15.3	15.8	17.2
27	13.3	11.3	11.4	11.9	18.3	14.7	9.1	14.0	14.9	15.9	15.3	16.4
28	13.5	12.6	11.2	11.6	15.6	18.0	9.1	14.5	15.3	16.5	14.6	15.6
29	12.5	13.7	10.7	11.0	13.7	16.4	10.1	-	16.2	14.6	14.6	14.3
30	15.2	13.1	10.7	11.0	14.3	14.9	13.1	-	14.6	14.3	14.6	13.1
31	13.7	12.8	-	11.9	-	11.6	12.5	-	14.5	-	14.6	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	16.3	8.8	13.5	20.9	418	1,280
August	19.8	11.3	15.3	23.7	474	1,450
September	14.6	10.7	12.3	19.0	368	1,130
October	21	10.5	13.6	21.0	423	1,300
November	23.5	11.3	15.0	23.2	450	1,380
December	18.0	0	12.4	19.2	386	1,180
Calendar year 1949	23.5	0	12.3	19.0	4,480	13,740
January	15.7	1.70	9.67	15.0	300	920
February	18.2	.44	11.4	17.6	321	984
March	16.2	11.3	13.4	20.7	414	1,270
April	17.0	9.2	14.2	22.0	428	1,310
May	16.7	.36	13.2	20.4	410	1,260
June	17.2	12.2	14.0	21.7	421	1,290
Fiscal year 1949-50	23.5	0	13.2	20.4	4,810	14,750

Stable storm ditch near Lihue

Location.--Lat 22°04'00", long. 159°26'45", on left bank 100 ft downstream from intake. 7.8 miles northwest of Lihue, and 8.2 miles west of Kapaa.

Records available.--December 1936 to June 1950.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 710 ft above mean sea level (by barometer).

Average discharge.--13 years (1937-50), 6.60 mgd (10.2 cfs).

Extremes.--1936-50: Maximum daily discharge, 46 mgd (71.2 cfs) Apr. 3, 1948; no flow at times each year.

Remarks.--Records good. Ditch diverts water from North Wailua River for irrigation of sugarcane in vicinity of Lihue. Flow regulated by headgates.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	15.3	24.5	19.8	29.5	19.7	0	0	0	0	0	0
2	0	19.8	24.5	19.8	26	29.5	0	0	0	0	0	0
3	0	26	24.5	19.8	28	28	0	0	0	0	.42	0
4	0	26	24.5	19.8	15.1	29.5	.10	0	0	0	0	0
5	0	24.5	24.5	22.5	17.4	28	.10	.17	0	0	0	0
6	0	26	24.5	21.5	26	26	.79	.10	0	0	0	0
7	0	24.5	23	21.5	28	24.5	.40	.10	12.8	.33	0	0
8	0	24.5	24.5	24.5	9.8	28	.40	0	18.3	0	0	8.3
9	0	26	23	26	0	29.5	.30	0	7.8	0	0	22
10	0	26	23	24.5	0	28	.20	0	0	0	0	7.2
11	16.6	8.2	23	24.5	0	28	.10	0	0	0	0	0
12	26	0	23	26	0	28	.10	0	0	0	0	0
13	28	0	23	24.5	0	9.8	.10	0	0	0	0	0
14	24.5	0	21.5	23	0	0	0	0	0	.15	0	0
15	17.2	17.1	23	23	0	0	0	0	0	0	0	0
16	15.9	26	24.5	24.5	0	.09	0	0	0	0	.10	0
17	23	28	24.5	26	0	3.0	0	0	0	0	.23	8.4
18	23	28	23	26	0	0	0	0	0	0	.23	10.6
19	23	28	21.5	28	0	0	0	0	0	0	.10	10.4
20	23	26	24.5	31	0	0	0	.04	0	0	0	10.1
21	21.5	11.3	21.5	29.5	0	.05	0	0	0	0	0	11.8
22	21.5	0	19.8	28	14.9	0	0	0	0	0	0	10.9
23	23	0	19.8	26	24.5	0	0	0	0	0	0	14.2
24	23	0	23	24.5	24.5	0	0	0	0	0	0	16.4
25	24.5	0	23	23	23	0	0	0	0	0	0	22
26	24.5	0	21.5	21.5	23	0	0	0	0	0	0	6.4
27	21.5	0	21.5	23	12.4	0	0	0	0	0	0	0
28	23	0	19.8	21.5	0	0	0	0	0	.10	0	0
29	24.5	13.3	19.8	21.5	0	0	0	-	0	0	0	0
30	15.8	24.5	19.8	21.5	0	0	0	-	0	0	0	0
31	0	24.5	-	21.5	-	0	0	-	0	-	0	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	28	0	14.3	22.1	443	1,360
August	28	0	15.3	23.7	474	1,450
September	24.5	19.8	22.7	35.1	682	2,090
October	31	19.8	23.8	36.8	738	2,260
November	29.5	0	10.1	15.6	302	927
December	29.5	0	11.0	17.0	340	1,040
Calendar year 1949	31	0	11.4	17.6	4,180	12,800
January	.79	0	.084	.130	2.59	7.9
February	.17	0	.015	.023	.41	1.3
March	18.3	0	1.25	1.93	38.9	119
April	.33	0	.019	.029	.58	1.8
May	.42	0	.035	.054	1.08	3.3
June	22	0	5.29	8.18	159	487
Fiscal year 1949-50	31	0	8.71	13.5	3,180	9,750

North Fork Wailua River at altitude 650 feet, near Lihue

Location.--Lat 22°03'50", long. 159°26'20", on right bank 1.5 miles upstream from intake of Kanaha ditch and 7.8 miles northwest of Lihue.
Drainage area.--6.6 sq mi.
Records available.--September 1914 to June 1950.
Gage.--Water-stage recorder. Altitude of gage is 650 ft (from topographic map). Prior to Sept. 9, 1944, water-stage recorder at same site at datum 2.0 ft higher.
Average discharge.--29 years (1921-50), 49.9 mgd (77.2 cfs).
Extremes.--Maximum discharge during year, 3,900 mgd (6,030 cfs) Dec. 17 (gage height, 11.78 ft), from rating curve extended above 600 mgd by test on model of station site; minimum, 0.34 mgd (0.53 cfs) Sept. 30 to Oct. 2, Oct. 31.
1914-50: Maximum discharge, 4,020 mgd (6,220 cfs) June 2, 1943 (gage height, 9.96 ft, datum then in use), from rating curve extended above 600 mgd by test on model of station site; minimum, 0.3 mgd (0.5 cfs) Feb. 19, 20, Oct. 13-15, 1945.
Remarks.--Records good except those for periods of faulty gage-height record, which are fair. Since 1925 Hanalei tunnel has discharged its water into river, and North Wailua and Stable storm ditches have diverted water above station for irrigation in vicinity of Lihue.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Dec. 17						Dec. 18 to June 30			
1.3	0.27	2.0	12.0	3.8	177	1.1	0.39	1.8	14.0
1.4	.64	2.2	20.5	4.2	242	1.2	.92	2.0	23.5
1.5	1.36	2.4	31.5	4.6	326	1.3	1.86	2.5	54
1.6	2.55	2.7	53	5.0	436	1.4	3.25	3.0	93
1.7	4.2	3.0	81	5.5	594	1.5	5.2	4.0	211
1.8	6.2	3.4	125	6.0	770	1.6	7.7	5.0	436

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	57	11.4	2.25	0.34	5.8	24.5	25.5	14.0	17.2	37.5	35.5	18.2
2	53	.78	1.59	.34	.81	4.1	82	13.3	19.5	24.5	32.5	17.2
3	48	27.5	1.14	.36	.87	3.6	45	13.0	18.5	54	48	18.0
4	52	13.8	.86	.38	69	6.1	40	12.6	17.6	48	38	20
5	92	3.9	.86	10.1	26	.86	30.5	137	37	29	34.5	18.5
6	53	17.3	1.00	.77	29	.64	255	107	22	20.5	22	15.4
7	41	6.9	.60	1.21	29.5	.60	126	72	7.3	190	21	14.0
8	37	3.15	4.4	1.89	36	28	183	57	.62	107	55	6.4
9	29	14.4	.90	16.8	30	17.3	183	38.5	103	44	18.5	9.8
10	26	18.3	.49	5.8	26.5	6.0	106	29	44	31	14.9	30
11	9.6	58	1.18	2.3	27	3.5	109	22.5	31.5	21.5	16.2	30.5
12	5.9	36.5	.49	2.3	66	5.6	60	20	21	19.5	19.5	28
13	23.5	32	.46	.64	50	94	38	18.5	15.4	74	42	28
14	3.9	33	.46	.42	47	74	29.5	29	16.2	179	13.0	14.9
15	29.5	11.2	2.7	.58	62	56	25	20	14.9	63	61	13.6
16	15.5	5.5	1.59	7.5	36	106	18.0	20	14.0	108	118	19.2
17	5.0	22.5	2.2	9.8	34	612	17.2	17.6	14.0	78	188	7.3
18	5.3	25	.60	6.0	36	102	16.7	17.6	14.0	41	132	1.15
19	1.71	22	.46	8.1	31.5	60	16.7	15.8	14.0	28.5	80	1.15
20	1.00	24	9.7	43	28	46	16.7	127	19.1	22	73	1.15
21	.71	41	.53	16.2	26	36	56	38	25.8	34.5	78	1.15
22	.64	106	.42	2.0	11.8	23.5	97	37	16.7	84	29	1.07
23	2.95	102	.38	.78	.57	29.5	56	58	30.5	130	31	1.61
24	2.55	55	1.76	.46	.53	19.5	63	73	38	59	21	3.65
25	7.3	44	.49	.42	.65	17.2	76	41	24	79	35	27
26	3.6	45	.42	.38	.57	19.8	66	27.5	33	66	45	17.2
27	.93	39	.38	.38	99	21	39	18.5	46	77	45	28
28	10.6	32.5	.38	.38	40	36	32	19.8	26	154	25	22.5
29	7.8	17.2	.38	.38	28	58	22.5	-	58	59	25	12.2
30	38	3.85	.34	.38	31.5	66	16.7	-	27.5	35	35	11.6
31	27	3.0	-	.34	-	28.5	14.0	-	32.5	-	36.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	92	0.64	22.3	34.5	691	2,120
August	106	.78	28.2	43.6	876	2,690
September	9.7	.34	1.31	2.03	39.4	121
October	43	.34	4.54	7.02	141	432
November	99	.53	30.3	46.9	910	2,790
December	612	.60	51.8	80.1	1,610	4,930
Calendar year 1949	688	.34	36.0	55.7	13,150	40,350
January	255	14.0	63.3	97.9	1,960	6,020
February	137	12.6	39.8	61.6	1,110	3,420
March	103	.62	26.4	40.8	819	2,510
April	190	19.5	66.6	103	2,000	6,130
May	188	13.0	47.4	73.3	1,470	4,510
June	30.5	1.07	14.6	22.6	438	1,350
Fiscal year 1949-50	612	.34	33.0	51.1	12,060	37,020

Peak discharge (base, 1,200 mgd).--Dec. 17 (2 p.m.) 3,900 mgd (6,030 cfs), 11.78 ft; Jan. 6 (8 p.m.) 1,950 mgd (3,020 cfs), 8.86 ft; May 17 (3 p.m.) 1,650 mgd (2,550 cfs), 8.28 ft.
Note.--Faulty gage-height record Oct. 24-27, Jan. 30 to Feb. 1, Feb. 9, Feb. 27 to June 30.

Kanaha ditch near Lihue

Location.--Lat 22°03'50", long. 159°25'30", on right bank 750 ft downstream from intake and 7 miles northwest of Lihue.

Records available.--August 1910 to June 1950.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 540 ft (by barometer). Prior to May 28, 1913, staff gage at site 250 ft upstream at different datum. May 28, 1913, to July 24, 1921, staff gage at site 450 ft upstream at different datum. July 25, 1921, to Mar. 4, 1926, water-stage recorder at site 750 ft downstream at different datum. Mar. 5, 1926, to Sept. 13, 1932, water-stage recorder at site 1,750 ft downstream at different datum.

Extremes.--1910-50: Maximum daily discharge, 25.6 mgd (39.6 cfs) Aug. 8, 1918; no flow at times.

Remarks.--Records poor. Ditch diverts water from North Fork Wailua River for domestic use only. Flow regulated by headgate.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.43	1.92	0.48	0.12	0.38	1.37	0.31	0.05	0.05	0.94	0.26	0.67
2	.43	.67	.31	.12	.31	1.09	.43	.05	.05	.80	.21	.67
3	.43	2.05	.21	.21	.55	.94	.31	.05	.05	.85	.21	.67
4	.43	2.4	0	.12	1.40	.94	.43	.05	.98	.80	.31	.67
5	.36	1.40	.02	1.02	1.09	.43	.43	.21	1.78	.67	.31	.67
6	.31	2.4	.28	.64	1.24	.08	.67	.12	1.58	.67	.31	.55
7	.31	1.58	.51	.46	1.40	0	.27	.12	.80	.55	.21	.55
8	.31	1.24	.43	.94	1.40	.23	.47	.12	.12	.12	.21	.43
9	.31	2.1	.43	1.71	1.24	.21	.31	.21	1.96	.12	1.09	.55
10	.21	2.6	.21	1.78	1.09	.12	.21	.21	1.78	.12	1.58	.55
11	.12	2.4	.31	1.36	1.09	.12	.31	.12	1.58	.49	1.58	.67
12	.12	1.58	.09	1.40	1.24	.31	.21	.21	1.58	.67	1.58	.67
13	.42	1.40	0	.80	1.24	1.09	.21	.21	1.58	.43	1.78	.55
14	.43	1.40	.42	.31	1.09	1.09	.21	.12	1.40	.21	1.58	.55
15	.55	1.09	.67	.38	1.24	1.09	.21	.12	1.37	.05	2.2	.55
16	.43	.80	.43	1.05	1.09	.55	.21	.12	1.24	.12	1.98	.55
17	.25	1.40	.21	1.98	1.09	1.09	.21	.12	1.09	.12	1.37	.43
18	0	1.40	.12	1.78	1.09	0	.21	.12	1.09	.12	1.09	.21
19	0	1.24	.05	1.58	1.09	0	.21	.12	1.09	.57	.80	.12
20	.16	1.24	.12	1.46	1.09	.94	.21	.12	1.09	.80	.80	.12
21	0	1.58	.57	1.40	1.09	1.57	.21	.05	1.09	.67	.80	.21
22	.38	1.78	.80	.80	.80	.66	.21	.12	1.09	.43	.80	.21
23	.95	1.58	.80	.67	.43	.67	.21	.12	1.24	.43	.80	.31
24	1.09	1.40	1.09	.43	.31	.43	.21	.12	1.24	.31	.67	.43
25	1.58	1.24	.80	.43	.43	.21	.21	.12	1.24	.31	.80	1.09
26	1.40	1.09	.67	.43	.31	.21	.12	.12	1.24	.55	.80	.94
27	.85	1.09	.31	.43	1.59	.21	.12	.12	1.24	.67	.80	1.24
26	.87	.94	.24	.31	1.58	.31	.05	.05	1.09	.43	.67	.94
29	1.90	.80	.12	.43	1.40	.31	.05	-	1.09	.31	.67	.80
30	2.95	.43	.12	.31	1.58	.43	.05	-	.80	.31	.67	.80
31	3.05	.43	-	.21	-	.31	.05	-	.80	-	.67	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	3.05	0	0.678	1.05	21.0	65
August	2.6	.43	1.44	2.23	44.7	137
September	1.09	0	.361	.559	10.8	33
October	1.98	.12	.809	1.25	25.1	77
November	1.59	.31	1.03	1.59	31.0	95
December	1.57	0	.549	.849	17.0	52
Calendar year 1949	3.05	0	.647	1.00	236	725
January	.67	.05	.243	.376	7.53	23
February	.21	.05	.121	.187	3.39	10
March	1.96	.05	1.11	1.72	34.4	106
April	.94	.05	.455	.704	13.6	42
May	2.2	.21	.891	1.38	27.6	85
June	1.24	.12	.579	.896	17.4	53
Fiscal year 1949-50	3.05	0	.695	1.08	254	778

East Branch of North Fork Wailua River near Lihue

Location.--Lat 22°04'10", long. 159°25'05", on right bank 1,200 ft upstream from mouth and 7.5 miles northwest of Lihue.
Drainage area.--6.2 sq mi.
Records available.--July 1912 to June 1950.
Gage.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (by barometer). Prior to Oct. 1, 1914, staff gage at site 725 ft downstream at different datum. Oct. 1, 1914, to May 10, 1934, water-stage recorder at site 75 ft upstream at present datum.
Average discharge.--30 years (1920-50), 30.4 mgd (47.0 cfs).
Extremes.--Maximum discharge during year, 2,060 mgd (3,190 cfs) Dec. 17 (gage height, 8.75 ft), from rating curve extended above 270 mgd by test on model of station site; minimum, 9.2 mgd (14.2 cfs) Oct. 2-5.
1912-50: Maximum discharge, 3,340 mgd (5,170 cfs) Dec. 24, 1927 (gage height, 10.57 ft), from rating curve extended above 500 mgd; minimum, 4.4 mgd (6.8 cfs) July 3, 13, 1926.
Remarks.--Records good except those for periods of no gage-height record, which are poor.
Revisions (fiscal years).--W 770: 1932-33.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.0	8.7	2.5	113
1.2	14.1	3.0	167
1.4	21	3.5	216
1.6	30.5	4.0	280
1.8	42	4.5	358
2.0	57	5.0	456

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	31	14.1	12.9	9.4	12.0	23	16.1	16.8	16.6	30	33	18.8
2	23	12.6	12.6	9.4	11.2	17.4	42	16.1	16.1	21	32.5	17.8
3	24.5	13.5	12.1	9.3	11.2	17.4	24	15.4	15.4	38.5	40	20
4	26	15.2	11.8	9.2	59	16.1	23	14.8	15.1	27	35	18.5
5	25	a13.2	11.8	17.8	33	14.4	18.2	126	23	21	28	16.7
6	22.5	a17.4	11.8	12.0	31.5	13.5	264	98	17.5	19.3	24.5	16.1
7	20	a15.8	11.2	10.0	33	13.2	140	66	14.8	81	24	15.4
8	18.5	a14.1	11.8	10.7	28	17.3	308	45	14.2	57	32	15.4
9	16.7	a16.1	11.5	15.4	18.2	28.5	135	32.5	73	28.5	22	19.3
10	15.4	19.1	10.7	13.5	15.1	17.1	72	28	27.5	23.5	20	26
11	14.8	22.5	11.0	12.1	14.1	15.4	69	24.5	21	23	19.3	17.8
12	15.8	16.4	10.7	12.6	52	15.1	47	23	18.2	20	18.9	17.8
13	21.5	15.9	10.4	11.2	23.5	22	36	21.5	17.1	31.5	22.5	16.1
14	15.1	16.4	10.4	10.7	21	30.5	31	26.5	16.4	68	18.5	15.1
15	21.5	13.5	10.7	11.5	43	25	27	21	15.4	45	35	14.4
16	17.4	13.2	11.0	14.1	22.5	66	24	22	14.8	109	56	14.4
17	14.8	19.5	11.2	18.2	20.5	426	22.5	19.7	14.8	96	86	14.1
18	13.8	20	11.0	15.8	22	99	21	19.7	14.4	46	67	13.5
19	13.5	26.5	10.7	16.9	18.5	46	19.7	17.8	13.8	36	45	13.2
20	13.2	26.5	14.0	23	16.1	34	18.5	41	14.3	30	46	12.9
21	13.2	30	10.4	15.8	15.1	28.5	18.5	21.5	18.8	36	47	13.5
22	a12.6	42	10.4	12.9	14.1	24.5	53	23.5	14.9	52	31	12.9
23	a14.1	49	10.4	11.8	13.2	22	29	21.5	22	79	31.5	14.1
24	a14.1	28	11.8	11.0	12.6	20.5	26.5	34.5	28	42	25.5	16.5
25	a17.4	21	11.2	10.7	12.6	18.9	49	21	16.4	62	26	31
26	a15.8	19.3	10.4	10.2	12.1	18.5	27	18.9	21.5	42	34.5	26
27	a13.2	17.1	10.2	10.2	38	19.5	26	17.1	44	55	33	20.5
28	a16.7	15.4	10.0	10.2	23	24	23.5	17.8	21	122	23.5	19.7
29	a17.4	14.4	9.7	10.0	16.1	24.5	21	-	60	48	21	15.1
30	a21	13.5	9.4	9.7	16.4	23.5	18.9	-	26.5	36.5	21	13.8
31	a15.8	13.2	-	10.2	-	17.8	17.8	-	25.5	-	21	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	31	12.6	17.9	27.7	555	1,700
August	49	12.6	19.5	30.2	604	1,850
September	14.0	9.4	11.1	17.2	333	1,020
October	23	9.2	12.4	19.2	386	1,180
November	59	11.2	22.6	35.0	679	2,080
December	426	13.2	38.7	59.9	1,200	3,680
Calendar year 1949	594	9.2	32.2	49.8	11,750	36,030
January	264	16.1	50.6	78.3	1,570	4,810
February	126	14.8	31.1	48.1	871	2,670
March	73	13.8	22.3	34.5	692	2,120
April	122	19.3	47.5	73.5	1,430	4,380
May	86	18.5	32.9	50.9	1,020	3,130
June	31	12.9	17.2	26.6	516	1,580
Fiscal year 1949-50	426	9.2	27.0	41.8	9,860	30,200

Peak discharge (base, 1,000 mgd).--Dec. 17 (2 p.m.) 2,060 mgd (3,190 cfs), 8.75 ft; Jan. 6 (5 p.m.) 1,800 mgd (2,790 cfs), 8.42 ft.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby streams.

Wailua ditch near Kapaa

Location.--Lat 22°04'25", long. 159°24'05", on right bank 2,000 ft downstream from Wailua Reservoir, 5.2 miles west of Kapaa, and 7 miles north of Lihue.

Records available.--November 1936 to June 1950 in reports of Geological Survey. April 1932 to November 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder. Altitude of gage is 462 ± 5 ft (by estimating slope of 2,000-foot length of ditch on basis of Lihue Plantation Co. levels).

Average discharge.--13 years (1937-50), 12.3 mgd (19.0 cfs).

Extremes.--1936-50: Maximum daily discharge, 41 mgd (63.4 cfs) June 4, 1937; no flow May 15 to June 3, 1940, Mar. 10, 11, Apr. 18-24, 1950.

Remarks.--Records good except those for periods of faulty or no gage-height record, which are fair. Ditch diverts water from North Fork Wailua River to reservoir 2,000 ft above station and thence passed station to fields for irrigation of sugarcane. Flow regulated by gates at reservoir.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.1	8.5	3.6	8.9	12.1	11.6	0.36	3.15	6.9	14.3	3.7	6.4
2	9.4	8.5	3.6	8.9	16.6	11.6	.36	4.8	6.4	13.8	4.8	8.4
3	6.9	17	3.6	8.9	17.6	11.6	9.4	1.55	6.4	13.8	4.7	12.6
4	6.9	17	3.6	8.9	12.7	11.6	22.5	1.62	6.4	11.6	4.6	14.3
5	6.9	15	6.7	12.1	9.4	11.0	22.5	.96	6.9	7.4	4.7	13.8
6	7.4	16	17.0	20	9.4	13.5	13.4	.30	6.4	6.9	5.1	13.8
7	7.4	8.5	29	16.5	9.4	17.6	.45	.30	9.2	6.9	5.0	14.3
8	2.7	8.5	29	13.8	8.4	18.8	.42	.30	16.5	6.0	4.9	14.3
9	8	8.5	27.5	15.4	6.0	21	.41	.30	4.8	5.7	4.8	12.1
10	25	8.4	23.5	21	6.0	~6.5	.36	.30	0	5.6	5.3	8.9
11	25	8.4	18.8	18.8	6.0	14.3	.36	.36	0	6.0	6.9	8.9
12	25	14.9	15.4	16.5	4.0	13.8	.36	.36	.01	7.9	9.4	8.4
13	25	18.8	13.2	15.4	3.0	14.3	.36	.36	.18	10.4	12.1	8.4
14	25	18.8	11.6	13.2	3.0	15.4	.36	.42	.24	8.9	12.6	10.4
15	25	17.6	11.6	12.1	3.1	14.3	.36	.42	.24	6.4	12.1	12.6
16	23	16.5	13.2	12.6	2.85	5.2	.36	.42	1.22	4.7	10.4	13.2
17	21	17.6	13.2	18.8	2.75	.35	.36	.42	2.25	.12	8.9	13.8
18	21	17.6	13.2	21	2.75	.30	.36	.42	4.5	0	8.4	13.8
19	21	12.6	12.1	22.5	2.75	.30	.36	.48	5.8	0	9.4	13.8
20	15	6.9	15.4	25	2.75	.30	.42	.48	5.9	0	11.6	13.8
21	9	8.3	16.5	23.5	7.0	.30	.42	.48	10.4	0	12.1	13.2
22	9	11.0	14.3	14.3	11.6	.30	.42	.48	14.3	0	12.1	13.2
23	9	10.4	11.6	14.3	11.6	.30	.42	.48	13.8	0	11.6	13.2
24	9	11.0	11.0	11.3	11.6	.30	.42	.42	13.2	0	8.9	13.2
25	9	11.0	12.1	6.9	11.6	.30	.48	.42	12.6	1.33	8.4	13.2
26	9	7.7	11.6	5.8	11.6	.30	.48	.42	12.1	2.55	7.9	12.6
27	9	3.5	11.0	6.0	11.6	.36	.48	3.95	13.2	2.55	7.9	12.1
28	9	3.5	10.4	8.5	11.6	.36	.48	7.4	14.3	2.6	8.9	12.1
29	9	3.5	9.9	12.1	11.6	.36	.54	-	13.8	2.7	6.9	12.6
30	8.5	3.6	8.9	12.1	11.6	.36	.54	-	13.8	2.7	6.4	13.2
31	8.5	3.6	-	12.1	-	.36	.60	-	14.3	-	6.4	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	25	2.7	13.4	20.7	417	1,280
August	18.8	3.5	11.1	17.2	343	1,050
September	29	3.6	13.4	20.7	402	1,230
October	25	5.8	14.1	21.8	437	1,340
November	17.6	2.75	8.40	13.0	252	773
December	21	.30	7.32	11.3	227	696
Calendar year 1949	30.5	.2	8.32	12.9	3,040	9,320
January	22.5	.36	2.55	3.95	79.1	243
February	7.4	.30	1.13	1.75	31.8	97
March	16.5	0	7.61	11.8	236	724
April	14.3	0	5.03	7.78	151	463
May	12.6	3.7	7.96	12.3	247	758
June	14.3	6.4	12.2	18.9	365	1,120
Fiscal year 1949-50	29	0	8.73	13.5	3,190	9,770

Note.--No gage-height record July 9 to Aug. 9, intake action faulty Sept. 9 to Oct. 1; discharge estimated on basis of recorded range in stage and ditchman's notes, or computed on basis of estimated gage-height record.

Kapaa River at Kapahi ditch intake, near Kapaa

Location.--Lat 22°06'05", long. 159°22'30", on right bank 4 miles northwest of Kapaa and 4.5 miles northwest of Wailua.

Drainage area.--3.3 sq mi.

Records available.--December 1936 to June 1950.

Gage.--Water-stage recorder and masonry-dam control. Altitude of gage is 365 ft (by barometer).

Average discharge.--13 years (1937-50), 13.2 mgd (20.4 cfs).

Extremes.--Maximum discharge during year, 2,870 mgd (4,440 cfs) Jan. 6 (gage height, 4.16 ft), from rating curve extended above 330 mgd by logarithmic plotting; no flow many times.
1936-50: Maximum discharge, 3,570 mgd (5,520 cfs) Feb. 7, 1949 (gage height, 4.65 ft), from rating curve extended above 330 mgd by logarithmic plotting; no flow at times.

Remarks.--Records good. Entire low flow is diverted into several ditches above station. Records do not include flow of Kapahi ditch (see following page).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

-0.03	0	0.5	18.9	1.1	113
0	.10	.6	28.5	1.2	140
.1	.74	.7	40	1.4	200
.2	2.55	.8	54	1.6	275
.3	6.1	.9	71	1.8	365
.4	11.5	1.0	90		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	18.3	0	1.02	0	0.13	0.77	9.1	5.0	10.4	18.1	13.6	0.66
2	16.0	0	0	0	0	0	27	3.3	9.1	11.5	13.9	0
3	25.5	0	0	0	1.54	0	11.2	2.9	9.1	20	26	5.7
4	21	0	0	0	49	0	.35	0	5.0	10.3	16.5	2.1
5	10.7	0	.06	.03	7.0	0	0	87	29.5	7.0	10.9	.25
6	15.4	0	0	0	8.8	0	356	81	9.1	5.0	8.6	0
7	5.3	0	0	0	9.4	0	127	39.5	2.1	24	13.3	0
8	4.4	0	.21	0	6.1	15.6	183	27.5	0	17.9	7.4	0
9	6.1	0	.23	0	2.1	11.6	92	17.3	61	12.2	5.6	1.28
10	7.5	0	0	0	0	10.1	26.5	13.6	24	4.6	4.1	5.0
11	.53	0	0	0	0	9.7	26.5	12.9	18.7	.90	1.50	3.1
12	0	0	0	0	33.5	2.25	18.1	12.2	13.6	0	0	.38
13	0	0	0	0	7.5	7.6	12.9	10.9	12.2	1.38	.28	0
14	0	0	0	0	6.4	7.2	10.3	18.3	9.1	42	0	0
15	.96	0	0	0	21.5	3.15	10.3	15.0	8.6	32	.02	0
16	.28	0	0	0	10.3	32	8.6	17.3	7.5	129	5.8	0
17	0	0	0	0	11.0	329	9.7	14.3	7.5	78	8.3	0
18	0	.59	0	0	12.7	37	9.1	15.0	7.0	26	27	0
19	0	2.5	0	0	9.7	15.7	9.7	12.2	9.7	16.5	13.7	0
20	0	9.0	0	1.07	8.6	11.5	8.6	29.5	6.7	12.9	21.5	0
21	0	12.9	0	0	5.3	9.1	10.6	12.9	1.32	24	26	0
22	0	16.6	0	0	5.3	8.6	28	17.4	0	27.5	12.6	0
23	0	14.3	0	0	1.20	8.6	15.7	19.7	.99	42	11.5	0
24	0	2.6	0	0	6.1	8.0	20.5	32.5	2.25	24.5	10.3	.05
25	0	1.55	0	0	1.40	7.5	31	17.3	4.1	32	9.7	8.0
26	0	1.45	0	0	0	9.7	15.7	13.6	15.9	27.5	9.8	3.8
27	0	3.4	0	0	6.1	10.3	21.5	10.3	33	34.5	14.8	.01
28	0	2.85	0	0	10.4	13.9	16.4	12.9	10.9	55	11.5	0
29	0	2.05	0	0	0	14.2	13.6	-	42	22.5	9.1	.34
30	.32	1.14	0	0	.61	14.2	10.3	-	14.4	16.5	12.6	1.40
31	0	1.85	-	0	-	9.7	10.3	-	13.8	-	5.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	25.5	0	4.27	6.61	132	406
August	16.6	0	2.35	3.64	72.8	223
September	1.02	0	.051	.079	1.52	4.7
October	1.07	0	.035	.054	1.10	3.4
November	49	0	8.06	12.5	242	742
December	329	0	19.6	30.3	607	1,860
Calendar year 1949	774	0	15.1	23.4	5,520	16,930
January	356	0	37.1	57.4	1,150	3,530
February	87	0	20.4	31.6	571	1,750
March	61	0	12.9	20.0	399	1,220
April	129	0	25.8	39.9	775	2,380
May	27	0	10.7	16.6	332	1,020
June	8.0	0	1.07	1.66	32.1	98
Fiscal year 1949-50	356	0	11.8	18.3	4,320	13,240

Peak discharge (base, 1,400 mgd).--Dec. 17 (3 p.m.) 1,710 mgd (2,650 cfs), 3.41 ft; Jan. 6 (5 p.m.) 2,870 mgd (4,440 cfs), 4.16 ft; Jan. 8 (1 p.m.) 1,480 mgd (2,290 cfs), 3.17 ft.

Kapahi ditch near Kealia

Location.--Lat 22°06'00", long. 159°22'30", on right bank 500 ft downstream from intake and 4.5 miles west of Kealia.

Records available.--April 1909 to May 1914, May 1915 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 360 ft (by barometer). Prior to Nov. 26, 1936, water-stage recorder at site 61 ft upstream at 2.52 ft higher datum.

Average discharge.--32 years (1917-20, 1921-50), 5.55 mgd (8.59 cfs).

Extremes.--1909-14, 1915-50: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts water from Kapaa River for irrigation in vicinity of Kapaa. Flow regulated by headgates.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.5	3.9	1.65	2.8	7.5	5.1	0.07	4.2	1.05	1.9	2.05	6.2
2	5.3	2.85	2.5	2.75	4.3	3.35	.07	5.3	1.04	5.5	4.9	3.15
3	.35	4.6	3.7	2.85	5.8	3.45	6.6	5.0	1.04	6.0	5.1	3.25
4	.40	5.9	3.8	2.75	5.9	2.85	16.3	7.2	3.9	3.45	5.1	3.35
5	8.2	3.05	4.0	8.9	5.5	4.4	10	2.65	4.4	4.1	5.1	3.6
6	.31	8.6	3.8	7.6	5.5	6.2	4.2	.51	4.7	5.1	5.1	3.15
7	1.52	5.4	3.7	4.5	3.35	6.2	.01	.23	7	.35	4.9	2.95
8	1.22	3.25	3.8	2.95	.13	8.4	.01	2.5	8	3.5	9.9	2.85
9	.19	7.5	4.0	9.3	1.29	10.1	.01	1.7	3.6	.35	7.0	3.0
10	.19	7.0	3.8	3.6	2.55	2.65	1.2	1.4	.39	5.8	7.0	.13
11	6.1	11.3	4.4	2.85	2.35	.23	.01	.1	.39	9.7	5.4	.13
12	6.3	4.3	4.2	3.65	10.4	7.5	.01	.2	.39	9.1	3.7	3.0
13	4.7	4.4	4.0	2.75	.10	7.9	.6	.6	.60	15.6	5.8	2.75
14	3.25	4.0	4.5	2.55	.07	6.0	1.2	3.7	2.75	5.5	3.8	2.55
15	5.8	2.85	4.7	3.3	.02	8.4	.22	1.5	2.25	.69	8.2	2.45
16	3.15	3.4	5.1	5.3	.01	3.45	1.62	.1	3.4	.41	5.1	2.35
17	2.85	9.1	5.8	12.4	.02	1.4	.16	.7	3.4	.13	5.3	2.45
18	2.65	7.9	5.0	6.7	2.95	.07	.59	.1	2.6	.16	6.4	2.35
19	2.55	7.0	4.6	7.5	2.6	1.19	.13	.3	.23	.35	7.8	2.35
20	2.45	.23	6.9	15.4	.10	1.46	.64	.5	4.3	.27	4.2	2.25
21	2.65	.19	3.8	5.4	1.63	1.30	.19	2.6	13	1.17	.35	2.55
22	2.55	3.85	3.35	3.8	1.29	1.00	.19	.6	3.35	.23	.29	2.25
23	2.55	3.15	3.35	3.25	3.9	.93	.16	.3	13.2	.31	1.03	2.45
24	3.15	2.95	4.5	2.85	.13	.80	.16	2.5	17	.27	1.38	4.5
25	4.0	1.98	3.6	2.85	3.4	.74	.16	1.7	9	.23	4.4	6.8
26	4.4	1.85	3.25	2.85	2.25	.56	.34	.4	1.1	1.11	8.2	5.7
27	2.95	.16	3.25	3.25	5.2	.45	.16	3.7	7	3.05	5.4	6.2
28	2.85	.19	3.05	3.05	6.4	.50	.29	1.0	7	3.6	1.21	6.0
29	3.55	.44	2.85	2.95	3.45	.40	.21	-	10	.07	2.45	2.65
30	9.5	1.00	2.85	2.85	3.9	.13	.87	-	6.5	0	1.45	.89
31	3.45	1.00	-	3.8	-	.07	.16	-	6	-	5.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	11.5	0.19	3.57	5.52	111	339
August	11.3	.16	3.98	6.16	123	378
September	6.9	1.65	3.93	6.08	118	362
October	15.4	2.55	4.75	7.35	147	452
November	10.4	.01	3.07	4.75	92.0	282
December	10.1	.07	3.13	4.84	97.2	298
Calendar year 1949	17.7	.01	3.85	5.96	1,410	4,320
January	16.3	.01	1.50	2.32	46.5	143
February	7.2	.1	1.83	2.83	51.3	157
March	17	.23	4.79	7.41	149	456
April	15.6	0	2.93	4.53	88.0	270
May	9.9	.29	4.63	7.16	144	440
June	6.8	.13	3.14	4.86	94.2	289
Fiscal year 1949-50	17	0	3.45	5.34	1,260	3,870

Note.--No gage-height record Dec. 17, 18; Jan. 5-14, 26-31; Feb. 8-28; Mar. 4-12, 16-21; Mar. 24 to Apr. 3; discharge estimated on basis of recorded range in stage and records for nearby streams.

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Makaleha ditch near Kealia

Location.--Lat 22°06'55", long. 159°22'05", on left bank at end of last tunnel from which water spills down slope into Mimino Reservoir, 3.9 miles northwest of Kealia, and 4.1 miles northwest of Kapaa.

Records available --November 1936 to June 1950 in reports of Geological Survey. July 1925 to November 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder and Parshall flume. Prior to November 1936, water-stage recorder at site 150 ft downstream at different datum operated by East Kauai Water Co.

Average discharge.--13 years (1937-50), 3.82 mgd (5.91 cfs).

Extremes.--1936-50: Maximum daily discharge, 15.1 mgd (23.4 cfs) Oct. 27, 1938, Dec. 5, 1944, Mar. 27, 1945; minimum daily, 0.02 mgd (0.03 cfs) Nov. 28, 1942, Sept. 24-26, 1944, Aug. 31, 1947.

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Ditch diverts water from Makaleha Stream for irrigation of sugarcane. Diversion is regulated by headgates.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.26	8.2	5.4	3.85	7.2	9.7	0.21	0.14	0.07	0.19	0.25	2.45
2	.23	6.4	4.8	3.8	5.9	8.2	.21	.14	.08	.16	.19	6.2
3	.23	8.3	3.65	3.9	6.8	8.2	.19	.14	.07	.12	.21	8.8
4	a.23	8.5	3.55	3.8	7.9	6.4	.21	.12	.06	.11	.19	9.2
5	a.23	7.0	3.65	3.2	7.7	3.45	.19	.31	.13	.10	.17	7.2
6	3.45	10.2	3.5	.16	10.7	1.25	.66	.26	3.0	.08	.16	6.4
7	9.2	9.2	3.45	2.8	11.2	.96	.50	.21	5.4	.08	.12	5.9
8	8.9	7.7	3.45	5.9	9.7	.88	.48	.12	5.0	.10	.12	5.9
9	4.8	10.2	3.3	7.6	7.2	.83	.26	.12	3.55	.08	.11	9.1
10	2.3	10.2	3.2	7.2	6.4	.83	.19	.11	3.4	.08	.11	8.3
11	2.2	10.7	3.15	6.4	6.7	.74	.17	.11	.26	.08	3.65	6.8
12	4.4	9.1	3.1	6.8	10.2	.78	.17	.11	.21	.10	7.0	8.2
13	8.7	8.2	3.0	5.9	9.7	a.8	.17	.11	.17	.10	8.2	6.4
14	6.4	8.7	3.0	5.9	9.2	a.8	.16	.11	.14	.11	6.8	5.9
15	9.0	7.2	2.85	5.9	7.9	a.8	.16	.11	.12	.17	9.2	5.4
16	7.7	8.6	2.85	6.8	3.3	1.15	.16	.11	.11	2.2	10.2	6.1
17	6.4	10.2	3.7	7.7	2.65	1.64	.16	.11	.10	2.95	9.7	5.9
18	5.9	10.7	3.7	7.2	2.55	.07	.16	.11	.10	1.29	3.95	5.4
19	5.9	10.6	3.55	7.7	2.4	.05	.16	.11	.07	.58	.11	5.4
20	5.9	10.7	6.7	8.7	2.6	.05	.16	.11	.07	.34	.11	5.4
21	6.4	11.2	4.3	7.0	2.65	.05	.14	.11	.07	.28	.11	7.0
22	6.4	11.2	4.1	5.9	2.6	.05	.12	.11	3.6	.26	.11	5.9
23	6.4	11.2	4.0	5.4	2.35	.05	.14	.11	8.7	.30	.10	7.4
24	7.2	9.7	6.4	4.8	2.4	.05	.14	.11	8.1	.25	.10	9.2
25	9.2	7.7	4.8	4.6	3.25	.04	.14	.10	7.2	.23	.10	10.7
26	8.7	8.2	4.3	4.4	5.0	.04	.16	.10	8.2	.21	.10	11.2
27	6.4	8.2	4.5	4.6	8.6	.04	.16	.10	7.2	.25	.11	11.2
28	6.8	6.8	4.2	4.4	7.2	.05	.16	.08	7.2	.63	.08	10.7
29	8.2	6.4	4.1	4.0	6.4	.04	.16	-	3.2	.54	.07	7.2
30	10.2	5.9	3.9	3.9	8.5	.14	.14	-	.23	.30	.08	6.4
31	8.2	5.4	-	5.4	-	.21	.14	-	.19	-	.10	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	10.2	0.23	5.69	8.80	176	541
August	11.2	5.4	8.79	13.6	272	836
September	6.7	2.85	3.94	6.10	118	363
October	8.7	.16	5.34	8.26	166	508
November	11.2	2.35	6.23	9.64	187	573
December	9.7	.04	1.56	2.41	48.3	148
Calendar year 1949	11.2	.04	3.61	5.59	1,320	4,040
January	.66	.12	.204	.316	6.33	19
February	.31	.08	.128	.198	3.59	11
March	8.7	.06	2.45	3.79	76.0	233
April	2.95	.08	.409	.633	12.3	38
May	10.2	.07	1.99	3.08	61.6	189
June	11.2	2.45	7.24	11.2	217	667
Fiscal year 1949-50	11.2	.04	3.68	5.69	1,340	4,130

a No gage-height record; discharge estimated on basis of recorded range in stage and records for Wailua ditch near Kapaa.

Anahola ditch wasteway near Kealia

Location.--Lat 22°08'10", long. 159°22'30", on right bank 300 ft downstream from wasteway gates on Anahola ditch, 500 ft upstream from Kaneha Reservoir, 3.8 miles west of Anahola, and 4.9 miles northwest of Kealia.

Records available.--December 1936 to June 1950.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 820 ft above mean sea level (hand levels from East Kauai Water Co. benchmark).

Average discharge.--13 years (1937-50), 3.18 mgd (4.92 cfs).

Extremes.--1936-50: Maximum daily discharge, 48 mgd (74.3 cfs) Feb. 7, 1949; no flow at times.

Remarks.--Records good above 1 mgd and fair below. Water that passes station is returned to Anahola River.

Discharge, in million gallons, fiscal year July 1949to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.19	0	0	0.06	0.06	0.19	2.95	1.57	1.38	3.6	6.2	0.32
2	.13	0	0	.06	.06	.13	12.6	.51	.76	4.2	7.3	.32
3	.13	.06	0	.13	.06	.13	2.85	.51	.88	5.4	10.7	.26
4	.13	.06	0	.19	.26	.06	.38	.45	.58	6.1	7.3	.26
5	.19	0	0	.26	.13	.06	.32	22	.58	3.4	4.9	.26
6	.19	.13	.06	0	.13	.13	24.5	17.7	.26	3.1	3.95	.26
7	.13	0	.13	0	.13	.13	25	9.2	.19	11.7	6.7	.26
8	0	0	.13	0	.03	.26	28.5	5.7	.19	11.1	1.94	.26
9	0	.03	.13	0	0	.26	24	4.2	8.9	4.4	.58	.26
10	0	0	.13	0	0	.13	10.4	3.25	9.9	1.09	.58	.26
11	0	0	.19	0	.06	.13	11.3	3.1	6.3	.38	.51	.26
12	0	0	.19	0	.19	.13	6.8	2.8	3.8	.32	.45	.26
13	.03	0	.13	0	.13	.13	4.9	2.8	3.1	.45	.26	.26
14	0	0	.13	0	.13	.13	4.4	7.8	2.95	.38	.26	.26
15	.09	0	.13	.03	.13	.13	3.8	5.1	2.8	7.6	.26	.26
16	.06	0	.13	.03	.13	.19	3.4	5.1	.98	28.5	.53	.19
17	.06	.02	.13	.13	.13	22.5	3.1	3.6	.38	31.5	.32	.19
18	0	0	.13	0	.13	10.3	2.95	7.3	.38	11.9	.32	.19
19	0	0	.13	.06	.13	5.3	2.8	3.6	.38	7.1	.19	.19
20	0	.06	.19	.13	.13	4.2	2.6	7.6	.45	5.5	8.9	.19
21	0	.06	.02	0	.13	3.25	2.9	4.8	.51	10.0	8.2	.19
22	0	.06	0	0	.19	2.95	17.0	4.2	.32	10.6	4.5	.19
23	.06	.02	0	0	.13	2.6	5.9	.88	.45	16.6	4.4	.19
24	.06	0	.06	0	.13	2.45	8.8	3.05	.38	9.9	1.02	.26
25	.13	0	.06	0	.19	2.3	8.4	5.2	.32	16.8	.38	.26
26	.13	0	0	0	.13	6.7	6.1	3.4	.38	9.1	.45	.26
27	.13	0	0	0	.19	5.1	6.5	2.95	.51	22	.38	.19
28	.13	0	.06	0	.13	9.1	5.1	4.0	.38	20.5	.32	.19
29	.13	0	.06	0	.13	10.8	5.7	-	.45	10.0	.32	.19
30	.13	0	.06	.06	.13	7.9	3.4	-	.32	6.2	.32	.19
31	0	0	-	.06	-	3.8	2.95	-	.45	-	.32	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.19	0	0.072	0.111	2.23	6.8
August	.13	0	.016	.025	.50	1.5
September	.19	0	.079	.122	2.38	7.3
October	.26	0	.039	.060	1.20	3.7
November	.26	0	.121	.187	3.63	11
December	22.5	.06	3.28	5.07	102	312
Calendar year 1949	48	0	2.67	4.13	975	3,000
January	28.5	.32	8.07	12.5	250	768
February	22	.45	5.08	7.86	142	437
March	9.9	.19	1.60	2.48	49.6	152
April	31.5	.32	9.31	14.4	279	858
May	10.7	.19	2.67	4.13	82.8	254
June	.32	.19	.236	.365	7.08	22
Fiscal year 1949-50	31.5	0	2.53	3.91	922	2,830

Anahola ditch above Kaneha Reservoir, near Kealia

Location.--Lat 22°08'00", long. 159°22'30", on left bank at point of discharge into Kaneha Reservoir, 500 ft below wasteway gates and 5 miles northwest of Kealia.

Records available.--December 1921 to June 1950. May 1915 to December 1921 at site 0.3 mile upstream; records not equivalent owing to diversion.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 821.8 ft above mean sea level (Lihue Plantation benchmark). Dec. 9, 1921, to June 2, 1934, at site 480 ft upstream at different datum.

Average discharge.--27 years (1921-25, 1927-50), 3.29 mgd (5.09 cfs).

Extremes.--1921-50: Maximum daily discharge, 40 mgd (61.9 cfs) Nov. 12, 1947; no flow at times.

Remarks.--Records excellent. Ditch diverts water from Anahola River to Kaneha Reservoir, where it is stored for irrigation. Flow sometimes diverted by Anahola ditch wasteway (see preceding page).

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.8	2.15	1.75	0.98	5.3	7.4	0.07	1.30	1.88	5.5	0.05	2.55
2	7.4	1.84	1.66	.98	3.05	5.7	.07	2.05	2.05	.09	.03	2.35
3	7.4	3.4	1.66	1.66	4.2	3.2	7.3	1.84	1.84	.09	.03	5.4
4	6.5	2.75	1.56	1.14	31.5	2.35	7.7	1.84	1.66	.11	.03	3.9
5	9.5	2.1	1.66	5.0	10.7	2.15	3.8	.94	11.1	.13	.03	2.65
6	5.4	11.6	1.56	2.15	12.9	1.84	7.4	.20	3.55	.07	.03	2.35
7	4.4	4.7	1.66	1.22	14.9	1.66	.24	.05	2.35	.07	.03	2.15
8	3.95	2.25	1.50	1.56	7.1	12.9	.43	.09	2.05	.05	6.1	2.15
9	3.0	6.0	1.50	4.1	4.0	12.7	.13	.07	7.1	.05	3.8	4.5
10	2.55	3.55	1.39	2.25	3.2	4.6	.11	.05	.07	2.35	3.1	2.65
11	2.2	4.9	1.84	1.56	2.75	3.3	.13	.07	.05	3.95	3.1	2.25
12	2.65	3.95	1.50	2.65	14.2	3.0	.13	.05	.05	3.1	3.75	2.75
13	4.8	2.75	1.39	1.30	4.9	7.1	.09	.05	.05	9.9	5.0	2.15
14	2.35	3.45	1.30	1.39	5.3	5.3	.05	.05	.05	22.5	3.45	1.94
15	7.7	2.45	1.22	3.15	11.3	3.45	.05	.05	.05	7.7	5.4	1.66
16	3.45	2.15	1.39	4.5	3.8	13.0	.05	.03	1.46	.43	15.7	1.80
17	2.15	5.2	1.75	9.7	4.3	4.7	.05	.05	1.94	.11	13.9	1.66
18	1.84	5.0	1.50	4.2	5.8	.05	.05	.05	2.05	.05	11.9	1.50
19	1.75	8.3	1.84	6.3	3.3	.03	.05	.05	1.75	.05	6.0	1.39
20	1.66	11.3	6.5	10.2	2.75	.03	.05	.05	6.1	.05	5.5	1.39
21	1.75	7.8	1.66	3.45	2.55	.03	.05	.03	8.0	.05	.11	1.39
22	1.56	12.4	1.30	2.65	2.25	.03	.15	1.71	2.65	.07	.11	1.39
23	1.56	9.3	1.37	2.65	2.05	.03	.05	3.4	6.7	.07	.11	1.70
24	1.75	4.4	3.2	1.75	2.05	.03	.05	5.3	9.5	.05	2.75	3.15
25	2.15	3.2	1.75	1.56	1.84	.03	.07	.07	3.55	.07	4.5	9.1
26	3.7	3.25	1.39	1.50	1.75	.03	.05	.07	7.5	.07	8.1	7.6
27	1.75	2.75	1.30	1.66	9.4	.05	.05	.05	13.9	.09	9.4	4.8
28	1.76	2.35	1.22	1.56	6.1	.05	.05	.05	6.5	.08	3.55	5.1
29	2.85	2.25	1.05	1.22	2.65	.05	.05	-	11.6	.05	3.0	2.55
30	7.3	1.84	.98	3.75	6.1	.05	.05	-	4.4	.05	4.6	1.94
31	2.35	1.75	-	8.4	-	.05	.05	-	9.1	-	3.3	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	10.8	1.56	3.87	5.99	120	368
August	12.4	1.75	4.55	7.04	141	433
September	6.5	.98	1.71	2.65	51.4	158
October	10.2	.98	3.10	4.80	96.1	295
November	31.5	1.75	6.40	9.90	192	589
December	13.0	.03	3.06	4.73	94.9	291
Calendar year 1949	31.5	.02	3.23	5.00	1,180	3,620
January	7.7	.05	.923	1.43	28.6	88
February	5.3	.03	.700	1.08	19.6	60
March	13.9	.05	4.21	6.51	131	401
April	22.5	.05	1.90	2.94	57.0	175
May	15.7	.03	4.08	6.31	126	388
June	9.1	1.39	2.93	4.53	87.9	270
Fiscal year 1949-50	31.5	.03	3.14	4.86	1,150	3,520

Anahola River near Kealia

Location.--Lat 22°08'55", long. 159°21'20", on right bank just upstream from intake of Lower Anahola ditch, 4.5 miles northwest of Kealia.
Drainage area.--5.5 sq mi.
Records available.--August to November 1910, December 1910 to November 1912 (fragmentary), December 1912 to June 1950.
Gage.--Water-stage recorder and concrete dam and orifice control. Datum of gage is 295.11 ft above mean sea level (Highway Department benchmark). Aug. 22 to Nov. 2, 1910, water-stage recorder, Dec. 15, 1910, to Dec. 28, 1912, staff gage and Dec. 30, 1912, to May 3, 1934, water-stage recorder, at site one-eighth of a mile upstream at different datum.
Average discharge.--31 years (1919-50), 13.4 mgd (20.7 cfs).
Extremes.--Maximum discharge during year, 2,300 mgd (3,560 cfs) Jan. 6 (gage height, 6.47 ft), from rating curve extended above 230 mgd by logarithmic plotting; minimum, 1.90 mgd (2.94 cfs) Oct. 29.
1910, 1912-50: Maximum discharge, 7,940 mgd (12,300 cfs) Apr. 1, 1948 (gage height, 11.06 ft), from rating curve extended above 230 mgd by logarithmic plotting; minimum, slightly less than 1.4 mgd (about 2.2 cfs) Sept. 12, 13, 1923.
Remarks.--Records good except those above 30 mgd, which are fair. Anahola ditch diverts water 3 miles above station for irrigation in vicinity of Kealia (see p. 29).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.9	1.70	2.0	35
1.0	2.2	2.3	60
1.1	2.8	2.6	95
1.2	3.6	3.0	162
1.4	6.1	3.5	282
1.6	12.5	4.0	456
1.8	22.5		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.3	2.8	2.5	2.0	4.5	7.1	3.95	6.6	6.6	10.1	12.1	6.1
2	7.1	2.75	2.45	2.0	3.25	3.55	7.5	6.3	6.1	7.4	12.5	5.9
3	6.8	3.0	2.4	2.2	3.2	3.55	9.0	6.0	5.9	6.3	13.4	9.5
4	7.4	2.8	2.45	2.15	33	3.0	8.4	5.6	5.8	5.8	11.7	8.6
5	5.9	2.9	2.5	4.1	15.4	2.8	4.7	59	25	5.4	9.8	6.6
6	6.0	8.0	2.4	3.45	10.5	2.7	289	52	9.8	5.2	9.2	5.8
7	5.0	4.5	2.4	2.25	22.5	2.65	104	30.5	7.1	12.2	8.9	5.3
8	4.6	3.0	2.3	2.1	9.2	12.4	169	23	6.6	10.6	9.5	5.3
9	4.1	4.2	2.3	2.6	6.1	14.0	72	17.6	23.5	5.4	8.3	6.1
10	3.6	4.1	2.3	2.65	4.9	4.4	26	14.3	14.5	4.9	7.4	5.8
11	3.45	3.55	2.3	2.4	4.4	3.55	20	13.0	14.8	5.9	7.1	5.2
12	3.7	3.7	2.25	2.7	21	3.2	15.7	11.7	10.1	5.2	6.8	4.7
13	4.3	3.0	2.15	2.15	5.8	3.85	12.1	11.3	9.2	5.0	6.6	4.5
14	3.55	3.45	2.15	2.3	5.0	3.6	10.9	12.5	8.6	31.5	6.1	4.4
15	5.4	2.9	2.1	2.65	5.8	3.05	9.8	11.3	8.0	22.5	7.0	4.1
16	4.4	2.65	2.15	2.65	4.8	26.5	9.5	10.9	7.4	359	59	4.1
17	3.2	2.75	2.3	4.4	4.5	82	8.9	9.8	7.1	130	25	4.1
18	3.0	3.55	2.2	3.6	4.6	21	8.6	12.2	6.8	33	14.8	3.95
19	3.05	3.55	2.2	3.3	4.1	10.9	8.0	9.5	6.1	19.7	10.9	3.7
20	2.9	4.1	3.5	3.55	3.7	8.3	7.4	10.1	6.6	15.7	25.5	3.7
21	3.0	3.6	2.65	2.8	3.5	6.8	7.7	9.2	8.9	15.3	13.9	3.6
22	2.75	4.0	2.15	2.3	3.2	5.9	30.5	9.5	6.3	15.3	10.5	3.55
23	2.75	3.95	2.3	2.45	3.05	5.3	11.3	8.0	8.0	16.8	9.5	3.6
24	2.8	3.4	2.65	2.15	3.0	4.8	12.3	9.8	11.6	11.7	8.6	4.1
25	2.8	3.15	2.5	2.05	2.9	4.4	10.8	8.9	6.6	20.5	8.3	6.9
26	3.2	3.05	2.15	2.0	2.8	6.4	8.3	7.4	7.4	11.3	8.9	6.1
27	2.9	3.05	2.1	2.1	9.2	5.0	8.6	6.8	14.9	35.5	11.6	5.2
28	2.75	2.8	2.05	2.0	6.5	6.3	8.6	6.6	6.3	33	7.7	5.3
29	2.9	2.7	2.0	1.95	3.45	6.8	8.6	-	11.9	16.2	7.1	4.2
30	4.8	2.55	1.95	9.3	4.3	7.2	7.7	-	6.8	13.4	7.4	3.55
31	3.2	2.5	-	13.2	-	4.5	7.1	-	9.8	-	7.1	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.4	2.75	4.15	6.42	129	395
August	8.0	2.5	3.42	5.29	106	325
September	3.5	1.95	2.33	3.61	69.8	214
October	13.2	1.95	3.15	4.87	97.5	299
November	33	2.8	7.27	11.2	218	669
December	82	2.65	9.21	14.2	286	876
Calendar year 1949	756	1.95	13.2	20.4	4,830	14,810
January	289	3.95	29.9	46.3	926	2,840
February	59	5.6	14.3	22.1	399	1,230
March	25	5.8	9.49	14.7	294	903
April	359	4.9	29.7	46.0	890	2,730
May	59	6.1	12.0	18.6	372	1,140
June	9.5	3.55	5.12	7.92	154	471
Fiscal year 1949-50	359	1.95	10.8	16.7	3,940	12,090

Peak discharge (base, 900 mgd).--Jan. 6 (8 p.m.) 2,300 mgd (3,560 cfs); Apr. 16 (3 p.m.) 2,200 mgd (3,400 cfs).

Lower Anahola ditch near Kealia

Location.--Lat 22°08'00", long. 159°19'30", on left bank 100 ft downstream from last waste-way, 1.3 miles southwest of mouth of Anahola River, and 2.5 miles northwest of Kealia.

Records available.--December 1936 to June 1950. July 1925 to December 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 276.11 ft above mean sea level (Highway Department benchmark).

Average discharge.--13 years (1937-50), 2.57 mgd (3.98 cfs).

Extremes.--1936-50: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times.

Remarks.--Records good. Ditch diverts water from Anahola River for irrigation of sugar-cane. Flow regulated by spillways and gates.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	3.25	2.4	1.86	3.9	4.3	0	0	1.20	0.36	0	6.1
2	0	3.1	2.45	1.80	3.35	3.6	0	0	2.3	.14	0	5.9
3	0	3.25	2.55	1.98	3.25	3.55	3.05	0	4.8	2.8	0	6.2
4	0	3.25	2.55	1.98	5.6	3.25	6.6	2.45	6.6	7.5	0	6.6
5	0	3.2	2.6	2.2	6.0	3.05	5.2	2.5	7.0	7.5	0	3.5
6	0	4.8	2.4	3.1	5.5	2.85	3.35	0	7.0	6.2	0	.04
7	0	4.9	2.4	2.3	5.3	2.8	.03	0	6.6	5.7	0	.04
8	0	3.7	2.3	2.05	5.3	3.0	.03	0	6.2	7.5	1.48	2.25
9	0	4.4	2.35	2.35	4.7	5.0	.03	0	1.41	7.0	4.1	5.7
10	0	4.7	2.4	2.6	4.2	4.1	.03	0	0	5.9	4.2	5.6
11	0	4.1	2.35	2.35	3.9	3.6	.03	0	0	3.7	5.0	5.5
12	2.2	4.1	2.3	2.55	5.9	3.35	.03	0	0	3.7	6.8	5.2
13	4.0	3.55	2.2	2.2	5.1	3.35	0	0	0	3.55	7.0	5.1
14	3.8	3.55	2.2	2.1	4.4	3.7	0	0	0	3.65	6.6	4.9
15	4.0	3.2	2.15	2.35	3.0	3.35	0	0	0	4.9	6.6	4.7
16	4.1	2.9	2.1	2.45	2.4	4.8	0	0	0	5.9	8.0	4.7
17	3.6	3.0	2.3	3.35	2.3	2.1	0	0	0	0	8.0	4.7
18	3.6	3.45	2.15	3.25	3.05	.03	0	0	0	0	7.5	4.4
19	3.2	3.25	2.15	3.05	4.0	.03	0	0	0	0	3.9	4.3
20	3.1	3.8	3.05	3.05	4.0	.01	0	0	0	0	.01	4.2
21	3.2	3.7	2.7	2.65	3.75	.01	0	0	0	0	.01	4.1
22	3.0	3.8	2.3	2.3	3.55	.01	0	0	2.65	0	.01	4.1
23	2.9	4.0	2.3	2.3	3.4	0	0	0	6.6	0	.01	4.0
24	3.0	3.7	2.65	2.1	3.25	0	0	0	6.6	0	1.67	4.2
25	3.0	3.45	2.65	1.98	3.2	0	0	.67	6.2	0	5.6	5.1
26	1.89	3.35	2.3	1.86	3.0	0	0	1.12	6.2	0	6.6	5.5
27	.89	3.25	2.2	1.98	3.8	0	0	1.07	7.0	0	6.6	4.9
28	.72	3.05	2.15	1.86	4.3	0	0	1.12	6.6	0	6.6	5.0
29	1.38	2.85	2.05	2.1	3.45	0	0	-	4.4	0	6.2	4.6
30	4.8	2.7	1.92	2.2	3.25	0	0	-	.47	0	6.2	4.0
31	3.8	2.65	-	5.0	-	0	0	-	.40	-	6.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.8	0	1.94	3.00	60.2	185
August	4.9	2.65	3.55	5.49	110	337
September	3.05	1.92	2.35	3.64	70.6	217
October	5.0	1.80	2.43	3.76	75.2	231
November	6.0	2.3	4.00	6.19	120	369
December	5.0	0	1.93	2.99	59.8	184
Calendar year 1949	6.0	0	1.80	2.79	656	2,010
January	6.6	0	.593	.918	18.4	56
February	2.5	0	.319	.494	8.93	27
March	7.0	0	2.91	4.50	90.2	277
April	7.5	0	2.53	3.91	76.0	233
May	8.0	0	3.71	5.74	115	353
June	6.6	.04	4.50	6.96	135	415
Fiscal year 1949-50	8.0	0	2.57	3.98	939	2,880

Ka Loko ditch near Kilauea

Location.--Lat 22°10'35", long. 159°23'00", on left bank 35 ft (revised) downstream from Moloaa ditch, 400 ft upstream from Ka Loko Reservoir, and 3.5 miles southeast of Kilauea.

Records available.--August 1932 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 750 ft (from topographic map).

Average discharge.--17 years (1933-50), 3.69 mgd (5.71 cfs).

Extremes.--1932-50: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.46 mgd (0.71 cfs) Nov. 21, 22, 1949.

Remarks.--Records good except those for May 4-9, which are fair, and those for Jan. 21 to Feb. 13, which are poor. Ditch diverts water from Moloaa and Puu Ka Ele Streams, 0.5 mile southeast and 1.5 miles southwest of station, respectively. Water used for irrigation in vicinity of Kilauea. Flow regulated by wasteway gates.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	1.39	1.63	1.02	2.15	2.7	1.89	2.3	2.15	3.15	1.02	2.15
2	3.05	1.23	1.54	1.02	1.63	1.98	2.8	2.2	1.98	2.25	3.05	3.25
3	3.15	1.56	1.47	1.16	1.47	1.71	3.75	2.1	1.89	1.98	4.6	2.45
4	3.7	1.31	1.39	1.09	7.3	1.54	3.2	2.1	1.89	1.89	3.9	2.05
5	2.6	1.31	1.39	2.3	4.1	1.54	1.98	10	9.8	1.89	3.7	1.98
6	2.4	5.3	1.39	1.55	4.6	1.39	26	8.5	2.8	1.80	3.5	1.89
7	2.05	2.45	1.31	1.09	11.3	1.39	17.0	4.5	2.15	4.3	3.3	1.89
8	1.89	1.54	1.39	1.09	4.8	6.2	22.5	3.2	1.98	4.7	2.9	1.89
9	1.71	3.2	1.39	1.54	2.65	6.3	14.0	2.9	10.0	2.25	2.6	2.75
10	1.54	2.65	1.31	1.23	2.05	2.25	6.7	2.8	5.5	1.98	2.45	2.65
11	1.54	2.45	1.39	1.31	1.98	1.80	6.8	2.6	4.8	3.3	2.45	1.98
12	1.98	2.15	1.31	1.54	5.6	1.71	5.0	2.6	2.85	1.98	2.55	1.80
13	2.15	1.95	1.31	1.16	2.35	2.05	4.0	2.5	2.55	2.45	2.45	1.80
14	1.54	2.45	1.23	1.31	2.05	2.05	3.45	2.45	2.35	10.8	2.95	1.71
15	3.05	1.71	1.31	1.54	2.05	1.63	3.25	3.05	2.15	7.2	10.6	1.63
16	1.80	1.54	1.23	1.80	.57	5.5	3.05	3.25	2.05	33	6.9	1.63
17	1.54	2.05	1.39	2.5	.52	14.5	2.85	3.05	1.98	14.7	5.1	1.63
18	1.39	2.85	1.31	1.54	.63	5.2	2.65	4.6	1.98	5.4	3.35	1.54
19	1.39	3.45	1.31	1.54	.52	2.85	2.55	2.65	1.89	4.3	9.0	1.54
20	1.39	3.9	2.65	1.54	.52	2.35	2.45	4.2	1.98	3.1	5.7	1.54
21	1.39	4.4	1.39	1.23	.46	2.15	2.5	2.95	2.7	1.09	3.35	1.47
22	1.39	5.4	1.16	1.16	.46	2.05	6.5	3.95	1.89	1.23	2.95	1.47
23	1.31	5.0	1.39	1.31	.96	1.98	3.5	2.85	3.15	1.47	2.75	1.47
24	1.39	2.65	1.80	1.09	1.47	1.89	3.9	3.35	5.5	3.2	2.75	1.71
25	1.54	2.15	1.39	1.02	1.39	1.80	3.3	3.15	2.25	9.5	3.0	3.6
26	1.54	2.15	1.16	1.02	1.39	3.15	2.8	2.45	3.3	5.2	4.2	3.3
27	1.54	2.05	1.16	1.09	3.95	2.15	2.7	2.25	6.8	13.0	2.65	2.45
28	1.39	1.80	1.23	1.02	2.15	2.9	2.7	2.35	2.75	6.5	2.65	2.35
29	1.54	1.71	1.16	.95	1.54	3.75	2.6	-	3.9	1.39	2.95	1.71
30	3.3	1.63	1.09	3.65	2.55	3.6	2.4	-	2.25	1.09	2.45	1.47
31	1.63	1.63	-	8.2	-	2.05	2.3	-	2.65	-	2.25	-

Month	Million gallons a day			Cubic-feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.4	1.31	2.01	3.11	62.2	191
August	5.4	1.23	2.48	3.84	77.0	236
September	2.65	1.09	1.39	2.15	41.6	128
October	8.2	.95	1.63	2.52	50.6	155
November	11.3	.46	2.51	3.88	75.2	231
December	14.5	1.39	3.04	4.70	94.1	289
Calendar year 1949	33.5	.46	3.08	4.77	1,120	3,450
January	26	1.89	5.52	8.54	171	525
February	10	2.1	3.39	5.25	94.8	291
March	10.0	1.89	3.29	5.09	102	313
April	33	1.09	5.20	8.05	156	479
May	10.6	1.02	3.68	5.69	114	350
June	3.6	1.47	2.02	3.13	60.8	186
Fiscal year 1949-50	33	.46	3.01	4.66	1,100	3,370

Note.--No gage-height record Jan. 21 to Feb. 13, May 4-9; discharge estimated on basis of recorded range in stage and records for Anahola River and nearby ditches.

Puu Ka Ele ditch near Kilauea

Location.--Lat 22°11'05", long. 159°24'20", on left bank 200 ft (revised) upstream from Puu Ka Ele Reservoir and 2 miles south of Kilauea.

Records available.--August 1932 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 430 ft (by barometer).

Average discharge.--17 years (1933-50), 3.08 mgd (4.77 cfs).

Extremes.--1932-50: Maximum daily discharge, 21 mgd (32.5 cfs) Sept. 2, 1943; no flow at times each year.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	a4.0	a1.7	1.89	1.47	1.80	2.95	a2.8	0	2.85	2.65	1.73	2.55
2	a3.0	a1.6	1.80	1.47	1.54	2.35	a4.0	0	2.75	2.25	2.15	2.45
3	a3.3	1.71	1.71	1.54	1.54	2.15	5.3	0	2.65	2.05	3.35	3.45
4	a3.5	1.71	1.71	1.47	5.2	1.98	4.0	0	2.55	1.98	4.3	2.75
5	a2.8	1.54	1.71	2.1	3.65	1.89	2.85	1.08	1.23	1.98	4.0	2.45
6	a2.5	4.0	1.63	1.81	3.5	1.80	3.2	.96	0	1.98	3.8	2.25
7	a2.1	2.25	1.54	1.47	8.7	1.71	.04	.23	0	4.4	3.8	2.25
8	a1.9	1.54	1.71	1.39	6.1	4.3	.76	0	1.64	5.2	3.7	2.25
9	1.80	2.7	1.71	a1.63	3.25	6.4	.13	0	1.92	2.75	3.25	2.65
10	1.71	2.45	1.63	1.54	2.65	2.55	0	0	0	2.45	3.05	2.95
11	1.63	2.65	1.80	1.47	2.45	2.15	0	0	0	3.05	2.85	2.35
12	2.05	2.55	1.54	1.71	4.9	2.05	0	0	0	2.65	2.75	2.15
13	2.15	2.05	1.63	1.39	2.65	2.45	2.8	0	0	3.05	2.95	2.15
14	1.80	2.25	1.63	1.54	2.45	2.25	3.9	0	2.05	7.0	2.75	2.05
15	2.65	1.80	1.71	1.54	3.25	1.98	3.7	0	2.45	5.3	3.7	1.98
16	1.98	1.80	1.54	2.65	2.35	6.8	2.05	0	2.45	7.6	5.2	1.98
17	1.80	2.45	1.71	2.05	2.25	9.7	0	0	2.35	3.8	.04	1.98
18	1.71	2.85	1.63	1.80	2.75	5.8	0	0	2.25	.06	0	1.80
19	1.63	3.3	1.54	2.45	2.25	3.7	0	0	2.15	0	0	1.80
20	1.71	3.55	2.3	1.89	2.05	3.05	0	0	2.25	0	.45	1.80
21	1.80	5.0	1.71	1.63	1.98	2.75	0	0	2.45	0	.10	1.80
22	1.63	5.1	1.54	1.63	1.89	2.65	.34	0	2.15	0	2.35	1.80
23	1.80	5.8	1.80	1.54	1.80	2.55	0	0	3.1	0	3.7	1.80
24	1.71	3.9	2.05	1.38	1.80	2.35	5.0	0	1.85	2.15	3.45	1.98
25	a1.9	3.05	1.71	1.31	1.80	2.25	3.2	0	0	2.25	3.55	3.2
26	a1.9	3.05	1.54	1.23	1.71	3.6	0	0	0	.48	3.35	3.05
27	a1.9	2.65	1.71	1.31	3.75	2.65	0	0	0	1.95	4.4	2.35
28	a1.7	2.25	1.54	1.23	2.05	3.65	0	2.1	1.57	1.24	3.35	2.15
29	a1.9	2.15	1.47	1.23	1.71	4.6	0	-	2.85	0	3.25	1.89
30	a3.0	1.98	1.47	2.7	2.3	4.3	0	-	2.25	0	3.15	1.80
31	a2.0	2.05	-	5.4	-	a3.0	0	-	2.45	-	2.55	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.0	1.63	2.16	3.34	67.0	205
August	5.8	1.54	2.69	4.16	83.4	256
September	2.3	1.47	1.69	2.61	50.6	155
October	5.4	1.23	1.77	2.74	55.0	169
November	8.7	1.54	2.87	4.44	86.1	264
December	9.7	1.71	3.30	5.11	102	314
Calendar year 1949		0	2.12	3.28	775	2,380
January	5.3	0	1.42	2.20	44.1	135
February	2.1	0	.156	.241	4.37	13
March	3.1	0	1.62	2.51	50.2	154
April	7.6	0	2.28	3.53	68.3	210
May	5.2	0	2.81	4.35	87.0	267
June	3.45	1.80	2.26	3.50	67.9	208
Fiscal year 1949-50	9.7	0	2.10	3.25	766	2,350

a No gage-height record; discharge estimated on basis of records for nearby ditches.

Kalihiwai ditch near Kilauea

Location.--Lat 22°10'55", long. 159°25'55", on right bank 0.1 mile upstream from Kalihiwai Reservoir and 2.4 miles southwest of Kilauea.

Records available.--June 1934 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 410 ft (by barometer).

Average discharge.--15 years (1934-42, 1943-50), 2.66 mgd (4.12 cfs).

Extremes.--1934-50: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow Oct. 14-16, Oct. 21 to Nov. 2, 1948.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Ditch diverts low-water flow from most branches of Pohakuhonu Stream at intakes, about 1 mile south of station. Diversion of flow to Kahililolo Stream, 0.1 mile above station, regulated by gates. Water discharges into Kalihiwai Reservoir, where it is stored for irrigation in vicinity of Kilauea.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.7	2.15	2.15	1.09	2.25	4.7	2.65	0.08	2.45	3.6	0.82	2.75
2	2.85	1.87	1.96	1.16	1.96	3.65	4.4	.08	2.25	1.70	.82	2.65
3	3.65	1.96	1.87	1.16	1.96	3.15	5.6	.08	2.15	2.15	.88	2.55
4	4.2	1.87	1.87	1.09	8.0	2.65	4.4	.08	1.96	2.9	.95	2.45
5	3.35	1.70	1.87	3.45	5.0	2.35	3.25	.40	3.35	2.05	.88	2.25
6	2.85	6.7	1.70	1.70	5.5	2.15	3.05	.38	2.65	1.87	.82	2.15
7	2.25	3.35	1.62	1.38	15	1.96	1.68	.26	2.15	13.3	3.0	2.15
8	2.15	2.35	1.87	1.30	6.0	2.7	.76	.20	1.96	8.1	4.3	2.25
9	1.87	2.75	1.70	1.78	4.2	6.3	.58	.17	2.75	3.9	4.0	2.65
10	1.70	3.05	1.54	1.62	3.3	2.65	.52	.15	3.45	3.05	3.8	2.45
11	1.46	2.95	1.87	1.70	3.0	2.25	.52	.14	3.8	6.5	3.6	2.35
12	1.70	2.55	1.46	2.05	6.0	2.05	.47	.14	2.65	3.6	3.35	1.96
13	3.1	2.45	1.46	1.46	3.5	4.3	.42	.14	2.25	5.5	3.7	1.87
14	1.96	3.6	1.30	1.54	3.0	3.8	.42	.14	2.05	9.5	3.25	1.87
15	3.55	2.55	1.46	2.25	4.5	2.95	.37	.14	1.78	6.5	3.9	1.78
16	2.35	2.15	1.54	3.35	2.8	10.7	.37	.14	1.70	5.3	9.6	1.78
17	1.87	2.85	1.70	[illegible]	2.6	7.0	.37	.14	1.62	2.6	5.0	1.78
18	1.70	3.75	1.46	2.55	3.5	4.5	.37	.14	1.54	.95	.76	1.70
19	1.62	4.9	1.38	4.6	2.8	3.45	.33	.14	1.46	.88	.70	1.62
20	1.62	5.3	2.55	9.4	2.5	3.05	.33	.25	1.54	.88	.76	1.62
21	1.46	7.4	1.55	3.6	2.4	2.65	.29	.14	2.75	1.54	.64	1.54
22	1.46	10.5	1.30	2.65	2.2	2.45	.35	.14	1.70	1.72	2.55	1.54
23	1.62	10.4	1.78	2.15	2.0	2.25	.25	.14	3.2	.76	4.4	1.62
24	1.70	5.4	2.45	1.87	1.9	2.15	.27	.14	4.9	.70	4.0	1.78
25	2.65	4.0	1.70	1.70	1.8	2.05	.24	.14	2.55	.82	3.9	3.2
26	2.65	3.6	1.46	1.54	1.78	3.25	.08	.14	4.6	.76	3.95	3.35
27	2.35	3.15	1.30	1.62	3.2	2.35	.08	1.75	5.5	.95	4.7	2.65
28	1.78	2.85	1.30	1.46	2.35	4.4	.08	2.85	3.7	.88	3.6	2.15
29	1.96	2.55	1.23	1.46	1.96	4.5	.08	-	4.5	.76	3.25	1.78
30	6.0	2.35	1.16	1.94	3.9	4.4	.08	-	2.65	.82	3.15	1.62
31	2.75	2.25	-	4.3	-	3.05	.08	-	2.55	-	2.95	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.0	1.46	2.45	3.79	75.9	233
August	10.5	1.70	3.72	5.76	115	354
September	2.55	1.16	1.65	2.55	49.6	152
October	9.4	1.09	2.32	3.59	71.8	220
November	15	1.78	3.70	5.72	111	340
December	10.7	1.96	3.54	5.48	110	337
Calendar year 1949	15	.16	2.56	3.96	936	2,870
January	5.6	.08	1.06	1.64	32.7	100
February	2.85	.08	.315	.487	8.83	27
March	5.5	1.46	2.71	4.19	84.1	258
April	13.3	.70	3.15	4.87	94.5	290
May	9.6	.64	2.97	4.60	92.0	282
June	3.35	1.54	2.13	3.30	63.9	196
Fiscal year 1949-50	15	.08	2.49	3.85	909	2,790

Note.--No gage-height record Nov. 4-25, Jan. 22 to Feb. 12; discharge estimated on basis of records for nearby ditches.

Hanalei River at altitude 625 feet, near Hanalei

Location.--Lat 22°07'10", long. 159°28'05", on right bank 0.4 mile downstream from confluence with Kaapoko Stream and 6.2 miles southeast of Hanalei.
Drainage area.--7.4 sq mi.
Records available.--January 1914 to June 1950.
Gage.--Water-stage recorder. Altitude of gage is 625 ft (from topographic map). Prior to July 20, 1921, water-stage recorder at site 300 ft downstream at same datum.
Average discharge.--32 years (1918-50), 46.7 mgd (72.3 cfs).
Extremes.--Maximum discharge during year, 5,940 mgd (9,190 cfs) Jan. 6 (gage height, 8.35 ft), from rating curve extended above 200 mgd by logarithmic plotting; minimum, 8.3 mgd (12.8 cfs) Oct. 2.
1914-50: Maximum discharge, 13,800 mgd (21,400 cfs) Apr. 1, 1948 (gage height, 11.20 ft), from rating curve extended above 200 mgd by logarithmic plotting; minimum, 5.8 mgd (9.0 cfs) Apr. 28, May 1-3, 1926.
Remarks.--Records good except those for periods of no gage-height record, which are poor. Since 1925 Hanalei tunnel has been diverting an average of about 25 mgd from Hanalei River and its tributary Kaapoko Stream at points about 2 miles above station, for irrigation in vicinity of Lihue.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.3	8.0	1.4	66
.4	10.9	2.0	133
.5	14.0	2.5	213
.6	17.5	3.0	320
.8	26	3.5	465
1.1	44		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	52	20	13.7	8.6	27	31.5	31	33	32	57	70	35
2	40	19.7	13.4	8.6	13.7	16.8	113	31	26	37	62	34
3	45	29.5	12.8	9.4	13.7	17.2	56	31	24.5	71	65	34
4	49	20	12.4	8.6	111	16.4	45	31	23	86	66	33.5
5	92	16.1	12.1	38.5	45	13.4	30.5	151	88	39.5	58	31.5
6	39	28.5	12.1	10.6	57	12.4	347	133	33.5	34	47	30.5
7	29.5	19.8	11.8	10.0	74	11.8	125	66	26.5	227	37.5	29.5
8	27	15.8	15.1	10.3	39.5	32	213	63	24.5	135	114	30.5
9	23	22.5	12.4	a20	20.5	26	200	56	110	52	47	39
10	20	26	11.5	a15	16.8	14.4	97	44	53	42	42	52
11	19.1	39.5	11.5	a13	15.8	12.8	114	38.5	46	39	40	43
12	24	18.7	11.2	a14	83	13.1	64	36	32	33.5	39	45
13	45	19.8	10.9	a12	45	93	47	37.5	28.5	130	64	41
14	21	19.4	10.9	a11	31.5	69	42	50	26.5	312	42	31
15	50	15.8	11.5	a14	62	41	38.5	39.5	24.5	91	107	29
16	26	15.9	10.9	a17	23	127	36	41	23	226	235	29.5
17	20	27	11.2	a20	22	380	33.5	36	23	156	388	29.5
18	19.4	29.5	11.5	a18	26.5	75	32	39.5	22	70	180	27.5
19	18.3	44	11.2	a22	19.4	44	31	34	21	54	103	27
20	17.5	47	17.9	a30	17.5	34	30	175	32.5	47	113	27
21	17.5	47	a11	24.5	15.8	30	127	58	44	83	106	30.5
22	17.2	105	a11	15.0	14.0	27.5	213	63	25	168	58	28.5
23	19.5	88	a11	13.1	13.1	28	72	79	48	223	59	34
24	20	33.5	a12	11.8	12.4	23.5	79	85	57	118	47	43
25	30	23.5	a11	11.5	12.1	22	97	50	36	152	49	78
26	28.5	23	a11	10.9	11.5	23.5	160	42	48	125	81	58
27	18.7	19.1	a10	10.9	83	30	54	37	76	173	66	50
28	23	17.2	a10	10.6	18.8	60	47	44	47	310	44	44
29	25	16.4	a10	10.0	13.1	62	44	-	111	97	40	33
30	46	15.0	a9.5	9.7	17.7	80	37.5	-	48	66	42	29.5
31	21	14.4	-	10.8	-	31.5	35	-	52	-	39	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	92	17.2	30.4	47.0	943	2,890
August	105	14.4	28.9	44.7	897	2,750
September	17.9	9.5	11.8	18.3	352	1,080
October	38.5	8.6	14.5	22.4	449	1,380
November	111	11.5	32.5	50.3	975	2,990
December	380	11.8	48.3	74.7	1,500	4,600
Calendar year 1949	1,350	8.6	49.8	77.1	18,180	55,760
January	347	30	86.8	134	2,690	8,260
February	175	31	58.0	89.7	1,620	4,980
March	111	21	42.3	65.4	1,310	4,030
April	312	33.5	115	178	3,450	10,600
May	388	37.5	82.3	127	2,550	7,830
June	78	27	36.9	57.1	1,110	3,400
Fiscal year 1949-50	388	8.6	48.9	75.7	17,850	54,790

Peak discharge (base, 2,000 mgd).--Dec. 16 (5 a.m.) 4,020 mgd (6,220 cfs), 7.39 ft; Jan. 6 (8:30 p.m.) 5,940 mgd (9,190 cfs), 8.35 ft; Apr. 14 (2 p.m.) 3,380 mgd (5,230 cfs), 7.02 ft; Apr. 28 (11 a.m.) 4,020 mgd (6,220 cfs), 7.39 ft; May 17 (1:30 a.m.) 3,700 mgd (5,720 cfs), 7.20 ft.
a No gage-height record; discharge estimated on basis of records for East Branch of North Fork Wailua River near Lihue.

Hanakapiai Stream near Hanalei

Location.--Lat 22°11'20", long. 159°35'50", on left bank 1.5 miles upstream from mouth and 6 miles west of Hanalei.

Drainage area.--2.6 sq mi.

Records available.--December 1931 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 450 ft (by barometer).

Average discharge.--18 years (1932-50), 10.9 mgd (16.9 cfs).

Extremes.--Maximum discharge during year, 1,180 mgd (1,830 cfs) Apr. 27 (gage height, 5.97 ft), from rating curve extended above 60 mgd; minimum, 3.1 mgd (4.8 cfs) June 18-20.
1931-50: Maximum discharge, 2,680 mgd (4,150 cfs) Dec. 23, 1937 (gage height, 8.41 ft), from rating curve extended above 60 mgd; minimum, 1.50 mgd (2.32 cfs) Oct. 14, 15 1945.

Remarks.--Records good except those for periods of fragmentary or no gage-height record and those above 60 mgd, which are poor.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 22		Aug. 23 to June 30			
0.5	3.3	0.4	2.9	1.5	28
.7	6.4	.5	4.0	2.0	55
1.0	12.5	.7	6.7	2.5	96
1.3	20.5	1.0	12.5	3.0	158
1.6	32				

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.3	7.2	a4.1	3.45	21	10.4	3.45	3.9	5.6	22	9.2	a4
2	7.4	5.0	a4.0	3.35	13.2	13.1	9.5	3.65	4.3	9.0	9.3	a3.8
3	10.6	a4.2	a4.0	3.35	22.5	16.5	7.2	3.55	3.8	6.3	13.0	a3.7
4	7.2	a3.9	a4.0	3.35	46	8.2	5.2	3.45	3.55	5.4	f8.5	a3.6
5	5.3	a3.9	a3.9	8.1	17.8	6.0	4.0	23.5	37	4.6	a7	a3.5
6	4.5	11.8	a3.8	5.0	24.5	4.9	29	22.5	9.1	4.4	a5.5	a3.5
7	3.9	5.8	a3.8	3.65	35	4.5	10.8	10.5	5.2	6.2	a11	a3.5
8	3.9	a4.2	a3.8	3.45	11.6	a4.3	30	6.0	4.4	7.2	f22	a3.5
9	3.75	a3.9	3.65	7.1	6.6	a4.1	14.6	4.8	36.5	4.9	f8	a3.5
10	3.75	a4.0	3.65	4.7	5.3	a4.0	15.9	4.1	14.7	4.4	a5	a3.4
11	3.75	a3.6	4.0	4.5	5.0	a3.9	44	3.8	12.4	4.9	a5	3.35
12	3.75	a3.8	3.65	6.0	70	a5.8	11.7	3.55	6.3	4.3	a4.7	3.25
13	7.7	a3.6	5.5	4.4	24	a4.2	6.7	3.9	5.0	4.4	a4.3	3.25
14	4.4	a3.4	4.3	3.9	22.5	a4.9	5.2	11.2	4.4	19.7	a4.1	3.25
15	16.3	a3.4	8.8	3.9	22.5	3.65	4.4	8.5	3.9	9.4	a4.1	3.25
16	6.2	a3.3	7.5	3.9	11.5	13.9	4.9	7.9	3.55	68	37	3.25
17	4.5	6.5	5.4	3.9	19.0	9.0	4.3	9.4	3.45	35	f10	3.25
18	4.0	8.7	4.6	4.3	16.5	17.7	4.2	11.7	3.45	10.3	a6	3.1
19	a3.9	10.5	4.6	5.3	13.2	5.9	4.4	5.0	3.35	6.7	a4.7	3.1
20	a3.8	15.8	8.4	4.7	9.2	4.5	4.0	12.7	10.7	5.6	a5	3.1
21	a3.6	12.6	4.4	3.8	6.6	4.0	4.5	30.5	28.5	10.1	a4.8	3.55
22	a3.6	23	3.8	3.65	5.6	4.6	85	38.5	6.4	11.4	a4.3	3.45
23	4.5	12.6	4.8	3.65	4.9	5.3	16.9	8.1	13.7	25.5	a4	7.7
24	6.5	7.6	8.1	3.45	4.8	4.5	7.7	5.7	36	9.2	a3.9	11.8
25	20.5	7.6	7.4	3.35	4.8	3.65	6.0	4.6	12.7	13.7	a5	18.8
26	19.8	6.7	5.7	3.25	4.5	4.4	4.9	4.1	12.2	7.0	a14	16.9
27	6.8	6.0	4.9	3.25	4.4	3.65	4.5	4.7	20.5	113	a11	8.4
28	5.0	4.9	4.1	3.25	4.4	3.55	9.9	12.9	27.5	76	a5	8.2
29	7.3	a4.5	3.65	3.25	4.4	3.45	8.8	-	35	f18.1	a4.4	4.9
30	29	a4.4	3.45	6.7	13.3	4.4	5.0	-	12.5	12.3	a4.1	3.9
31	7.4	a4.3	-	8.3	-	3.55	4.3	-	22	-	a4.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	29	3.6	7.55	11.7	234	718
August	23	3.3	6.80	10.5	211	647
September	8.8	3.45	4.86	7.52	146	447
October	8.3	3.25	4.39	6.79	136	418
November	70	4.4	15.8	24.4	475	1,460
December	17.7	3.45	6.21	9.61	192	591
Calendar year 1949	190	3.25	10.2	15.8	3,730	11,460
January	85	3.45	12.3	19.0	381	1,170
February	38.5	3.45	9.74	15.1	273	837
March	37	3.35	13.2	20.4	408	1,250
April	113	4.3	18.0	27.9	539	1,650
May	37	3.9	8.01	12.4	248	762
June	18.8	3.1	5.19	8.03	156	478
Fiscal year 1949-50	113	3.1	9.31	14.4	3,400	10,430

Peak discharge (base, 400 mgd).--Jan. 22 (8 a.m.) 694 mgd (1,070 cfs), 4.93 ft; Apr. 27 (8:30 p.m.) 1,180 mgd (1,830 cfs), 5.97 ft; May 16 (11:30 a.m.) 509 mgd (788 cfs), 4.42 ft.

a No gage-height record; discharge estimated on basis of records for nearby streams.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Hanakoa Stream near Hanalei

Location.--Lat 22°11'00", long. 159°37'35", on left bank 0.8 mile upstream from mouth and 8 miles west of Hanalei.

Drainage area.--1.1 sq mi.

Records available.--December 1931 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 470 ft (by barometer).

Average discharge.--18 years (1932-50), 3.56 mgd (5.51 cfs).

Extremes.--Maximum discharge during year, 409 mgd (633 cfs) Jan. 22 (gage height, 4.80 ft), from rating curve extended above 30 mgd by logarithmic plotting; minimum, 0.28 mgd (0.43 cfs) Oct. 26-30.
1931-50: Maximum discharge, 687 mgd (1,060 cfs) Dec. 21, 1946 (gage height, 5.98 ft) from rating curve extended above 30 mgd by logarithmic plotting; minimum, 0.17 mgd (0.26 cfs) Mar. 21, 22, 1934.

Remarks.--Records good.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.9	0.11	1.5	9.0
1.0	.53	1.7	15.3
1.1	1.29	1.9	22.5
1.2	2.5	2.1	32
1.3	4.1	2.4	49
1.4	6.3	2.8	80

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.15	1.29	0.47	0.42	7.2	1.85	0.47	1.03	1.20	8.8	3.05	1.03
2	1.38	.87	.47	.42	3.05	3.3	1.19	.95	.87	3.05	2.6	.87
3	2.3	.72	.42	.42	6.7	5.2	1.03	.87	.87	2.05	3.3	.75
4	1.29	.65	.42	.42	19.5	1.91	.65	.79	.79	1.68	2.3	.79
5	.95	.65	.47	1.56	6.3	1.29	.53	9.6	18.3	1.38	1.91	.72
6	.72	1.68	.42	.92	9.4	1.03	13.2	9.9	2.7	1.20	1.47	.72
7	.65	.79	.42	.47	16.6	.87	2.7	3.9	1.47	1.44	2.45	.65
8	.59	.59	.42	.42	4.0	.87	13.8	1.79	1.20	1.47	5.2	.65
9	.59	.53	.47	1.33	1.91	.87	4.8	1.47	19.5	1.11	2.15	.65
10	.59	.65	.42	.79	1.38	.72	5.5	1.20	4.1	1.03	1.47	.53
11	.53	.53	.59	.65	1.29	.65	24	.95	2.75	1.03	1.38	.53
12	.59	.53	.47	.95	33.5	.59	4.3	.87	1.68	.95	1.29	.47
13	1.15	.47	.81	.72	10.0	.72	2.05	.87	1.29	.87	1.11	.47
14	.72	.53	.59	.53	7.6	.79	1.47	2.25	1.11	4.1	1.03	.47
15	3.9	.47	1.46	.53	8.9	.59	1.29	1.47	.95	1.73	1.03	.47
16	1.03	.42	1.41	.47	3.95	5.8	1.29	1.38	.87	22	22.5	.47
17	.65	.72	.95	.53	6.1	2.65	1.20	2.15	.79	12.6	2.85	.47
18	.53	1.11	.72	.59	5.0	8.2	.95	2.3	.79	3.05	1.68	.47
19	.47	1.47	.72	.87	3.55	1.68	1.03	1.03	.72	1.79	1.38	.42
20	.42	2.55	1.33	.65	2.3	1.11	.95	2.75	2.85	1.47	1.47	.42
21	.42	1.91	.65	.42	1.68	.87	1.59	15.8	7.3	2.35	1.38	.59
22	.42	5.5	.47	.42	1.38	1.20	49	14.9	1.38	2.25	1.03	.53
23	.73	2.25	.53	.42	1.29	1.20	7.4	2.5	2.45	7.3	.95	1.33
24	1.03	1.29	1.29	.37	1.20	1.03	2.75	1.57	13.3	2.15	.87	2.25
25	5.5	1.29	1.29	.32	1.11	.72	1.91	1.20	3.25	3.0	1.38	5.5
26	4.9	1.11	.95	.28	.95	.79	1.47	1.03	3.0	1.57	9.1	4.6
27	1.20	.87	.79	.28	.87	.65	1.29	1.11	6.2	53	6.7	1.68
28	.79	.72	.59	.28	.87	.65	4.2	3.55	12.7	38.5	1.57	1.38
29	2.6	.59	.53	.28	.79	.59	2.95	-	15.6	7.8	1.20	.79
30	7.2	.53	.47	1.30	3.0	.72	1.47	-	4.7	4.5	1.11	.65
31	1.47	.53	-	1.91	-	.53	1.20	-	7.9	-	1.38	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.2	0.42	1.53	2.37	47.5	146
August	5.5	.42	1.09	1.69	33.8	104
September	1.46	.42	.700	1.08	21.0	64
October	1.91	.28	.643	.995	19.9	61
November	33.5	.79	5.71	8.83	171	526
December	8.2	.53	1.60	2.48	49.6	152
Calendar year 1949	96	.28	2.95	4.56	1,080	3,300
January	49	.53	5.08	7.86	158	484
February	15.8	.79	3.18	4.92	89.2	274
March	19.5	.72	4.60	7.12	143	438
April	53	.87	6.51	10.1	195	599
May	22.5	.87	2.85	4.41	88.3	271
June	5.5	.42	1.05	1.62	31.4	96
Fiscal year 1949-50	53	.28	2.87	4.44	1,050	3,220

Peak discharge (base, 220 mgd).--Jan. 22 (7:30 a.m.) 409 mgd (633 cfs); Apr. 27 (6:30 p.m.) 409 mgd (633 cfs); May 16 (12 m.) 327 mgd (506 cfs).

Kalalau Stream near Hanalei

Location.--Lat 22°09'50", long. 159°38'15", on left bank 2 miles upstream from mouth and 9 miles southwest of Hanalei.

Drainage area.--1.6 sq mi.

Records available.--November 1931 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 960 ft (by barometer).

Average discharge.--18 years (1932-50), 4.46 mgd (6.90 cfs).

Extremes.--Maximum discharge during year, 203 mgd (314 cfs) Apr. 27 (gage height, 3.26 ft), from rating curve extended above 18 mgd by logarithmic plotting; minimum, 1.92 mgd (3.0 cfs) Dec. 31 to Jan. 5.
1931-50: Maximum discharge, 620 mgd (959 cfs) Feb. 7, 1949 (gage height, 4.46 ft), from rating curve extended above 18 mgd by logarithmic plotting; minimum, 1.73 mgd (2.68 cfs) June 2, 1945.

Remarks.--Records good except those for period of no gage-height record, which are fair.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.9	1.40	1.5	11.5
1.0	2.15	1.6	14.9
1.1	3.2	1.8	23.5
1.2	4.6	2.0	35
1.3	6.4	2.2	50
1.4	8.7		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.6	3.1	3.1	2.75	3.6	2.35	1.92	3.35	3.2	5.1	5.7	3.45
2	3.6	3.1	3.1	2.75	2.75	2.35	1.92	3.1	3.1	4.3	4.8	3.35
3	3.6	3.1	3.1	2.75	2.9	2.75	1.92	3.0	3.0	3.9	4.5	3.35
4	3.6	3.1	3.1	2.75	4.1	2.45	1.92	2.9	3.0	3.6	4.2	a3.3
5	3.45	3.1	3.1	3.0	3.9	2.35	2.0	5.4	5.0	3.45	3.9	a3.25
6	3.45	3.1	3.1	2.9	4.2	2.35	4.1	7.6	4.2	3.2	3.6	a3.2
7	3.45	3.1	3.1	2.75	6.5	2.25	3.7	6.6	3.6	3.2	3.75	a3.2
8	3.45	3.1	3.1	2.65	4.3	2.25	8.3	5.0	3.35	3.1	3.75	a3.15
9	3.45	3.1	3.0	2.75	3.2	2.25	7.1	4.7	12.5	3.0	3.45	a3.1
10	3.45	3.1	3.0	2.75	2.75	2.25	7.3	4.2	7.6	3.0	3.35	a3.05
11	3.45	3.1	3.0	2.75	2.65	2.25	21.5	3.7	5.5	3.0	3.35	3.0
12	3.6	3.1	3.0	2.75	7.4	2.15	8.9	3.45	4.3	2.9	3.2	3.1
13	3.6	3.1	3.0	2.75	5.5	2.15	5.1	3.2	3.9	2.9	3.1	3.1
14	3.5	3.1	3.0	2.75	4.6	2.15	3.75	3.2	3.6	2.9	3.1	3.1
15	3.2	3.1	3.0	2.75	5.5	2.15	3.35	3.1	3.35	2.9	3.1	3.1
16	3.1	3.1	3.0	2.75	4.5	2.95	3.2	3.0	3.2	7.1	4.2	3.1
17	3.1	3.1	2.9	2.75	3.75	3.0	2.9	3.1	3.2	6.2	3.45	3.1
18	3.0	3.1	2.9	2.75	3.2	5.4	2.75	3.1	3.1	4.6	3.35	3.1
19	3.0	3.1	2.9	2.75	2.9	3.6	2.75	3.0	3.1	3.9	3.2	3.1
20	3.0	3.1	2.9	2.75	2.75	2.9	2.55	3.0	3.35	3.45	3.2	3.1
21	2.9	3.1	2.9	2.75	2.65	2.45	3.15	5.5	3.6	3.75	3.2	3.1
22	2.9	3.2	2.9	2.75	2.55	2.55	36	10.6	3.1	3.6	3.2	3.1
23	2.9	3.2	2.9	2.75	2.45	2.55	13.3	5.5	3.1	4.6	3.2	3.2
24	2.9	3.2	2.9	2.65	2.35	2.55	6.4	4.3	4.7	3.9	3.2	3.2
25	3.1	3.2	2.9	2.65	2.35	2.25	5.1	3.6	3.9	3.9	3.2	3.45
26	3.1	3.2	2.9	2.65	2.35	2.15	4.3	3.45	3.6	3.6	4.3	3.6
27	3.0	3.2	2.9	2.65	2.35	2.15	3.9	3.45	3.75	37.5	4.7	3.35
28	3.0	3.1	2.9	2.65	2.25	2.1	4.6	3.6	4.7	29.5	3.65	3.2
29	3.0	3.1	2.75	2.65	2.25	2.0	4.8	-	9.2	11.2	3.35	3.1
30	3.35	3.1	2.75	2.75	2.45	2.0	4.0	-	5.7	6.9	3.2	3.1
31	3.1	3.1	-	2.9	-	1.92	3.6	-	5.1	-	3.45	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	3.6	2.9	3.25	5.03	101	310
August	3.2	3.1	3.12	4.83	96.7	297
September	3.1	2.75	2.97	4.60	89.1	273
October	3.0	2.65	2.75	4.25	85.1	261
November	7.4	2.25	3.50	5.42	105	322
December	5.4	1.92	2.48	3.84	77.0	236
Calendar year 1949	157	1.92	4.54	7.02	1,660	5,090
January	36	1.92	6.00	9.28	186	571
February	10.6	2.9	4.20	6.50	118	361
Maroh	12.5	3.0	4.37	6.76	136	416
April	37.5	2.9	6.14	9.50	184	565
May	5.7	3.1	3.64	5.63	113	346
June	3.6	3.0	3.19	4.94	95.7	294
Fiscal year 1949-50	37.5	1.92	3.80	5.88	1,390	4,250

Peak discharge (base, 70 mgd).--Jan. 22 (6 a.m.) 144 mgd (223 cfs); 2.94 ft; Apr. 27 (8:30 p.m.) 203 mgd (314 cfs) 3.26 ft.
a No gage-height record; discharge estimated on basis of records for nearby streams.

Left Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°31'10", long. 157°56'55", on left bank 140 ft upstream from intake of Wahiawa Water Co.'s tunnel and the confluence of Right and Left Branches of North Fork Kaukonahua Stream, and 5.5 miles northeast of Wahiawa.
Drainage area.--1.5 sq mi.
Records available.--May 1913 to June 1950.
Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,200 ft (from topographic map).
Average discharge.--33 years (1915-24, 1926-50), 10.8 mgd (16.7 cfs).
Extremes.--Maximum discharge during year, 1,280 mgd (1,980 cfs) Jan. 22 (gage height, 7.31 ft), from rating curve extended above 43 mgd by test on model of station site; minimum, 0.21 mgd (0.32 cfs) Nov. 24.
1913-50: Maximum discharge, 5,400 mgd (8,360 cfs) Jan. 1, 1933 (gage height, 11.7 ft, from floodmark), from rating curve extended above 15 mgd; minimum, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.
Remarks.--Records good except those for period of no gage-height record, which are fair.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.4	0.19	2.2	5.4
1.5	.30	2.4	9.6
1.6	.52	2.7	20
1.7	.84	3.0	38.5
1.8	1.31	3.3	68
2.0	2.85	3.7	123

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.5	3.95	3.65	0.65	0.57	0.93	4.7	2.4	3.95	4.0	10.2	4.8
2	4.2	9.4	3.05	.58	1.00	2.6	16.9	2.25	3.05	2.75	11.2	7.7
3	18.6	7.5	2.75	.55	.52	5.1	8.5	1.98	2.75	6.0	14.5	10.7
4	12.7	3.75	2.7	.52	1.88	1.10	4.7	1.85	2.4	25.5	39	4.8
5	11.1	3.2	2.6	.45	8.2	.65	3.4	5.5	2.35	27.5	15.8	3.95
6	12.9	5.6	2.35	.43	.80	.48	3.05	3.7	2.4	21.5	11.9	3.95
7	5.0	2.95	2.25	2.4	.52	.41	48	3.3	1.85	45	11.6	3.75
8	8.0	6.2	2.85	1.12	.50	.66	7.8	1.91	1.64	36	45	16.4
9	6.8	11.0	2.25	6.1	.39	.48	11.4	1.64	2.1	10.6	10.7	5.2
10	3.3	23.5	1.98	1.65	.30	.39	9.1	1.44	2.2	6.1	8.4	6.6
11	14.1	35	1.85	.93	.29	22.5	19.3	1.78	2.45	14.7	9.0	7.0
12	8.2	7.1	1.85	.74	3.15	3.45	5.1	1.44	1.44	7.0	7.2	5.0
13	20	5.4	1.71	.55	.68	9.5	3.95	1.58	1.98	16.6	44	6.4
14	4.4	4.2	1.58	2.3	.37	6.7	3.5	1.58	1.51	38.5	13.1	4.6
15	29	4.4	1.51	3.45	.39	6.1	3.2	5.9	1.26	25	14.5	3.4
16	5.9	5.0	1.64	9.1	.52	2.4	2.85	5.3	1.08	30.5	66	3.05
17	4.5	14.3	2.8	1.58	.32	18.2	2.7	1.64	1.08	14.1	19.8	3.05
18	6.7	22.5	1.51	2.05	4.6	58	2.4	1.38	1.08	16.3	104	2.7
19	3.4	6.7	1.31	4.7	1.44	5.2	2.25	2.7	.98	15.4	22.5	2.4
20	3.05	9.0	1.26	2.9	.55	3.4	3.2	13.2	5.2	6.3	19.3	2.6
21	6.1	8.0	1.03	1.28	.34	2.85	15.0	3.9	16.6	9.4	52	8.1
22	3.55	33	1.03	1.09	.26	2.5	84	6.6	6.7	55	12.5	3.0
23	8.0	20.5	1.03	1.13	.23	2.15	a120	56	1.91	77	22.5	4.8
24	4.7	8.4	.98	.78	.52	1.85	a14	31	16.7	88	9.6	2.85
25	14.6	6.3	1.31	.68	.30	1.64	a19	7.7	2.35	49	8.6	14.9
26	3.85	5.8	1.31	.55	.24	7.6	a5.6	4.5	2.45	46	15.7	3.8
27	11.7	16.0	1.08	.58	9.0	16.1	a4.1	3.4	18.7	66	11.3	2.95
28	7.5	5.1	.84	5.7	16.0	48	a3.7	24	12.5	43	7.2	2.6
29	11.0	4.2	1.63	.96	1.16	12.7	a3.4	-	21	16.0	6.5	2.25
30	22.5	3.85	.84	.55	4.4	31.5	a2.9	-	5.6	11.9	5.9	1.91
31	5.1	3.75	-	.48	-	7.0	4.2	-	4.7	-	5.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	29	3.05	9.45	14.6	293	899
August	35	2.95	9.86	15.3	306	938
September	3.65	.84	1.82	2.82	54.5	167
October	9.1	.43	1.82	2.82	56.5	173
November	16.0	.23	1.98	3.06	59.4	182
December	58	.39	9.10	14.1	282	866
Calendar year 1949	279	.23	6.34	9.81	2,310	7,090
January	120	2.25	14.2	22.0	440	1,350
February	56	1.38	7.13	11.0	200	612
March	21	.98	4.90	7.58	152	466
April	88	2.75	27.8	43.0	833	2,560
May	104	5.2	21.1	32.6	655	2,010
June	16.4	1.91	5.17	8.00	155	476
Fiscal year 1949-50	120	.23	9.55	14.8	3,490	10,700

Peak discharge (base, 700 mgd).--Jan. 7 (1:30 a.m.) 840 mgd (1,300 cfs), 6.22 ft; Jan. 22 (3 p.m.) 1,280 mgd (1,980 cfs), 7.31 ft.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.

Right Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°31'15", long. 157°56'55", on left bank 190 ft upstream from confluence with Left Branch, 200 ft upstream from intake of Wahiawa Water Co.'s tunnel, and 5.5 miles northeast of Wahiawa.

Drainage area.--1.2 sq mi.

Records available.--May 1913 to January 1933, February 1934 to June 1950.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,200 ft (from topographic map).

Average discharge.--31 years (1915-24, 1926-32, 1934-50), 7.26 mgd (11.2 cfs).

Extremes.--Maximum discharge during year, 612 mgd (947 cfs) Jan. 22 (gage height, 6.83 ft), from rating curve extended above 40 mgd by test on model of station site; minimum, 0.17 mgd (0.26 cfs) Nov. 23, 24.

1913-50: Maximum discharge, 1,500 mgd (2,320 cfs) Aug. 12, 1940 (gage height, 9.34 ft), from rating curve extended above 40 mgd by test on model of station site; minimum, 0.09 mgd (0.15 cfs) Mar. 22, 1926.

Remarks.--Records good except those for period of no gage-height record, which are fair.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

2.5	0.06	3.2	8.4
2.6	.29	3.4	14.9
2.7	.79	3.6	24.5
2.8	1.59	4.0	49
2.9	2.75	4.2	64
3.0	4.1		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	2.35	1.79	0.44	0.29	0.92	3.95	2.25	2.6	3.0	8	3.55
2	1.90	2.35	1.59	.39	.49	1.66	12.1	2.1	2.1	1.79	8.5	6.2
3	4.8	6.2	1.50	.39	.34	3.55	5.1	1.90	2.0	5.7	11	7.0
4	8.1	2.1	1.41	.39	.81	.99	3.55	1.79	1.79	6.0	30	3.4
5	8.2	1.79	1.41	.34	4.5	.64	2.85	3.5	1.79	9.0	12	3.15
6	5.3	2.75	1.23	.29	.54	.54	2.6	2.95	1.79	6.4	8	3.0
7	2.85	1.79	1.14	7.6	.39	.49	38	2.85	1.32	25.5	7.5	2.75
8	3.4	4.0	1.32	.99	.29	1.49	5.8	1.79	1.23	16.5	38	7.5
9	2.45	5.1	1.06	1.87	.25	.89	8.3	1.41	1.64	6.1	6.9	3.85
10	1.79	6.3	.99	.69	.22	1.18	5.5	1.32	1.72	3.4	5.8	8.0
11	2.55	18.5	.92	.49	.19	6.8	12.7	1.41	2.15	9.2	7.8	6.7
12	3.65	4.3	.85	.39	1.80	2.8	3.8	1.32	1.14	5.9	5.4	3.8
13	8.6	2.6	.79	.34	.49	14.4	3.25	1.32	1.32	15	58.5	3.15
14	2.0	2.25	.79	.59	.25	17.0	2.85	1.23	.99	22	9.6	2.6
15	9.4	2.25	.79	.85	.22	12.8	2.6	2.4	.79	15	12.6	2.75
16	2.85	1.90	.74	3.15	.25	3.0	2.35	2.8	.79	18	52	2.45
17	2.0	2.75	.79	.69	.25	10.9	2.25	1.14	.74	10	25.5	2.35
18	4.3	7.9	.69	.69	3.0	36.5	2.0	.99	.74	11	44	2.1
19	1.90	3.7	.64	2.0	1.00	4.3	1.90	2.45	.69	10	12.0	1.90
20	1.59	2.6	.54	1.19	.44	3.0	2.15	12.2	3.5	5	17.0	2.1
21	4.5	3.4	.59	.54	.25	2.45	15.8	2.65	12.3	7	23	3.0
22	2.2	9.9	.59	.39	.19	2.0	45	2.65	3.45	38	8.1	1.90
23	2.8	18.0	.54	.34	.19	1.79	51	27.5	1.32	55	11.0	1.90
24	2.55	3.95	.54	.34	.40	1.59	8.2	14.2	6.8	60	6.4	1.79
25	7.3	3.15	.59	.29	.29	1.32	10.0	3.95	1.41	40	6.0	5.2
26	2.35	2.75	.64	.25	.93	4.8	5.4	2.75	1.06	36	8.1	2.1
27	5.4	5.2	.59	.25	4.2	14.9	3.95	2.25	5.6	44	6.2	1.59
28	5.9	2.45	.49	3.25	12.2	46	3.25	15.4	7.2	36	4.8	1.68
29	4.8	2.1	1.15	.59	1.06	13.9	3.0	-	12.0	12	4.4	1.50
30	12.7	2.0	.59	.34	2.45	18.0	2.75	-	3.1	9.5	4.3	1.32
31	3.15	1.90	-	.29	-	5.4	2.85	-	3.3	-	3.7	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	12.7	1.59	4.47	6.92	139	426
August	18.5	1.79	4.46	6.90	138	424
September	1.79	.49	.913	1.41	27.4	84
October	7.6	.25	.988	1.53	30.6	94
November	12.2	.19	1.27	1.96	38.2	117
December	46	.49	7.61	11.8	236	724
Calendar year 1949	111	.19	3.99	6.17	1,460	4,480
January	51	1.90	8.86	13.7	275	843
February	27.5	.99	4.30	6.65	120	370
March	12.3	.69	2.85	4.41	88.4	271
April	60	1.79	18.1	28.0	542	1,660
May	52	3.7	14.4	22.3	446	1,370
June	8.0	1.32	3.34	5.17	100	308
Fiscal year 1949-50	60	.19	5.98	9.25	2,180	6,690

Peak discharge (base, 420 mgd).--Jan. 7 (1:30 a.m.) 476 mgd (736 cfs), 6.37 ft; Jan. 22 (4 p.m.) 612 mgd (947 cfs), 6.83 ft.

Note.--No gage-height record Apr. 13 to May 8; discharge estimated on basis of records for nearby streams.

Kaukonahua ditch near Wahiawa

Location.--Lat 21°30'45", long. 157°59'20", on left bank 3 miles northeast of Wahiawa.

Records available.--March 1947 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,100 ft (from topographic map).

Extremes.--1947-50: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times in each year.

Remarks.--Records good. Ditch diverts water from North Fork Kaukonahua Stream for domestic use.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1						0	0	0	0.02	0	0	0.62
2						0	0	0	.01	0	0	.62
3						0	0	0	.01	0	0	.62
4						0	0	0	0	0	0	.58
5						0	0	0	0	0	0	.53
6						0	0	0	0	0	0	.48
7						0	.08	0	0	0	0	.48
8						0	0	0	0	0	0	.90
9						0	0	0	0	0	0	.62
10						0	0	0	0	0	0	.88
11						0	0	0	0	0	0	.62
12						0	0	0	0	0	0	.53
13						0	0	0	0	0	0	.66
14						0	0	0	0	0	0	.62
15						0	0	0	0	0	0	.53
16						0	0	0	0	0	0	.53
17						.01	0	0	0	0	.05	.53
18						.02	0	0	0	0	.63	.48
19						0	0	0	0	0	.96	.45
20						0	0	0	0	0	1.10	.43
21						0	.01	.07	0	0	1.24	1.42
22						0	.08	.05	0	0	.91	.79
23						0	.15	.04	0	0	.91	.89
24						0	0	.04	0	.02	.82	.48
25						0	0	.04	0	.02	.86	1.45
26						0	0	.04	0	0	.82	.67
27						0	0	.03	0	0	.86	.48
28						0	0	.02	0	.04	.77	.40
29						0	0	-	0	0	.72	.34
30						0	0	-	0	0	.67	.32
31						0	0	-	0	-	.67	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0	0	0	0	0	0
August	0	0	0	0	0	0
September	0	0	0	0	0	0
October	0	0	0	0	0	0
November	0	0	0	0	0	0
December	.02	0	.001	.002	.03	.1
Calendar year 1949	.25	0	.001	.002	.45	1.4
January	.15	0	.010	.015	.32	1.0
February	.07	0	.012	.019	.33	1.0
March	.02	0	.001	.002	.04	.1
April	.04	0	.003	.005	.08	.2
May	1.24	0	.387	.599	12.0	37
June	1.45	.32	.632	.978	19.0	58
Fiscal year 1949-50	1.45	0	.087	.135	31.8	97

North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'55", long. 157°59'20", on left bank 3 miles northeast of Wahiawa and 8.6 miles north of Pearl City.
Drainage area.--4.9 sq mi.
Records available.--September 1946 to June 1950.
Gage.--Water-stage recorder and concrete control. Altitude of gage is 970 ft (from topographic map).
Extremes.--Maximum discharge during year, 2,840 mgd (4,390 cfs) Jan. 22 (gage height, 10.28 ft), from rating curve extended above 120 mgd by test on model of station site; minimum, 0.58 mgd (0.90 cfs) Oct. 18.
1946-50: Maximum discharge, 3,340 mgd (5,170 cfs) Apr. 3, 1948 (gage height, 11.34 ft), from rating curve extended above 120 mgd by test on model of station site; minimum, 0.35 mgd (0.54 cfs) Mar. 26-28, 1947.
Remarks.--Records good except those for periods of fragmentary gage-height records, which are fair. Poamoho tunnel diverts floodwater from Poamoho Stream into North Fork Kaukonahua Stream about a mile above station. Kaukonahua ditch diverts water 2.6 miles above station for domestic use in Wahiawa (see preceding page).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.37	1.6	37.5
.4	.80	2.0	74
.5	1.45	2.5	143
.6	2.35	3.0	235
.8	5.0	3.5	338
1.0	9.1	4.0	458
1.3	20		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	47	9.4	7.7	1.81	f1.4	5.4	15.3	8.6	12.1	13.9	f30	11.8
2	12.1	14.7	6.6	1.54	f2.0	5.3	48	7.7	8.6	8.6	f30	16.6
3	25	16.8	5.9	1.38	1.45	20.5	23	7.0	8.0	11.2	f40	22
4	41	8.6	5.5	1.38	1.19	6.5	15.0	6.6	6.8	18.8	79	13.5
5	25.5	7.0	5.4	1.26	21	3.05	10.6	12.7	6.3	61	52	10.3
6	28	10.0	5.0	1.19	3.05	2.25	8.4	11.9	7.0	38.5	33	9.7
7	15.1	7.9	4.7	f9.5	1.54	1.81	220	12.5	5.4	82	34	9.4
8	15.1	11.5	5.5	f3.2	1.32	2.45	31.5	7.0	5.0	85	159	19.6
9	14.0	20.5	5.0	f12	1.06	3.25	47	5.9	5.9	25.5	34	25
10	7.5	29.5	4.4	f4.5	.86	2.25	34	5.2	7.5	15.0	25	23.5
11	8.8	68	3.95	f2.8	.76	33.5	62	5.2	6.4	29	26.5	13.6
12	27	19.3	3.65	f2.1	5.7	18.6	21.5	5.5	4.7	15.3	22	17.6
13	45	10.3	3.8	f1.6	3.2	58	15.7	4.8	4.8	58	112	9.7
14	10.6	8.9	3.5	f3.2	1.38	40	13.2	5.2	4.7	97	28.5	12.8
15	61	8.6	3.4	f6.5	1.06	47	11.8	5.1	3.65	63	41	8.2
16	17.4	7.3	3.5	f16	1.00	9.7	9.4	17.9	3.4	79	152	8.0
17	10.3	22.5	4.5	f3.4	1.02	43	8.2	5.2	3.25	39	76	7.5
18	26	44	3.8	f4.2	6.5	229	7.0	4.4	3.25	25	181	6.8
19	9.4	18.9	2.9	f8	6.7	25	6.6	4.8	3.15	44	52	6.3
20	7.7	11.8	2.8	f6	2.15	13.5	6.6	40	11.2	16.6	48	6.3
21	11.6	18.7	2.45	f3.2	1.19	10.0	77	26.5	47	20.5	97	19.4
22	11.0	55	2.25	f2.5	.80	8.0	285	30.5	15.8	f120	32.5	7.7
23	13.3	67	2.25	f2.5	.67	6.8	404	85	6.3	f260	42	10.6
24	11.8	18.7	2.35	f2.0	.76	5.9	31.5	62	28	339	24	7.0
25	39	14.6	2.9	f1.7	1.32	5.2	39	19.2	7.7	144	22	27.5
26	12.8	12.5	3.05	f1.4	.80	14.2	23	11.8	5.9	119	19.1	10.4
27	21	28.5	2.6	f1.5	11.5	38.5	15.7	8.6	44	f140	36	6.4
28	14.0	11.8	2.15	f7	47	167	13.2	59	42	f110	17.8	6.3
29	14.6	8.9	2.6	f2.3	4.6	58	11.5	-	69	50	16.1	5.4
30	61	8.0	2.8	f1.4	11.6	77	10.0	-	23.5	f38	14.3	4.8
31	13.2	7.7	-	f1.2	-	24.5	11.8	-	12.5	-	13.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	61	7.5	21.8	33.7	677	2,080
August	68	7.0	19.6	30.3	607	1,860
September	7.7	2.15	3.90	6.03	117	359
October	16	1.19	3.81	5.89	118	363
November	47	.67	4.82	7.46	145	444
December	229	1.81	31.8	49.2	985	3,020
Calendar year 1949	810	.67	17.7	27.4	6,480	19,880
January	404	6.6	49.6	76.7	1,540	4,720
February	85	4.4	17.4	26.9	486	1,490
March	69	3.15	13.6	21.0	423	1,300
April	339	8.6	72.2	112	2,170	6,650
May	181	13.2	51.3	79.4	1,590	4,880
June	27.5	4.8	12.1	18.7	364	1,120
Fiscal year 1949-50	404	.67	25.2	39.0	9,220	28,290

Peak discharge (base, 1,500 mgd).--Dec. 18 (8:30 a.m.) 1,520 mgd (2,350 cfs), 7.30 ft; Jan. 7 (3 a.m.) 1,920 mgd (2,970 cfs), 8.31 ft; Jan. 22 (5 p.m.) 2,840 mgd (4,390 cfs), 10.28 ft.
f Fragmentary gage-height record; discharge estimated on basis of recorded range in stage or partial gage-height record.

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South Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'05", long. 157°56'50", on right bank at Canon Dam, 5.4 miles east of Wahiawa and 7.7 miles north of Pearl City.

Drainage area.--1.9 sq mi.

Records available.--May 1944 to June 1950.

Gage.--Water-stage recorder and masonry dam control. Altitude of gage is 1,070 ft (from topographic map).

Average discharge.--6 years, 6.91 mgd (10.7 cfs).

Extremes.--Maximum discharge during year, 624 mgd (965 cfs) Jan. 22 (gage height, 5.33 ft), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Nov. 23, 24, 26, 27.

1944-50: Maximum discharge, 741 mgd (1,150 cfs) Nov. 8, 1944 (gage height, 5.80 ft), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 1945.

Remarks.--Records good.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.09	1.0	2.3
.4	.17	1.1	5.5
.5	.30	1.2	9.8
.6	.47	1.4	19.2
.7	.68	1.7	38
.8	.95	2.1	74
.9	1.33		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.5	3.95	3.0	0.45	0.24	3.0	1.45	1.84	3.4	4.7	9.9	3.95
2	3.85	6.8	2.3	.41	.24	9.0	7.2	1.63	2.3	3.0	10.2	4.7
3	23	3.3	2.05	.39	.24	14.9	4.6	1.50	1.84	3.0	11.6	7.6
4	9.7	2.75	1.84	.37	3.8	3.1	1.63	1.37	1.56	10.9	19.1	3.6
5	5.5	2.5	1.73	.36	16.6	1.90	1.25	4.4	1.45	27	10.2	3.0
6	7.3	2.75	1.63	.32	.82	.95	1.09	3.0	1.85	22	8.1	2.75
7	4.5	2.3	1.50	.23	.53	.73	48	3.0	1.13	25	10.7	2.75
8	10.1	3.25	1.63	.41	.40	.87	7.3	1.50	1.01	23	46	14.1
9	10.2	5.2	1.62	.90	.23	1.09	11.9	1.17	1.38	15.6	9.4	3.3
10	5.2	12.2	1.37	.64	.18	.66	12.8	.95	1.58	6.8	7.6	3.0
11	11.0	19.6	1.21	.57	.17	6.4	28	.66	1.44	16.4	8.5	2.3
12	8.5	4.6	1.45	.41	3.0	4.2	4.7	.80	.99	6.8	7.6	2.3
13	10.4	3.0	1.41	.33	.62	6.1	3.3	1.58	1.46	14.6	21	4.5
14	3.95	2.5	1.30	1.90	.24	2.55	2.5	1.52	.95	27	6.8	3.95
15	46	2.75	1.13	1.66	.44	9.6	2.05	11.7	.68	24.5	6.4	1.75
16	9.2	3.65	1.17	5.9	.37	1.01	1.84	7.7	.57	35.5	60	1.56
17	5.5	18.5	1.32	1.05	.30	17.6	1.63	2.6	.85	16.4	12.1	1.41
18	6.1	36	1.01	.90	6.5	61	1.50	1.45	.33	20	59	1.33
19	3.95	10.5	.83	1.47	1.95	5.7	1.23	1.41	.51	24	14.0	1.21
20	3.6	9.2	.77	1.01	.69	3.0	1.48	10.3	10.6	7.6	11.2	1.21
21	3.6	10.6	.65	.49	.32	2.05	12.4	4.6	22.5	10.6	43	5.2
22	3.3	14.6	.56	.45	.20	1.50	66	7.4	14.5	17.0	10.4	1.93
23	4.3	15.5	.68	.64	.16	1.25	58	25	2.5	35	19.1	8.5
24	8.0	9.1	.68	.39	.36	1.05	8.3	23.5	2.3	41	8.5	2.75
25	18.6	6.5	1.38	.32	.24	.92	7.2	4.7	2.75	27.5	8.5	33
26	5.1	5.1	1.18	.28	.16	2.1	5.5	3.0	1.76	18.0	17.2	4.2
27	8.4	10.7	.84	.28	.52	5.5	3.6	2.05	20	60	10.8	2.75
28	3.8	4.7	.55	2.25	35.5	15.6	3.0	26	21	61	6.4	2.05
29	5.0	3.6	.51	.85	2.05	3.6	2.5	-	32	16.4	5.9	1.84
30	17.6	3.3	.47	.27	15.4	7.8	2.5	-	8.3	13.5	5.5	1.45
31	6.0	3.6	-	.23	-	2.95	2.75	-	5.6	-	4.3	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	46	3.3	8.99	13.9	279	855
August	38	2.3	7.90	12.2	245	752
September	3.0	.47	1.27	1.96	38.0	116
October	5.9	.23	.857	1.33	26.6	82
November	35.5	.16	3.08	4.77	92.5	284
December	61	.66	6.23	9.64	193	593
Calendar year 1949	280	.16	5.90	9.13	2,150	6,600
January	66	1.09	10.3	15.9	318	977
February	26	.80	5.59	8.65	157	480
March	32	.51	5.45	8.43	169	519
April	61	3.0	21.1	32.6	634	1,950
May	60	4.3	15.8	24.4	489	1,500
June	33	1.21	4.40	6.81	132	405
Fiscal year 1949-50	66	.16	7.60	11.8	2,770	8,510

Peak discharge (base, 400 mgd).--Jan. 22 (4 p.m.) 624 mgd (965 cfs), 5.33 ft; Apr. 28 (10:30 a.m.) 452 mgd (699 cfs), 4.51 ft.

South Fork Kaukonahua Stream above Wahiawa Reservoir, near Wahiawa

Location.--Lat 21°29'35", long. 157°59'55", on right bank 2 miles southeast of Wahiawa and 7.5 miles north of Waipahu.

Drainage area.--3.8 sq mi.

Records available.--October 1946 to June 1950.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 850 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,910 mgd (2,960 cfs) Jan. 22 (gage height, 10.89 ft), from rating curve extended above 80 mgd by test on model of station site; minimum, 0.56 mgd (0.87 cfs) Nov. 26-28.
1946-50: Maximum discharge, 2,540 mgd (3,930 cfs) Jan. 16, 1949 (gage height, 12.71 ft), from rating curve extended above 80 mgd by test on model of station site; minimum, 0.48 mgd (0.74 cfs) Oct. 29, 1946.

Remarks.--Records good except those above 50 mgd, which are fair.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.36	0.7	3.25	1.4	23.5	2.5	131
.4	.76	.8	4.6	1.6	36	3.0	193
.5	1.36	1.0	8.4	1.9	60	4.0	322
.6	2.2	1.2	14.1	2.2	92	5.0	470

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.6	12.9	6.1	1.94	0.72	5.5	3.05	5.9	10.4	11.9	16.0	3.8
2	5.4	15.3	4.9	1.86	.68	7.7	8.5	5.4	5.9	8.0	12.2	3.65
3	25	10.7	4.3	1.86	.68	26.5	8.9	4.8	5.1	6.5	17.0	5.4
4	17.6	5.4	4.3	1.86	.72	7.1	4.1	4.6	4.8	8.2	25.5	5.4
5	3.8	5.3	4.2	1.86	21	3.1	2.5	9.3	4.3	36.5	16.6	6.3
6	5.1	5.4	3.8	1.50	2.25	1.94	2.1	9.7	4.2	37.5	11.0	5.9
7	4.4	4.6	3.65	.82	1.36	1.36	129	10.5	3.5	27.5	11.7	5.9
8	6.6	4.5	3.65	.82	1.06	1.30	17.2	5.8	3.05	51	79	35.5
9	10.6	6.5	3.8	.94	.76	1.69	32	4.3	4.1	23.5	22	10.1
10	3.35	11.9	3.4	1.00	.64	1.12	29	3.25	5.4	11.0	19.7	9.8
11	5.7	23.5	3.15	.88	.64	1.59	52	3.25	3.65	16.6	19.2	6.9
12	10.7	7.8	3.4	.82	1.18	9.9	12.4	3.25	3.25	12.1	20	5.4
13	10.8	5.1	4.3	.82	1.63	14.3	8.0	3.5	3.15	16.8	35.5	4.9
14	3.9	4.8	4.3	1.70	.82	6.6	6.3	4.3	3.4	31.5	19.2	9.1
15	92	4.0	3.7	1.60	.72	4.8	5.6	8.0	2.5	38	17.0	4.6
16	14.6	4.3	3.5	7.6	.68	2.6	4.6	20.5	2.3	63	67	4.8
17	5.4	31	3.8	2.5	.68	36	4.2	4.8	2.2	34.5	19.8	4.3
18	17.7	65	3.65	1.44	1.68	178	3.6	4.8	2.1	15.2	73	4.0
19	7.0	27	2.6	1.88	4.4	18.9	3.4	5.0	2.0	45	25	3.65
20	5.3	16.8	2.6	2.9	1.36	7.7	3.5	13.0	13.1	10.7	21	3.25
21	10.0	24	2.1	1.44	.76	5.4	55	57	43	13.4	66	12.2
22	12.2	29	2.1	.72	.64	3.9	275	38.5	24.5	33.5	21	5.7
23	15.1	29	2.0	.72	.60	3.25	354	21.5	6.5	72	26	16.6
24	25	18.2	2.2	.72	.68	2.6	31.5	39	39	86	9.4	8.3
25	62	16.8	3.2	.68	.68	2.6	20	11.5	10.5	53	14.6	64
26	27.5	12.9	4.2	.68	.60	2.7	15.6	6.5	5.3	41	13.7	16.4
27	22.5	20	2.4	.68	.56	7.0	10.7	5.3	52	108	19.2	8.0
28	15.3	13.6	2.1	.68	28	25.5	8.9	51	33	281	7.1	5.9
29	14.1	9.3	2.0	.72	2.55	7.4	8.0	-	60	86	5.9	4.9
30	34.5	6.1	1.94	.68	14.2	6.9	6.7	-	24	66	5.4	4.5
31	17.0	5.9	-	.68	-	8.1	6.6	-	11.0	-	4.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	92	3.35	16.7	25.8	518	1,590
August	65	4.0	14.7	22.7	457	1,400
September	6.1	1.94	3.38	5.23	101	311
October	7.6	.68	1.45	2.24	45.0	138
November	28	.56	3.10	4.80	92.9	285
December	178	1.12	13.3	20.6	413	1,270
Calendar year 1949	841	.56	13.7	21.2	5,000	15,300
January	354	2.1	36.5	56.5	1,130	3,480
February	57	3.25	13.0	20.1	364	1,120
March	60	2.0	12.8	19.8	397	1,220
April	281	6.5	44.8	69.3	1,350	4,130
May	79	4.9	23.9	37.0	741	2,270
June	64	3.25	9.64	14.9	289	887
Fiscal year 1949-50	354	.56	16.2	25.1	5,900	18,100

Peak discharge (base, 700 mgd).--Jan. 22 (6 p.m.) 1,910 mgd (2,960 cfs), 10.89 ft; Apr. 26 (12:30 p.m.) 1,520 mgd (2,350 cfs), 9.65 ft.

Poamoho Stream near Wahiawa

Location.--Lat 21°31'25", long. 157°58'55", on left bank just below concrete diversion dam, 3.5 miles northeast of Wahiawa and 9.5 miles north of Waipahu.

Drainage area.--1.8 sq mi.

Records available.--January 1947 to June 1950.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,150 ft (from topographic map).

Extremes.--Maximum discharge during year, 272 mgd (421 cfs) Jan. 22 (gage height, 3.16 ft), from rating curve extended above 10 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) on several days.
1947-50: Maximum discharge, 916 mgd (1,420 cfs) Mar. 30, 1947 (gage height, 5.68 ft), from rating curve extended above 10 mgd by test on model of station site; no flow Feb. 4, 5, 1948.

Remarks.--Records good except those above 10 mgd and period of doubtful or no gage-height record, which are fair. Poamoho tunnel diverts floodwater into North Fork Kaukonahua Stream about 175 ft above station.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.0	0	.6	2.2
.1	.02	.8	4.7
.2	.13	1.0	8.5
.3	.36	1.2	14.2
.4	.76	1.5	28.5

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	1.09	0.58	0.04	0.07	0.98	0.04	2.0	2.5	2.75	4.9	2.1
2	1.02	.86	.50	.04	.07	.51	.03	1.94	1.8	1.53	4.4	3.0
3	2.0	2.1	.42	.02	.23	2.85	.03	1.69	1.6	3.0	5.2	3.1
4	4.1	1.12	.39	.02	.11	1.02	.02	1.61	1.4	5.2	9.4	2.1
5	4.0	.71	.39	.01	3.0	.39	.49	3.15	1.22	2.65	8.4	1.86
6	2.5	.86	.36	.01	.52	.21	1.22	2.85	1.22	3.65	4.1	1.78
7	1.50	.76	.33	3.3	.23	.13	7.2	3.65	1.15	9.7	6.4	1.69
8	1.46	.74	.33	1.16	.13	1.78	.05	1.94	.91	7.1	16.8	2.95
9	1.68	1.21	.33	.58	.11	.80	.03	1.44	1.1	3.95	6.4	2.0
10	.76	1.82	.27	.36	.05	1.29	.02	1.22	1.36	2.0	4.7	4.8
11	.58	4.3	.23	.17	.02	.46	.02	1.22	1.22	4.8	5.6	2.35
12	1.34	1.66	.21	.09	1.19	1.44	.02	1.22	1.03	2.4	3.85	2.9
13	2.6	.81	.25	.05	.61	7.5	.02	1.09	.76	10.0	11.1	1.69
14	.91	.66	.25	.03	.19	8.1	.03	1.09	.71	12.4	4.7	1.36
15	4.0	.62	.25	.16	.10	6.2	.04	1.09	.58	9.5	5.0	1.71
16	1.80	.58	.23	.84	.11	2.2	1.15	3.05	.50	7.7	16.7	1.44
17	.86	.66	.19	.64	.08	3.95	1.06	1.22	.48	6.8	11.2	1.15
18	2.2	3.05	.21	.50	.25	6.4	1.15	1.03	.50	3.35	13.3	1.09
19	.86	2.65	.19	.30	1.27	.13	1.09	.91	.46	7.0	6.4	.97
20	.62	1.09	.11	.71	.33	.11	1.21	10.6	1.22	2.5	7.1	1.03
21	.62	2.3	.10	.25	.15	.09	7.9	5.8	8.5	4.8	10.5	1.61
22	1.38	4.0	.08	.11	.06	.10	19.0	6.6	3.6	16.1	4.9	1.03
23	.99	5.6	.06	.06	.03	.08	23.5	13	1.09	22	4.6	1.09
24	1.22	2.0	.07	.03	.02	.07	9.3	10	4.7	18.4	3.7	.97
25	4.4	1.44	.10	.02	.02	.06	5.0	4.5	.96	15.7	3.7	3.85
26	2.5	.97	.17	.02	.09	.06	2.25	2.5	.10	14.3	4.1	1.88
27	2.15	1.73	.15	.01	.92	.05	4.8	1.9	.09	14.8	5.0	1.03
28	1.64	1.09	.10	1.04	4.2	.07	3.45	12	.08	13.9	2.95	.86
29	2.25	.97	.06	.68	.77	.04	2.85	-	.83	7.3	2.75	.81
30	5.2	.66	.05	.19	2.2	.07	2.5	-	2.25	6.1	2.65	.76
31	1.86	.58	-	.09	-	.06	2.5	-	2.2	-	2.4	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	5.2	0.58	2.03	3.14	62.8	193
August	5.6	.58	1.57	2.43	48.7	149
September	.58	.05	.232	.359	6.96	21
October	3.3	.01	.372	.576	11.5	35
November	4.2	.02	.571	.883	17.1	53
December	8.1	.04	1.52	2.35	47.2	145
Calendar year 1949	60	.01	1.97	3.05	718	2,200
January	23.5	.02	3.16	4.89	98.0	301
February	13	.91	3.58	5.54	100	308
March	8.5	.08	1.49	2.31	46.1	141
April	22	1.53	8.05	12.5	241	741
May	16.8	2.4	6.55	10.1	203	623
June	4.8	.76	1.83	2.83	55.0	169
Fiscal year 1949-50	23.5	.01	2.57	3.98	937	2,880

Note.--Doubtful or no gage-height record Jan. 26 to Mar. 23; discharge estimated on basis of recorder graph and records for nearby streams.

Pearl Harbor Springs at Waiawa, near Pearl City

Location.--Lat 21°23'35", long. 157°59'10", on right bank at rear of Oahu Sugar Co.'s pumping plant 9, 0.7 mile west of Pearl City and 9.8 miles northwest of Honolulu.

Records available.--March 1931 to June 1934, July 1937 to June 1950.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 0.73 ft below mean sea level.

Average discharge.--16 years (1931-34, 1937-50), 11.9 mgd (18.4 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-50: Maximum daily discharge, 18.7 mgd (28.9 cfs), Feb. 27, 1949; minimum daily, 6.0 mgd (9.3 cfs) on several days in 1941 and 1947.

Remarks.--Records good. Oahu Sugar Co.'s pump 9 diverts about 3 mgd at times when water is needed for irrigation of sugarcane. Surface runoff from floods not included in figures of discharge given below.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.3	14.3	14.7	14.3	13.1	13.1	13.1	14.7	13.5	13.5	17.1	13.9
2	14.3	14.3	14.7	14.3	13.1	13.1	12.7	14.7	13.5	13.1	16.7	13.1
3	14.3	14.3	14.7	14.3	13.1	13.5	12.3	14.7	13.5	12.7	16.7	13.9
4	14.7	14.3	14.7	14.3	13.5	13.5	12.3	14.7	14.3	12.3	15.1	13.1
5	15.1	14.3	15.1	14.3	13.5	13.5	12.3	14.7	13.9	12.7	15.1	13.1
6	14.7	13.9	15.1	13.9	13.5	13.1	12.7	15.1	13.9	12.3	15.1	13.1
7	14.7	14.3	14.7	13.9	13.5	12.7	13.1	14.7	13.9	12.7	15.1	13.1
8	14.3	14.3	14.7	13.9	13.5	13.1	13.1	14.7	13.9	13.1	14.3	13.5
9	14.3	13.9	14.3	14.3	13.1	13.1	13.1	14.7	13.9	13.1	14.3	13.5
10	13.9	14.3	14.7	14.3	13.1	13.1	13.1	14.7	13.9	13.5	14.3	14.3
11	13.9	14.3	15.1	13.9	13.5	13.1	13.1	14.7	14.3	13.5	14.3	14.3
12	14.3	14.3	14.7	13.9	13.5	13.1	12.7	14.7	13.5	13.1	14.3	14.7
13	14.3	14.3	14.7	13.9	13.5	13.1	12.7	14.7	13.5	12.7	14.3	14.7
14	14.3	14.3	14.3	13.9	13.5	13.1	13.1	14.7	13.5	13.1	13.9	14.7
15	14.3	14.3	14.3	13.9	13.5	13.1	13.1	14.7	13.1	13.5	13.9	14.7
16	13.9	14.3	14.7	13.9	13.5	13.1	13.1	14.7	13.1	13.1	13.9	13.9
17	14.3	14.3	14.7	13.9	13.1	13.1	12.7	14.3	13.5	13.9	13.5	13.5
18	14.3	14.7	14.7	13.9	13.1	13.5	12.7	14.3	13.9	13.1	13.9	13.5
19	13.9	14.7	14.3	13.9	13.5	13.1	13.1	14.3	13.1	13.1	13.9	13.5
20	14.3	14.7	14.3	13.9	13.5	13.1	13.5	14.7	13.5	13.5	13.9	13.1
21	14.7	14.7	14.3	13.5	13.1	13.1	13.5	14.3	13.5	13.5	14.3	13.1
22	14.7	14.7	14.3	13.5	13.1	13.5	13.9	14.3	13.1	13.5	13.5	13.1
23	14.7	14.3	14.3	13.9	13.1	13.5	14.7	14.3	13.5	14.7	13.5	13.1
24	14.7	14.3	14.3	13.9	13.1	13.5	13.9	13.9	13.5	15.1	13.5	13.1
25	14.7	14.3	14.3	13.5	13.5	13.1	13.9	13.9	13.5	15.1	13.1	13.1
26	14.7	14.3	14.3	13.5	13.1	13.1	14.7	13.5	13.1	15.5	13.1	13.1
27	14.3	14.7	14.3	13.5	13.1	12.7	14.7	13.9	13.5	15.5	13.1	13.1
28	14.3	14.7	13.9	13.5	13.5	12.7	14.7	13.9	13.1	15.9	13.9	12.7
29	14.3	14.7	13.9	13.5	13.5	12.3	14.7	-	13.1	16.3	13.5	13.1
30	14.3	14.7	13.9	13.9	13.1	12.7	14.3	-	13.1	16.7	13.9	13.1
31	14.3	14.7	-	13.5	-	13.1	14.7	-	13.1	-	13.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.1	13.9	14.4	22.3	446	1,370
August	14.7	13.9	14.4	22.3	446	1,370
September	15.1	13.9	14.5	22.4	435	1,330
October	14.3	13.5	13.9	21.5	430	1,320
November	13.5	13.1	13.3	20.6	399	1,230
December	13.5	12.3	13.1	20.3	406	1,250
Calendar year 1949	18.7	12.3	14.8	22.9	5,400	16,590
January	14.7	12.3	13.4	20.7	415	1,270
February	15.1	13.5	14.5	22.4	405	1,240
March	14.3	13.1	13.5	20.9	419	1,290
April	16.7	12.3	13.8	21.4	413	1,270
May	17.1	13.1	14.3	22.1	443	1,360
June	14.7	12.7	13.5	20.9	406	1,250
Fiscal year 1949-50	17.1	12.3	13.9	21.5	5,060	15,550

Pearl Harbor Springs at Kalauao, near Aiea

Location.--Lat 21°23'05", long. 157°56'47", on left bank 900 ft downstream from Oahu Sugar Co. pump 6, 1.1 miles west of Aiea, and 7.6 miles northwest of Honolulu.

Records available.--March 1931 to June 1950.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1.38 ft below mean sea level.

Average discharge.--19 years, 15.8 mgd (24.4 cfs), unadjusted for pumpage.

Extremes.--1931-50: Maximum daily discharge, 25 mgd (39 cfs) Feb. 17-26, 1938; minimum daily, 7.2 mgd (11.1 cfs) Aug. 25, Sept. 2, 1947.

Remarks.--Records fair. When water is needed for irrigation of sugarcane, Oahu Sugar Co.'s pump 6 diverts about 7 mgd as a high-lift pump or 9 mgd as a low-lift pump. Surface runoff from floods not included in figures of discharge given below.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19.3	13.3	14.6	19.0	12.9	19	20.5	21	22	21	21	19.8
2	19.0	15.9	17.6	18.7	12.9	19	20.5	21	22	21	21	19.8
3	21	17.6	19.4	11.7	12.9	19	20.5	21	22	18.0	21	19.8
4	21	17.6	19.6	12.9	12.9	19	20.5	21	22	21	21	19.8
5	19.4	15.4	19.8	13.8	19.0	15.5	20.5	21.5	22	15.0	21	19.8
6	14.2	17.6	14.2	13.8	19.0	15.5	20.5	21.5	20.5	19.4	21	15.9
7	18.5	16.7	13.8	16.3	15.5	19	20.5	21.5	19.0	19.0	21	13.8
8	16.7	16.7	13.8	19.0	19	19	21	21.5	19.0	16.7	21	14.6
9	18.0	16.3	16.7	16.3	19	19	21	21.5	19.8	21	21	15.0
10	16.7	15.4	19.0	11.7	19	19	21	21.5	21	16.3	21	17.6
11	13.8	16.3	19.4	13.8	19	19	21	21.5	19.0	16.7	21	19.8
12	15.4	16.3	14.2	13.3	19	14.5	21	21.5	19.0	18.5	21	17.2
13	15.9	18.5	14.6	12.9	19	15.5	21	21.5	16.7	19.0	21	17.2
14	15.0	18.0	14.6	16.3	14.5	15.5	20.5	21.5	19.0	19.0	21	17.6
15	15.0	15.9	14.2	19.0	13.0	15.5	20.5	21.5	18.5	20.5	18.5	13.3
16	19.4	15.0	16.7	16.7	13.5	16	20.5	21.5	18.0	20.5	18.5	14.6
17	19.0	15.0	19.4	11.3	13.5	19.8	20.5	21.5	18.5	16.3	19.4	19.0
18	13.8	18.0	17.2	12.9	16	19.8	21	21.5	20.5	15.4	21	19.4
19	17.2	17.2	12.5	13.8	19	19.8	21	21.5	21	16.3	21	14.6
20	15.4	17.2	13.8	12.9	19	19.8	20.5	20.5	21	19.8	18.5	15.0
21	17.2	17.6	13.8	16.3	16	19.8	20.5	21.5	21	19.8	21	17.2
22	17.2	13.3	13.3	19.0	16	19.8	21	21.5	21	19.8	18.5	17.2
23	18.0	16.3	16.7	16.7	16.5	20.5	21	21.5	21	20.5	18.0	15.9
24	18.5	15.4	19.4	11.3	19	20.5	21	21.5	21	20.5	18.5	19.0
25	19.0	15.0	17.2	12.9	17	20.5	21	21.5	21	21	15.0	19.0
26	15.0	18.5	11.7	12.9	19	20.5	21	21.5	21	21	18.5	17.6
27	15.4	19.8	13.8	13.3	19	20.5	21	22	21	21	20.5	19.0
28	15.9	17.6	13.3	12.9	13.5	20.5	21	22	18.0	21	20.5	19.0
29	16.7	15.0	14.2	15.9	15.5	20.5	21	-	18.5	21	20.5	14.6
30	21	15.0	16.3	16.7	15.5	20.5	21	-	21	21	20.5	13.3
31	18.0	14.6	-	13.3	-	20.5	21	-	21	-	20.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21	13.8	17.2	26.6	532	1,630
August	19.8	13.3	16.4	25.4	508	1,560
September	19.8	11.7	15.8	24.4	475	1,460
October	19.0	11.3	14.7	22.7	455	1,400
November	19.0	12.9	16.5	25.5	495	1,520
December	20.5	14.5	18.9	29.1	582	1,790
Calendar year 1949	23.5	11.3	18.3	28.3	6,680	20,490
January	21	20.5	20.8	32.2	644	1,980
February	22	20.5	21.4	33.1	600	1,840
March	22	18.7	20.2	31.3	626	1,920
April	21	15.0	19.2	29.7	577	1,770
May	21	18.0	20.1	31.1	623	1,910
June	19.8	13.3	17.2	26.6	515	1,580
Fiscal year 1949-50	22	11.3	18.2	28.2	6,630	20,360

Note.--No gage-height record Nov. 7 to Dec. 21; discharge estimated on basis of probable increase or decrease of spring flow and pumping records.

Moanalua Stream near Honolulu

Location.--Lat 21°22'50", long. 157°52'20", on left bank 5 miles upstream from mouth and 5 miles north of Honolulu Post Office.

Drainage area.--2.8 sq mi.

Records available.--June 1926 to June 1950.

Gage.--Water-stage recorder and concrete weir. Datum of gage is 339.12 ft above mean sea level (city and county of Honolulu benchmark).

Average discharge.--24 years, 2.11 mgd (3.26 cfs).

Extremes.--Maximum discharge during year, 480 mgd (743 cfs) Jan. 22 (gage height, 5.36 ft), from rating curve extended above 71 mgd by test on model of station site; no flow for most of year.

1926-50: Maximum discharge, 2,960 mgd (4,580 cfs) Nov. 18, 1930 (gage height, 11.58 ft), from rating curve extended above 71 mgd by test on model of station site; no flow at times each year.

Remarks.--Records good. Continuous records of rainfall are obtained at station.

Revisions (fiscal years).--W 935: 1931(M).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

-0.09	0	0.6	2.5	1.2	12.3
.1	.03	.7	3.5	1.4	17.7
.2	.16	.8	4.8	1.6	25
.3	.44	.9	6.4	1.8	34.5
.4	.96	1.0	8.1	2.1	53
.5	1.60	1.1	10.1		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1							0	0.02	0.40	0.03	1.22	0.08
2							0	.01	.10	.02	.75	.35
3							0	.01	.02	.01	.44	.22
4							0	.01	.02	.01	2.05	.07
5							0	0	.01	.01	.96	.02
6							0	0	.01	0	.38	.02
7							14.8	0	.01	0	.27	.01
8							2.4	0	0	0	1.87	.01
9							10.2	0	0	0	1.09	.01
10							7.5	0	0	0	.44	.01
11							17.9	0	0	0	.24	0
12							4.0	0	0	0	.12	0
13							1.48	0	0	.56	4.5	0
14							.41	0	0	6.9	1.45	0
15							.12	0	0	2.2	.65	0
16							.02	0	0	4.5	49	0
17							.02	0	0	5.8	7.4	0
18							.01	0	0	6.2	15.1	0
19							.01	0	0	5.4	4.6	0
20							0	0	0	1.92	2.7	0
21							0	0	0	2.6	4.3	0
22							31	0	0	21	8.8	0
23							28.5	.19	0	18.3	7.9	0
24							5.6	1.18	0	18.2	3.0	0
25							3.0	.08	0	7.2	2.6	0
26							1.48	.02	0	4.7	1.47	0
27							.70	.01	0	5.8	1.09	0
28							.33	1.28	0	6.4	.65	0
29							.11	-	.09	3.65	.41	0
30							.03	-	.30	2.05	.33	0
31							.02	-	.08	-	.22	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0	0	0	0	0	0
August	0	0	0	0	0	0
September	0	0	0	0	0	0
October	0	0	0	0	0	0
November	0	0	0	0	0	0
December	0	0	0	0	0	0
Calendar year 1949	171	0	1.09	1.69	396	1,220
January	31	0	4.18	6.47	130	398
February	1.28	0	.100	.155	2.81	8.6
March	.40	0	.034	.053	1.04	3.2
April	21	0	4.12	6.37	123	379
May	49	.12	4.06	6.28	126	387
June	.35	0	.027	.042	.80	2.5
Fiscal year 1949-50	49	0	1.05	1.62	384	1,180

Peak discharge (base, 150 mgd).--Jan. 7 (6 a.m.) 184 mgd (285 cfs), 3.32 ft; Jan. 22 (5:30 p.m.) 480 mgd (743 cfs), 5.36 ft; May 16 (5:30 p.m.) 370 mgd (572 cfs), 4.55 ft.

Kalihi Stream near Honolulu

Location.--Lat 21°22'00", long. 157°50'45", on right bank at Kioi Pool, 0.4 mile upstream from Catholic Orphanage and 4.1 miles north of Honolulu Post Office.
Drainage area.--2.7 sq mi.
Records available.--September 1913 to June 1950.
Gage.--Water-stage recorder and V-notch weir. Datum of gage is 464.40 ft above mean sea level. Prior to Oct. 12, 1923, water-stage recorder at same site at datum 2.00 ft lower.
Average discharge.--33 years (1916-20, 1921-50), 4.69 mgd (7.26 cfs).
Extremes.--Maximum discharge during year, 1,340 mgd (2,070 cfs) May 16 (gage height, 10.23 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 0.23 mgd (0.36 cfs) Nov. 25.
1913-50: Maximum discharge, 10,900 mgd (16,900 cfs) Nov. 18, 1930 (gage height, 13.81 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 0.06 mgd (0.09 cfs) Oct. 22, 1933.
Remarks.--Records good except those for periods of no gage-height record, which are fair: Water for domestic use diverted from stream above station.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 8		Aug. 9 to June 30			
0.8	0.60	2.0	0.12	2.8	12.7
.9	1.28	2.1	.39	3.0	18.5
1.0	2.2	2.2	1.05	3.5	37.5
1.1	3.5	2.3	2.15	4.0	63
1.2	5.1	2.4	3.75	4.5	95
1.3	6.8	2.6	7.8		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.25	0.84	0.90	0.39	0.36	0.75	1.15	2.55	2.4	1.76	4.9	2.7
2	2.2	.78	.82	.36	.36	.90	.98	2.3	1.88	1.54	4.7	3.05
3	2.6	.91	.75	.36	.32	1.15	.75	2.15	1.65	1.89	4.3	2.85
4	2.6	.66	.75	.36	a.32	.75	.68	2.0	1.54	1.76	5.9	2.4
5	2.0	.78	.82	.36	a.5	a.6	.68	1.88	1.65	1.54	4.1	2.3
6	2.85	.78	.68	.36	.39	a.5	.68	2.9	1.43	2.05	3.55	2.15
7	1.55	.60	.75	.50	.36	a.4	35.5	2.4	1.23	2.4	3.55	2.15
8	1.91	.72	.90	.39	.36	a.6	6.8	2.0	1.23	1.88	7.3	2.55
9	1.73	1.93	.75	.44	.32	a.39	18.9	1.76	1.33	1.54	4.5	2.0
10	1.28	1.40	.68	.39	.32	a.39	12.5	1.65	1.43	1.43	3.55	1.88
11	1.37	3.5	.68	.39	.32	.39	22	1.54	1.54	2.45	3.2	1.76
12	1.37	1.33	.68	.36	.50	.44	6.5	1.54	1.15	1.88	3.05	1.88
13	2.45	.98	.68	.32	.36	.75	4.3	1.76	1.43	5.9	7.2	1.65
14	1.28	.82	.61	.36	.39	.55	3.2	1.54	1.15	14.4	3.95	1.54
15	6.2	.75	.82	.36	.44	.39	2.7	1.65	1.05	5.7	4.3	1.54
16	2.0	.75	.61	.61	.39	.39	2.4	1.54	1.05	5.8	86	1.54
17	1.21	.90	.68	.39	.32	.39	2.15	1.43	1.05	9.9	12.5	1.43
18	.78	2.05	.61	.39	.36	1.77	1.88	1.33	.98	8.1	33	1.43
19	.66	1.43	.55	.39	.32	1.05	1.88	1.43	.90	10.3	8.7	1.43
20	.66	1.15	.61	.39	.32	.68	1.65	2.5	1.43	5.1	6.5	1.43
21	.78	1.23	.50	.36	.28	.50	1.76	1.88	4.2	7.2	7.2	1.43
22	.72	2.2	.50	.39	.28	.44	48	1.65	3.2	38.5	6.7	1.33
23	.97	2.55	.50	.32	.25	.39	38.5	4.3	1.88	25.5	6.6	1.54
24	1.21	1.76	.50	.32	.32	.39	10.1	4.7	3.0	33	4.9	1.43
25	1.39	1.43	.50	.32	.28	.36	6.8	2.55	1.65	10.6	4.3	3.2
26	.84	1.15	.50	.32	.25	.44	5.3	2.0	1.43	7.4	4.3	1.54
27	1.65	1.79	.44	.32	.44	.98	4.3	1.65	1.88	12.1	3.75	1.43
28	.84	1.23	.44	.36	4.5	7.5	3.95	5.3	2.85	11.5	3.35	1.33
29	.95	1.05	.39	.36	1.43	1.88	3.35	-	4.7	7.0	3.2	1.23
30	1.73	1.15	.39	.32	1.05	2.15	3.2	-	2.7	5.5	3.2	1.15
31	1.13	.98	-	.32	-	1.65	2.7	-	2.15	-	2.7	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.2	0.66	1.68	2.60	52.2	160
August	3.5	.60	1.28	1.98	39.6	121
September	.90	.39	.633	.979	19.0	58
October	.61	.32	.374	.579	11.6	36
November	4.5	.25	.547	.846	16.4	50
December	7.5	.36	.965	1.49	29.9	92
Calendar year 1949	181	.25	2.83	4.38	1,030	3,170
January	48	.68	8.23	12.7	255	783
February	5.3	1.33	2.21	3.42	61.9	190
March	4.7	.90	1.84	2.85	57.1	175
April	38.5	1.43	8.19	12.7	246	754
May	86	2.7	8.55	13.2	265	813
June	3.2	1.15	1.84	2.85	55.3	170
Fiscal year 1949-50	86	.25	3.04	4.70	1,110	3,400

Peak discharge (base, 400 mgd).--Jan. 22 (5 p.m.) 575 mgd (890 cfs), 7.87 ft; May 16 (6 p.m.) 1,340 mgd (2,070 cfs), 10.23 ft.
a No gage-height record; discharge estimated on basis of records for Nuuanu Stream below reservoir 2 wasteway, near Honolulu.

Nuuanu Stream below reservoir 2 wasteway, near Honolulu

Location.--Lat 21°20'55", long. 157°49'40", on right bank near Pali Road in upper Nuuanu Valley, 0.2 mile downstream from reservoir 2 wasteway and 3.5 miles northeast of Honolulu Post Office.
Drainage area.--3.4 sq mi.
Records available.--October 1913 to June 1950.
Gage.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level. Prior to Sept. 6, 1915, staff gage at same site at datum 0.03 ft lower. Sept. 7, 1915, to Apr. 4, 1918, staff gage at same site and datum.
Average discharge.--31 years (1917-20, 1922-50), 4.99 mgd (7.72 cfs).
Extremes.--Maximum discharge during year, 277 mgd (429 cfs) May 16 (gage height, 4.52 ft); minimum, 0.28 mgd (0.43 cfs) Nov. 23, 24.
1913-50: Maximum discharge, 4,520 mgd (6,990 cfs) Jan. 16, 1921 (gage height, 8.74 ft, from floodmarks), from rating curve extended above 300 mgd by test on model of station site; minimum, 0.06 mgd (0.09 cfs) Sept. 10, 11, 1925.
Remarks.--Records good. Reservoirs 2, 3, and 4 (capacities, 21, 34, and 1,630 acre-ft, respectively) regulate flow only when cleaning reservoirs. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.
Revisions (fiscal years).--W 985: 1921-35(M).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 24 to Nov. 4, Nov. 12-14, May 16 to June 8)

0.2	0.30	0.6	1.65	1.0	3.65	1.5	14.9
.3	.60	.7	2.1	1.1	4.6	1.7	23
.4	.90	.8	2.6	1.2	6.5	1.9	32.5
.5	1.25	.9	3.1	1.3	8.8	2.1	43

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.41	0.97	0.87	0.60	0.51	0.69	1.08	1.96	2.2	1.57	6.1	3.2
2	1.25	.94	.84	.57	.51	.63	1.47	1.92	1.92	1.41	5.2	3.7
3	1.87	1.25	.81	.57	.45	.66	1.13	1.83	1.88	1.81	4.8	3.5
4	2.15	.94	.84	.57	.56	.45	1.19	1.74	1.78	1.82	5.7	3.0
5	1.74	.90	.84	.54	1.16	.36	.90	1.70	1.94	1.74	4.8	3.0
6	1.83	.97	.81	.57	.51	.39	.94	2.1	1.74	1.88	4.4	3.2
7	1.25	.90	1.00	.81	.45	.42	20	1.83	1.65	2.75	4.5	3.5
8	1.49	.94	.90	.63	.39	1.21	4.1	1.70	1.61	1.88	7.0	3.7
9	1.33	1.22	.84	.72	.42	.74	11.8	1.57	1.74	1.65	4.4	3.0
10	1.08	2.0	.81	.66	.42	.60	6.1	1.53	1.65	1.57	4.0	3.15
11	1.14	3.85	.78	.60	.51	1.31	10.6	1.49	1.78	2.1	3.85	3.15
12	1.20	1.09	.81	.57	.78	.86	3.4	1.49	1.53	1.78	3.45	3.1
13	3.7	1.04	.81	.54	.54	.95	2.45	1.78	1.74	4.4	5.5	3.0
14	1.25	.94	.84	.63	.38	1.09	2.15	1.49	1.49	8.6	3.75	3.0
15	11.8	.94	.84	.60	.55	.90	2.05	1.41	1.41	4.3	3.85	3.0
16	2.05	.94	.87	.90	.42	.63	1.92	1.37	1.41	5.0	27.5	2.85
17	1.45	1.24	.81	.66	.36	.54	1.83	1.33	1.49	7.8	5.7	2.8
18	1.08	2.0	.75	.57	.42	2.45	1.74	1.22	1.41	6.2	17.9	2.75
19	.90	1.25	.78	.84	.42	.94	1.70	1.20	1.37	9.3	4.5	2.7
20	1.00	1.11	.87	.60	.39	.69	1.65	2.85	1.96	4.8	4.0	2.75
21	1.14	1.25	.81	.51	.36	.60	1.70	1.65	4.8	7.7	5.8	2.7
22	1.08	2.3	.84	.54	.33	.57	25.5	1.41	3.3	43	9.8	2.7
23	1.14	2.4	.81	.54	.30	.51	18.6	16.9	1.53	23.5	8.6	2.7
24	1.14	1.33	.69	.57	.39	.48	7.0	5.6	2.85	42	4.5	2.75
25	1.45	1.08	.78	.60	.30	.48	5.7	2.6	1.53	11.8	4.3	3.6
26	1.08	1.00	.78	.60	.33	.78	4.9	2.25	1.45	8.3	4.3	2.6
27	1.73	1.66	.81	.63	.61	2.6	3.0	1.92	1.53	11.8	3.7	2.55
28	1.22	1.08	.72	.98	2.55	7.4	2.55	6.0	3.1	11.1	3.7	2.5
29	1.25	.97	.66	.54	1.39	2.7	2.45	-	3.35	7.2	3.5	2.5
30	1.79	.94	.60	.48	1.21	2.45	2.2	-	1.78	6.1	3.5	2.45
31	1.11	.87	-	.45	-	1.54	2.05	-	1.53	-	3.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	11.8	0.90	1.78	2.75	55.1	169
August	3.85	.87	1.30	2.01	40.3	124
September	1.00	.60	.807	1.25	24.2	74
October	.98	.45	.619	.958	19.2	59
November	2.55	.30	.597	.924	17.9	55
December	7.4	.36	1.18	1.83	36.6	112
Calendar year 1949	155	.30	3.33	5.15	1,220	3,730
January	25.5	.90	4.96	7.67	154	472
February	16.9	1.20	2.57	3.98	71.8	220
March	4.8	1.37	1.95	3.02	60.4	186
April	43	1.41	8.16	12.6	245	751
May	27.5	3.2	5.99	9.27	186	570
June	3.7	2.45	2.97	4.60	89.1	273
Fiscal year 1949-50	43	.30	2.74	4.24	1,000	3,060

Peak discharge (base, 150 mgd).--Apr. 22 (5 p.m.) 195 mgd (302 cfs), 4.01 ft; Apr. 24 (11 a.m.) 185 mgd (286 cfs), 3.86 ft; May 16 (5:30 p.m.) 277 mgd (429 cfs), 4.52 ft.

East Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long. 157°48'10", on right bank just downstream from highway bridge, 400 ft upstream from confluence with West Branch and 4 miles northeast of Honolulu Post Office.
Drainage area.--1.0 sq mi.
Records available.--May 1913 to January 1921, August 1925 to June 1950.
Gage.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft above mean sea level (Honolulu Board of Water Supply benchmark). Prior to May 20, 1914, staff gage at site 200 ft upstream at different datum. May 20, 1914, to Jan. 16, 1921, water-stage recorder at present site at different datum. Aug. 18, 1925, to Oct. 18, 1933, water-stage recorder at present site at datum 0.41 ft higher.
Average discharge.--31 years (1913-20, 1926-50), 3.09 mgd (4.78 cfs).
Extremes.--Maximum discharge during year, 214 mgd (331 cfs) Apr. 22 (gage height, 3.32 ft), from rating curve extended above 21 mgd by test on model of station site; minimum, 0.87 mgd (1.35 cfs) Dec. 25.
1913-21, 1925-50: Maximum gage height, 10.4 ft Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,000 mgd or 3,090 cfs, estimated from rating curve extended above 37 mgd); minimum discharge, 0.4 mgd (0.6 cfs) June 7, 8, 1926.
Remarks.--Records good. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnels in drainage area.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 7-10, Apr. 23-25)

July 1 to Jan. 10				Jan. 11 to June 30			
0.2	0.56	0.7	4.5	0.3	0.98	1.0	7.1
.3	1.08	.8	5.7	.4	1.57	1.2	9.9
.4	1.75	.9	7.3	.5	2.3	1.4	14.4
.5	2.55	1.1	11.4	.6	3.1	1.7	27.5
.6	3.5	1.3	16.8	.8	5.0	2.0	45

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.2	1.68	1.35	0.98	1.03	1.42	1.08	1.39	1.64	2.1	2.75	2.15
2	1.83	1.91	1.35	.98	1.03	1.35	1.41	1.33	1.39	1.71	2.75	3.9
3	2.6	2.25	1.28	.98	1.08	1.42	1.22	1.33	1.33	2.55	3.0	2.85
4	3.05	1.68	1.50	.98	1.24	1.21	1.12	1.33	1.28	1.92	4.8	2.35
5	2.55	1.68	1.35	1.03	2.95	1.08	1.08	1.22	1.28	3.0	2.5	2.05
6	3.05	1.68	1.28	1.03	1.08	1.03	1.15	1.45	1.22	2.8	2.3	2.0
7	2.45	1.55	1.50	1.21	1.03	1.03	10.4	1.39	1.16	3.5	2.6	1.85
8	4.5	1.75	1.48	1.08	1.03	1.37	2.25	1.16	1.16	2.45	3.1	2.5
9	2.8	1.75	1.28	1.03	1.03	1.21	7.5	1.04	1.28	2.3	2.35	1.85
10	2.05	5.5	1.28	.92	.98	1.08	4.2	.98	1.28	1.85	2.3	1.78
11	2.8	7.9	1.21	.92	.98	2.4	5.8	.98	1.61	4.5	2.65	1.92
12	2.7	2.25	1.21	.92	1.52	1.42	2.0	1.10	1.16	2.45	2.15	1.78
13	3.15	1.91	1.21	.92	1.03	1.42	1.64	2.05	1.33	4.4	3.0	1.71
14	2.4	1.75	1.21	1.03	1.03	1.28	1.45	1.28	1.16	10.1	2.15	1.64
15	15.8	1.92	1.21	.98	1.03	1.15	1.28	1.33	1.10	4.8	2.35	1.64
16	3.2	1.80	1.15	1.46	1.03	1.08	1.22	1.22	1.10	3.75	7.2	1.57
17	2.4	2.3	1.21	1.08	.98	1.08	1.16	1.60	1.22	5.3	2.85	1.57
18	2.15	3.6	1.15	1.49	1.42	3.2	1.10	1.22	1.10	4.0	10.9	1.57
19	1.91	2.25	1.15	2.05	1.42	1.28	1.10	1.16	1.10	8.2	3.2	1.57
20	1.75	2.1	1.15	1.08	1.21	1.08	1.10	2.15	2.85	2.5	3.35	1.57
21	1.75	2.25	1.08	.98	1.08	1.03	1.10	1.39	8.0	3.9	4.3	1.57
22	1.68	2.8	1.15	1.03	1.03	.98	13.5	1.22	3.95	29	13.1	1.57
23	1.68	3.7	1.08	.98	1.03	.92	8.6	14.8	1.78	13.0	9.3	1.94
24	2.0	2.5	1.03	.98	1.21	.92	2.8	5.2	1.97	16.4	3.35	1.88
25	2.15	2.05	1.21	.92	.98	.92	2.05	2.15	1.51	5.2	2.95	4.8
26	1.62	1.75	1.15	.92	1.08	1.21	1.78	1.57	1.45	4.6	3.6	1.78
27	2.45	2.1	1.08	.98	3.9	2.95	1.57	1.39	1.85	11.3	2.75	1.71
28	1.62	1.55	1.03	1.41	3.6	7.3	2.1	7.2	3.8	6.0	2.8	1.57
29	4.0	1.48	1.03	.98	3.45	1.55	1.78	-	3.65	3.7	2.45	1.64
30	2.95	1.55	.98	.98	2.65	1.88	1.64	-	1.92	3.1	2.75	1.57
31	1.91	1.42	-	.98	-	1.35	1.57	-	1.92	-	2.15	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.8	1.62	2.88	4.46	89.2	274
August	7.9	1.42	2.33	3.61	72.4	222
September	1.50	.98	1.21	1.87	36.3	111
October	2.05	.92	1.07	1.66	33.3	102
November	3.9	.98	1.47	2.27	44.1	135
December	7.3	.92	1.57	2.43	48.6	149
Calendar year 1949	84	.92	2.56	3.96	934	2,870
January	13.5	1.08	2.83	4.38	87.8	269
February	14.8	.98	2.20	3.40	61.6	189
March	8.0	1.10	1.89	2.92	58.6	180
April	29	1.71	5.68	8.79	170	523
May	13.1	2.15	3.79	5.86	118	361
June	4.8	1.57	1.99	3.08	59.6	183
Fiscal year 1949-50	29	.92	2.41	3.73	880	2,700

Peak discharge (base, 120 mgd).--Jan. 7 (5 a.m.) 157 mgd (243 cfs), 3.00 ft; Jan. 22 (4:30 p.m.) 127 mgd (196 cfs), 2.82 ft; Apr. 22 (11 p.m.) 214 mgd (331 cfs), 3.32 ft; May 16 (3:30 p.m.) 157 mgd (243 cfs), 2.97 ft; May 22 (9 p.m.) 134 mgd (207 cfs), 2.87 ft.

West Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long. 157°48'15", on left bank 100 ft upstream from lower highway and 4.2 miles northeast of Honolulu Post Office.
Drainage area.--1.1 sq mi.
Records available.--May 1913 to June 1950.
Gage.--Water-stage recorder and combination Parshall flume and V-notch weir. Datum of gage is 290.84 ft above mean sea level (Honolulu Board of Water Supply benchmark). Prior to June 17, 1914, staff gage at same site at different datum. June 17, 1914, to Jan. 16, 1921, water-stage recorder at site 150 ft upstream at different datum. Aug. 4, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 3.40 ft lower.
Average discharge.--31 years (1913-20, 1926-50), 2.58 mgd (3.99 cfs).
Extremes.--Maximum discharge during year, 280 mgd (433 cfs) Apr. 22 (gage height, 3.47 ft), from rating curve extended above 33 mgd by test on model of station site; minimum, 0.18 mgd (0.28 cfs) Oct. 27, 28, 31, Nov. 1-3, 11.
1913-21, 1925-50: Maximum gage height, 10.4 ft, Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,100 mgd or 3,250 cfs, estimated from rating curve extended above 40 mgd); minimum discharge, about 0.05 mgd (0.08 cfs) Mar. 16, 22, 1926.
Remarks.--Records good. Small quantity of water is diverted occasionally for irrigation.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Mar. 5-7)

0	0	0.6	3.5
.1	.25	.8	6.5
.2	.62	1.0	11.4
.3	1.11	1.2	18.7
.4	1.78	1.5	34
.5	2.6	1.6	40

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.10	0.67	0.67	0.22	0.22	0.86	0.96	0.82	2.5	1.63	2.5	1.32
2	.77	.72	.58	.22	.20	.72	1.32	.77	1.78	1.01	2.6	2.3
3	1.78	1.26	.55	.22	.20	.77	1.08	.72	1.31	2.1	3.2	1.11
4	2.25	.58	.62	.22	.32	.51	.84	.62	.96	1.34	6.2	1.01
5	1.71	.55	.55	.22	1.66	.44	.67	.58	1.00	2.5	2.4	.86
6	2.8	.67	.51	.22	.32	.36	.67	.83	.96	2.5	1.86	.77
7	1.71	.51	.74	.36	.25	.32	10.9	.86	.74	5.8	2.65	.77
8	2.25	.67	.67	.29	.25	.99	2.95	.86	.58	2.5	4.8	1.86
9	1.74	.80	.55	.36	.20	.51	6.0	.72	.62	1.88	2.05	.77
10	1.01	5.4	.51	.29	.20	.40	4.5	.62	.58	1.24	1.71	.67
11	1.33	7.1	.47	.25	.18	3.3	8.1	.77	.80	3.3	1.88	.78
12	1.35	1.38	.44	.22	.37	1.00	2.45	1.38	.55	1.85	1.38	.72
13	2.9	.86	.44	.22	.29	.96	1.58	2.3	.58	5.8	3.35	.60
14	1.38	.62	.44	.25	.32	.77	1.31	.72	.51	9.9	1.70	.58
15	15.6	.72	.40	.25	.44	.62	1.06	.77	.47	4.0	2.6	.55
16	2.95	.72	.36	.86	.36	.51	.96	.65	.44	3.55	9.6	.55
17	1.51	1.74	.44	.36	.32	.44	.86	1.34	.51	4.2	3.5	.55
18	1.06	4.4	.32	.56	.51	2.35	.82	.86	.47	3.15	16.9	.51
19	.91	1.71	.29	1.16	.47	.77	.77	.82	.44	7.7	3.0	.51
20	.82	1.18	.29	.58	.44	.58	.72	2.25	2.35	2.05	3.4	.51
21	.77	1.18	.29	.40	.32	.47	.67	1.27	7.3	3.75	4.8	.55
22	.67	2.3	.29	.36	.29	.44	11.4	.58	5.1	37.5	18.5	.61
23	1.72	3.75	.25	.29	.25	.40	12.6	6.2	1.65	14.5	6.4	1.15
24	1.01	1.71	.25	.25	.36	.36	3.45	3.5	1.96	28	2.9	1.22
25	1.11	1.11	.51	.22	.32	.32	2.10	2.85	1.01	6.5	2.2	6.5
26	.72	.91	.40	.20	.29	.55	1.51	2.25	.86	5.9	3.2	1.11
27	1.86	1.82	.36	.20	1.43	2.95	1.18	1.78	1.15	12.5	2.05	.86
28	.82	.91	.29	.48	1.87	7.3	1.33	4.0	3.55	8.0	1.71	.82
29	1.90	.82	.25	.22	2.3	1.71	1.18	-	2.75	3.9	1.51	.62
30	1.98	.82	.22	.20	2.1	2.2	.96	-	1.44	2.95	1.65	.51
31	.86	.67	-	.18	-	1.38	.91	-	1.18	-	1.11	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.6	0.67	1.95	3.02	60.4	185
August	7.1	.51	1.49	2.31	46.3	142
September	.74	.22	.432	.668	13.0	40
October	1.16	.18	.333	.515	10.3	32
November	2.3	.18	.570	.882	17.1	53
December	7.3	.32	1.14	1.76	35.3	108
Calendar year 1949	74	.18	1.40	2.17	512	1,570
January	12.6	.67	2.77	4.29	85.8	263
February	6.2	.58	1.49	2.31	41.7	128
March	7.3	.44	1.49	2.31	46.1	141
April	37.5	1.01	6.38	9.87	192	588
May	18.5	1.11	3.98	6.16	123	378
June	6.5	.51	1.04	1.61	31.0	95
Fiscal year 1949-50	37.5	.18	1.92	2.97	702	2,150

Peak discharge (base, 130 mgd).--Jan. 7 (5 a.m.) 248 mgd (384 cfs), 3.38 ft; Apr. 22 (10:30 p.m.) 280 mgd (433 cfs), 3.47 ft; Apr. 24 (1 p.m.) 178 mgd (275 cfs), 3.01 ft; May 16 (4 p.m.) 140 mgd (217 cfs), 2.72 ft; May 22 (7 p.m.) 205 mgd (317 cfs), 3.22 ft.

Pukele Stream near Honolulu

Location.--Lat 21°18'35", long. 157°47'30", on right bank 200 ft upstream from bridge on Palolo Belt Road, 0.6 mile upstream from confluence with Waiomao Stream, and 4.8 miles east of Honolulu Post Office.

Drainage area.--1.2 sq mi.

Records available.--April 1912 to September 1913, June 1926 to June 1950.

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 344.78 ft above mean sea level (Honolulu Board of Water Supply benchmark). Apr. 16, 1912, to Sept. 30, 1913, staff gage just above present site at different datum.

Average discharge.--24 years (1926-50), 1.28 mgd (1.98 cfs).

Extremes.--Maximum discharge during year, 174 mgd (269 cfs) Apr. 22 (gage height, 3.97 ft), from rating curve extended above 36 mgd by test on model of station site; minimum daily, 0.15 mgd (0.23 cfs) Dec. 23-26.
1912-13, 1926-50: Maximum discharge, 1,680 mgd (2,600 cfs) Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 14 mgd by test on model of station site; minimum, 0.07 mgd (0.11 cfs) Nov. 15-25, 1945.

Remarks.--Records poor. A 2-inch pipe diverts water from stream above station.

Revisions (fiscal years).--W 835: 1930(M).

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.43	0.60	0.43	0.17	0.18	0.26	0.18	0.77	1.21	0.91	1.45	0.91
2	.43	.56	.43	.17	.18	.23	.20	.72	1.03	.85	1.45	.91
3	.43	.56	.43	.18	.18	.23	.20	.68	.91	1.15	1.45	.85
4	.43	.56	.45	.18	.20	.20	.20	.68	.81	1.15	2.45	.85
5	.40	.56	.43	.19	.30	.20	.20	.64	.72	1.45	1.45	.81
6	.38	.56	.44	.20	.25	.18	.23	.64	.60	1.61	1.39	.81
7	.38	.56	.45	.21	.20	.18	3.35	.56	.56	2.25	1.33	.81
8	.36	.56	.44	.21	.18	.20	.68	.51	.51	2.05	1.27	.77
9	.36	.51	.43	.21	.18	.18	4.3	.43	.47	1.92	1.15	.77
10	.33	.43	.41	.21	.18	.18	1.97	.40	.43	1.84	1.15	.72
11	.30	.70	.38	.20	.17	.18	4.6	.40	.43	2.9	1.15	.68
12	.30	.51	.36	.20	.23	.18	1.33	.40	.40	2.25	1.15	.64
13	.30	.38	.34	.20	.20	.20	1.15	.40	.47	2.35	1.21	.64
14	.33	.38	.32	.22	.20	.18	1.03	.38	.38	3.35	1.15	.64
15	4.4	.40	.31	.23	.20	.17	.91	.38	.38	2.8	1.09	.60
16	1.31	.40	.29	.25	.18	.17	.81	.38	.38	3.55	2.9	.56
17	.81	.43	.27	.23	.18	.17	.77	.38	.36	3.2	1.53	.47
18	.68	.43	.25	.24	.25	.18	.77	.36	.36	2.7	4.8	.47
19	.68	.47	.24	.25	.22	.17	.77	.36	.33	4.2	1.33	.43
20	.68	.51	.23	.20	.20	.16	.77	.41	.35	1.61	1.21	.43
21	.68	.56	.22	.20	.19	.16	.72	.36	2.15	2.7	2.0	.43
22	.68	.56	.21	.18	.18	.16	8.2	.33	1.60	15.1	3.65	.43
23	.68	.56	.21	.18	.18	.15	11.9	5.6	.47	11.1	5.1	.43
24	.68	.56	.20	.18	.20	.15	3.45	2.45	.51	6.3	1.45	.43
25	.68	.56	.24	.18	.19	.15	1.45	1.21	.30	3.85	1.15	.51
26	.64	.56	.21	.18	.18	.15	.77	1.09	.30	3.0	1.15	.43
27	.64	.51	.19	.18	.23	.16	.72	1.03	.30	7.4	1.15	.40
28	.64	.51	.19	.18	.26	.54	.97	2.65	2.25	5.1	1.09	.40
29	.60	.51	.18	.18	.28	.20	.91	-	2.7	2.5	1.03	.40
30	.68	.47	.18	.18	.26	.18	.77	-	1.33	1.76	1.03	.38
31	.64	.43	-	.18	-	.18	.77	-	.97	-	.97	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.4	0.30	0.676	1.05	21.0	64
August	.70	.38	.512	.792	15.9	49
September	.45	.18	.312	.483	9.36	29
October	.25	.17	.198	.306	6.15	19
November	.30	.17	.207	.320	6.21	19
December	.54	.15	.193	.299	5.98	18
Calendar year 1949	81	.15	.968	1.50	353	1,080
January	11.9	.18	1.78	2.75	55.0	169
February	5.6	.33	.879	1.36	24.6	75
March	2.7	.30	.773	1.20	24.0	74
April	15.1	.85	3.43	5.31	103	316
May	5.1	.97	1.67	2.58	51.8	159
June	.91	.38	.600	.928	18.0	55
Fiscal year 1950	15.1	.15	.934	1.45	341	1,050

Peak discharge (base, 90 mgd).--Apr. 22 (10 p.m.) 174 mgd (269 cfs), 3.97 ft.
Note.--No gage-height record Sept. 4 to Oct. 19, Oct. 29 to Nov. 11, Nov. 18-26, Dec. 8, 23-26; discharge estimated on basis of records for nearby streams.

Waiomao Stream above Pukele Stream, near Honolulu

Location.--Lat 21°18'30", long. 157°47'10", on left bank 300 ft west of road, 1 mile upstream from confluence with Pukele Stream, and 5 miles east of Honolulu Post Office.
Drainage area.--1.0 sq mi.
Records available.--April 1911 to September 1913 (gage heights only), June 1926 to June 1950.
Gage.--Water-stage recorder and V-notch weir. Datum of gage is 373.66 ft above mean sea level (Honolulu Board of Water Supply benchmark). Apr. 12, 1911, to Sept. 30, 1913, staff gage at site 0.3 mile downstream at different datum.
Average discharge.--24 years (1926-50), 1.15 mgd (1.78 cfs).
Extremes.--Maximum discharge during year, 90 mgd (139 cfs) Apr. 22 (gage height, 3.49 ft), from rating curve extended above 45 mgd by test on model of station site; no flow on many days.
1911-12, 1926-50: Maximum discharge, 602 mgd (931 cfs) Oct. 15, 1938 (gage height, 5.43 ft), from rating curve extended above 45 mgd by test on model of station site; no flow in extremely dry weather.
Remarks.--Records good except those for periods of no gage-height record, which are poor. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Dec. 31

0.92	0	1.5	1.83
1.0	.01	1.6	2.7
1.1	.10	1.7	3.85
1.2	.30	1.8	5.3
1.3	.63	1.9	7.2
1.4	1.15	2.0	9.4

Jan. 1 to June 30

1.0	0.01	1.7	3.85
1.1	.08	1.8	5.4
1.2	.28	1.9	7.2
1.3	.63	2.0	9.5
1.4	1.13	2.2	15.9
1.5	1.81	2.4	24.5
1.6	2.7		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.33	0.22	0.18	0	0	0.26	0.18	0.34	0.9	0.43	0.81	0.25
2	.28	.22	.12	0	0	.18	.25	.25	.7	.31	.65	.92
3	.28	.24	.09	0	0	.30	.14	.20	.5	.34	.6	.59
4	.48	.20	.17	0	0	.20	.20	.16	.35	.37	2.0	.37
5	.60	.16	.10	0	.49	.10	.12	.14	.25	.49	1.0	.28
6	.49	.12	.07	0	.14	.06	.14	.16	.2	.77	.6	.22
7	.46	.09	.08	0	.08	.05	4.6	.31	.16	.51	.9	.16
8	1.07	.12	.06	0	.05	.04	1.55	.18	.14	.43	1.5	.28
9	.68	.14	.04	0	.02	.12	6.1	.12	.14	.28	.8	.18
10	.28	.99	.03	0	.01	.08	3.35	.08	.18	.22	.45	.14
11	.26	2.4	.01	0	.01	.06	5.9	.06	.53	1.72	.5	.10
12	.47	.52	.01	0	.04	.05	1.56	.06	.18	.81	.6	.12
13	.94	.28	.01	0	.06	.11	.92	.06	.22	.91	.65	.08
14	.33	.24	.01	0	.01	.10	.51	.06	.14	5.8	.37	.07
15	7.3	.32	0	0	.01	.07	.34	.06	.09	3.0	.25	.05
16	1.22	.22	0	0	.01	.05	.22	.06	.07	2.05	4.7	.04
17	.53	.26	0	0	.01	.03	.16	.06	.07	6.6	1.58	.03
18	.33	.71	0	0	.01	.75	.14	.06	.07	3.75	4.7	.02
19	.24	.46	0	0	.14	.36	.10	.06	.05	8.1	1.18	.02
20	.18	.55	0	.05	.16	.18	.08	.06	.42	1.56	.94	.01
21	.22	.76	0	.02	.06	.10	.08	.06	3.2	3.15	1.58	.01
22	.16	.62	0	.01	.03	.06	9.6	.06	1.87	18.4	.86	.01
23	.14	.77	0	.01	.01	.04	15.4	6.0	.63	15.5	3.0	.06
24	.14	.37	0	.01	.01	.02	3.6	1.5	.84	6.2	.81	.07
25	.42	.28	0	.01	.01	.01	1.58	.4	.37	2.75	.51	1.11
26	.24	.26	0	0	.01	.02	.92	.35	.22	1.45	.62	.36
27	.24	.40	0	0	.06	.16	.63	.3	.34	6.8	.63	.16
28	.16	.26	0	0	.99	1.31	1.28	1.5	1.63	4.6	.40	.09
29	.61	.26	0	0	.46	.79	1.82	-	1.59	1.93	.47	.10
30	1.29	.47	0	0	.50	.60	.76	-	.71	1.13	.34	.10
31	.37	.22	-	0	-	.40	.51	-	.43	-	.31	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.3	0.14	0.669	1.04	20.7	64
August	2.4	.09	.424	.656	13.1	40
September	.18	0	.033	.051	.98	3.0
October	.05	0	.004	.006	.11	.3
November	.99	0	.113	.175	3.39	10
December	1.31	.01	.215	.333	6.66	20
Calendar year 1949	59	0	.723	1.12	263	809
January	15.4	.08	2.02	3.13	62.7	193
February	6.0	.06	.454	.702	12.7	39
March	3.2	.05	.555	.859	17.2	53
April	18.4	.22	3.35	5.18	100	308
May	4.7	.25	1.11	1.72	34.3	105
June	1.11	.01	.200	.309	6.00	18
Fiscal year 1949-50	18.4	0	.763	1.18	278	853

Peak discharge (base, 70 mgd).--Apr. 22 (11 p.m.) 90 mgd (139 cfs).
Note.--No gage-height record Feb. 10 to Mar. 6, May 2-12; discharge estimated on basis of recorded range in stage and records for East and West Branches Manoa Stream near Honolulu.

Haiku Stream near Heeia

Location.--Lat 21°24'40", long. 157°49'40", on left bank 1.7 miles west of Kaneohe Post Office and 1.8 miles southwest of Heeia.

Drainage area.--1.0 sq mi.

Records available.--January 1914 to October 1919, July 1939 to June 1950.

Gage.--Water-stage recorder. Prior to Apr. 28, 1914, staff gage and Apr. 29, 1914, to Oct. 25, 1919, water-stage recorder at same site at different datum.

Average discharge.--16 years, 2.26 mgd (3.50 cfs).

Extremes.--Maximum discharge during year, 235 mgd (364 cfs) Jan. 22 (gage height, 3.37 ft), from rating curve extended above 13 mgd by test on model of station site; minimum, 0.62 mgd (0.96 cfs) Sept. 11, 28.
1914-19, 1939-50: Maximum discharge, 952 mgd (1,470 cfs) Jan. 13, 1943 (gage height, 4.99 ft), from rating curve extended above 13 mgd by test on model of station site; minimum, 0.17 mgd (0.26 cfs) Oct. 25, 1946.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Suburban Water System diverts ground water from tunnel in drainage area.

Revisions (fiscal years).--W 935: 1940.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.84	0.88	0.74	0.66	0.66	0.74	0.74	0.93	0.88	0.88	1.13	1.18
2	.84	.88	.70	.66	.66	.78	.74	.93	.88	.88	1.13	1.23
3	.88	.84	.70	.66	.66	.74	.74	.93	.88	.88	1.18	1.18
4	.84	.84	.70	.66	.70	.74	.74	.93	.88	.88	1.18	1.18
5	.84	.84	.70	.66	.70	.74	.74	1.14	.88	.88	1.18	1.13
6	.84	.84	.70	.66	.70	.70	.74	1.18	.88	.88	1.13	1.13
7	.84	.84	.70	.66	.70	.74	a17	1.13	.88	.88	1.13	1.13
8	a.84	.80	.70	.66	.70	.83	a2.0	1.03	.83	.83	1.18	1.13
9	a.84	.80	.70	.66	.70	.78	a4.0	1.03	.88	.83	1.13	1.13
10	a.84	.88	.74	.66	.70	.78	a3.7	.98	.93	.83	1.08	1.08
11	a.84	1.03	.70	.66	.66	.74	a6.0	.98	.93	.88	1.08	1.08
12	a.84	.88	.66	.66	.66	.74	a1.6	.98	.93	.83	1.03	1.08
13	a.84	.84	.66	.66	.66	.74	a1.1	.98	.93	.88	1.13	1.08
14	.88	.80	.66	.70	.66	.70	a1.0	.93	.93	1.03	1.08	1.03
15	1.03	.76	.66	.66	.70	.70	a.94	.93	.88	1.08	1.03	1.03
16	.88	.80	.66	.66	.70	.70	a.90	.93	.88	4.7	21	1.03
17	.84	.76	.66	.66	.70	.74	a.88	.88	.88	3.7	2.8	1.03
18	.80	.92	.70	.66	.74	1.68	a.88	.88	.88	2.4	3.85	1.03
19	.76	.84	.70	.70	.70	.93	a.88	.88	.88	1.76	1.54	.98
20	.76	.80	.70	.66	.78	.74	a.88	.93	.93	1.13	1.28	.98
21	.76	.84	.70	.66	.70	.70	.88	.93	.93	1.07	1.28	1.03
22	.76	.84	.70	.66	.70	.70	17.4	.88	.93	4.2	1.18	.98
23	.80	.84	.70	.70	.70	.70	12.4	.88	.88	4.1	1.18	.98
24	.80	.84	.70	.70	.74	.70	2.75	.88	.88	1.76	1.13	.98
25	.84	.80	.70	.70	.70	.74	1.60	.88	.88	1.47	1.13	.98
26	.84	.80	.66	.70	.70	.78	1.28	.88	.88	1.34	1.13	.98
27	1.02	.80	.66	.74	.70	.78	1.13	.83	.88	1.34	1.13	.98
28	.92	.76	.66	.74	.70	.78	1.03	.93	.88	1.34	1.13	.98
29	.88	.76	.66	.66	.74	.78	1.03	-	.88	1.23	1.13	.98
30	.92	.76	.66	.66	.74	.78	.98	-	.88	1.18	1.13	.98
31	.92	.76	-	.66	-	.74	.98	-	.88	-	1.13	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.03	0.76	0.851	1.32	26.4	81
August	1.03	.76	.828	1.28	25.7	79
September	.74	.66	.688	1.06	20.6	63
October	.74	.66	.673	1.04	20.9	64
November	.78	.66	.699	1.08	21.0	64
December	1.68	.70	.779	1.21	24.2	74
Calendar year 1949	73	.50	1.32	2.04	480	1,480
January	17.4	.74	2.83	4.38	87.7	269
February	1.18	.83	.950	1.47	26.6	82
March	.93	.83	.891	1.38	27.6	85
April	4.7	.83	1.54	2.38	46.1	141
May	21	1.03	1.93	2.99	60.0	184
June	1.23	.98	1.06	1.64	31.7	97
Fiscal year 1949-50	21	.66	1.15	1.78	418	1,280

Peak discharge (base, 100 mgd).--Jan. 22 (4 p.m.) 235 mgd (364 cfs), 3.37 ft; May 16 (4 p.m.) 172 mgd (266 cfs) 3.12 ft.

a No gage-height record; discharge estimated on basis of records for nearby streams.

Iolekaa Stream mauka near Heeia

Location.--Lat 21°25'15", long. 157°49'50", on left bank 0.7 mile upstream from confluence with Haiku Stream, 1.5 miles southwest of Heeia, and 1.8 miles west of Kaneohe Post Office.
Drainage area.--0.3 sq mi.
Records available.--March 1940 to June 1950.
Gage.--Water-stage recorder and concrete control. Datum of gage is 320 ft ± 1.0 ft above mean sea level (transit levels by U. S. Navy).
Average discharge.--9 years (1940-42, 1943-50). 0.334 mgd (0.517 cfs).
Extremes.--Maximum discharge during year, 19.9 mgd (30.8 cfs) May 16 (gage height, 1.67 ft), from rating curve extended above 4.0 mgd as explained below; minimum, 0.18 mgd (0.28 cfs) several days in March and April.
1940-50: Maximum discharge, 69 mgd (107 cfs) Oct. 22, 1941 (gage height, 2.40 ft), from rating curve extended above 4.0 mgd by rating for Columbus-type control and test on model of station site: minimum daily, 0.10 mgd (0.16 cfs) Oct. 31 to Nov. 9, Nov. 24 27, 1946.
Remarks.--Records fair except those for periods of no gage-height record, which are poor.
Revisions (fiscal years).--W 935: 1940.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.18	0.9	1.92
.6	.35	1.0	2.9
.7	.68	1.1	4.2
.8	1.20		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.32	0.30	0.30	0.23	0.23	0.21	0.20	0.22	0.21	0.20	0.26	0.27
2	.32	.30	.30	.23	.21	.23	.20	.22	.21	.18	.26	.28
3	.33	.30	.28	.23	.21	.23	.22	.22	.21	.20	.28	.27
4	.32	.30	.28	.23	.23	.21	.21	.22	.21	.18	.30	.27
5	.32	.30	.28	.23	.21	.21	.21	.28	.21	.20	.26	.25
6	.32	.30	.28	.23	.21	.21	.21	.28	.21	.20	.26	.25
7	.32	.30	.28	.23	.21	.21	2.85	.27	.21	.18	.26	.25
8	.32	.32	.28	.23	.21	.34	.91	.25	.21	.18	.34	.25
9	.32	.32	.26	.23	.21	.23	1.43	.25	.21	.18	.26	.25
10	.32	.38	.26	.23	.21	.21	1.34	.24	.21	.18	.26	.24
11	.32	.51	.26	.23	.21	.21	2.05	.24	.20	.26	.26	.24
12	.32	.30	.26	.23	.21	.21	.52	.24	.20	.20	.25	.24
13	.32	.30	.26	.23	.21	.21	.26	.24	.20	.20	.31	.24
14	.32	.30	.26	.23	.20	.21	.20	.22	.20	.33	.26	.22
15	.41	.30	.25	.23	.21	.21	.20	.22	.20	.25	.26	.22
16	.33	.30	.25	.23	.21	.21	.20	.22	.20	1.37	2.75	.22
17	.32	.30	.25	.23	.21	.26	.20	.21	.20	1.62	.39	.22
18	.30	.41	.25	.23	.21	.86	.20	.21	.20	1.01	.45	.20
19	.30	.30	.25	.23	.21	.26	.20	.21	.20	.74	.33	.20
20	.30	.30	.25	.23	.21	.25	.20	.22	.21	.42	.29	.20
21	.30	.30	.25	.23	.21	.23	.20	.22	.21	.32	.29	.20
22	.30	.30	.25	.23	.20	.21	2.35	.21	.21	1.04	.27	.20
23	.30	.30	.25	.21	.20	.21	2.95	.21	.20	1.63	.27	.20
24	.30	.30	.25	.23	.20	.20	1.0	.21	.20	.68	.25	.20
25	.30	.30	.25	.21	.20	.21	.50	.21	.18	.42	.25	.20
26	.30	.30	.23	.21	.20	.22	.35	.21	.18	.41	.25	.20
27	.49	.30	.23	.23	.21	.21	.28	.21	.20	.33	.25	.20
28	.30	.30	.23	.23	.23	.21	.26	.22	.20	.32	.25	.20
29	.30	.30	.23	.23	.21	.21	.26	-	.20	.28	.25	.21
30	.33	.30	.23	.21	.23	.21	.24	-	.18	.26	.25	.21
31	.30	.30	-	.21	-	.20	.24	-	.20	-	.25	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.49	0.30	0.322	0.498	9.97	31
August	.51	.30	.314	.486	9.74	30
September	.30	.23	.258	.399	7.74	24
October	.23	.21	.227	.351	7.03	22
November	.23	.20	.211	.326	6.32	19
December	.86	.20	.242	.374	7.50	23
Calendar year 1949	4.0	.20	.302	.467	110	340
January	2.95	.20	.666	1.03	20.6	63
February	.28	.21	.228	.353	6.38	20
March	.21	.18	.202	.313	6.27	19
April	1.63	.18	.466	.721	14.0	43
May	2.75	.25	.359	.555	11.1	34
June	.28	.20	.227	.351	6.80	21
Fiscal year 1949-50	2.95	.18	.311	.481	113	349

Peak discharge (base, 15 mgd).--Jan. 22 (5 p.m.) 16.3 mgd (25.2 cfs), 1.58 ft; May 16 (4:30 p.m.) 19.9 mgd (30.8 cfs), 1.67 ft.
Note.--No gage-height record Sept. 16 to Oct. 19, Jan. 24 to Mar. 8, May 18 to June 18; discharge estimated on basis of records for nearby streams.

Kahaluu Stream near Heeia

Location.--Lat 21°26'20", long. 157°51'05", on left bank 40 ft upstream from intake of Libby ditch, 0.5 mile upstream from forest-reserve boundary, and 3.5 miles northwest of Kaneohe.
Drainage area.--0.4 sq mi.
Records available.--October 1935 to June 1950.
Gage.--Water-stage recorder and Parshall flume. Datum of gage is 357.52 ft above mean sea level (levels by Wright, Harvey, & Wright).
Average discharge.--14 years (1936-50), 2.52 mgd (3.90 cfs).
Extremes.--Maximum discharge during year, 65 mgd (101 cfs) May 16 (gage height, 2.98 ft), from rating curve extended above 9 mgd by test on model of station site; minimum, 0.24 mgd (0.37 cfs) Oct. 1.
1935-50: Maximum discharge, 290 mgd (449 cfs) Sept. 27, 1937 (gage height, 5.47 ft, control then in use), from rating curve computed from 11 to 240 mgd by Parshall flume formula and extended above; minimum daily, 0.07 mgd (0.11 cfs) Mar. 19, 1947.
Remarks.--Records good. Suburban Water System diverts ground water from tunnel in drainage area. Continuous records of rainfall are obtained at the station.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Jan. 22				Jan. 23 to June 30			
0.1	0.15	0.5	2.05	0.1	0.14	0.5	2.35
.2	.42	.6	2.85	.2	.42	.7	4.3
.3	.84	.7	3.75	.3	.90	1.0	8.3
.4	1.40						

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.33	0.33	0.33	0.27	0.33	0.33	0.36	0.42	0.46	0.38	0.46	0.38
2	.33	.33	.30	.27	.33	.36	.36	.42	.42	.38	.46	.42
3	.36	.30	.30	.30	.33	.42	.36	.42	.42	.38	.42	.42
4	.36	.30	.30	.27	.33	.36	.36	.42	.42	.38	.46	.42
5	.36	.30	.30	.27	.30	.33	.36	.55	.51	.38	.42	.38
6	.33	.33	.30	.30	.30	.33	.36	.50	.50	.38	.42	.38
7	.33	.33	.30	.33	.30	.30	3.75	.46	.46	.38	.42	.38
8	.36	.30	.30	.33	.30	.33	.69	.46	.42	.38	.42	.38
9	.36	.30	.33	.33	.30	.33	1.53	.42	.46	.38	.42	.38
10	.36	.33	.33	.33	.30	.33	1.14	.42	.46	.38	.42	.38
11	.36	.36	.30	.33	.30	.33	1.48	.42	.50	.77	.42	.38
12	.36	.33	.30	.33	.30	.36	.54	.42	.46	.46	.42	.35
13	.36	.30	.30	.30	.30	.36	.46	.42	.46	.50	.42	.35
14	.36	.30	.30	.33	.30	.33	.42	.42	.42	.90	.46	.35
15	.39	.30	.30	.33	.30	.33	.42	.42	.42	.55	.42	.35
16	.39	.30	.30	.33	.30	.33	.39	.42	.42	1.74	5.7	.35
17	.36	.30	.30	.33	.30	.41	.36	.42	.42	1.03	.48	.35
18	.33	.33	.30	.30	.30	1.06	.36	.42	.42	1.41	.62	.35
19	.33	.33	.33	.33	.30	.42	.36	.42	.42	.73	.35	.32
20	.33	.36	.30	.30	.30	.36	.36	.52	.42	.50	.35	.29
21	.33	.36	.30	.30	.27	.36	.39	.46	.42	.52	.57	.29
22	.30	.39	.33	.30	.27	.36	3.6	.42	.42	1.95	.35	.29
23	.30	.39	.33	.30	.30	.36	2.9	.95	.42	.96	.32	.29
24	.33	.36	.33	.27	.30	.36	.75	.65	.42	.59	.32	.29
25	.36	.36	.33	.27	.27	.36	.55	.46	.42	.46	.32	.32
26	.33	.36	.33	.30	.27	.39	.50	.46	.42	.42	.32	.32
27	.39	.36	.33	.30	.30	.39	.46	.46	.46	.60	.32	.32
28	.30	.36	.30	.27	.33	.39	.46	.57	.46	.69	.35	.32
29	.33	.33	.30	.27	.33	.39	.46	-	.42	.46	.35	.32
30	.33	.33	.30	.27	.33	.39	.46	-	.38	.42	.38	.32
31	.33	.33	-	.30	-	.36	.42	-	.38	-	.38	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.39	0.30	0.345	0.534	10.7	33
August	.39	.30	.332	.514	10.3	32
September	.33	.30	.310	.480	9.30	29
October	.33	.27	.302	.467	9.36	29
November	.33	.27	.303	.469	9.09	28
December	1.06	.30	.381	.589	11.8	36
Calendar year 1949	13.1	.27	.417	.645	152	467
January	3.75	.36	.818	1.27	25.4	78
February	.95	.42	.472	.730	13.2	41
March	.51	.38	.436	.675	13.5	41
April	1.95	.38	.649	1.00	19.5	60
May	5.7	.32	.579	.896	17.9	55
June	.42	.29	.348	.538	10.4	32
Fiscal year 1949-50	5.7	.27	.440	.681	160	492

Peak discharge (base, 30 mgd).--Jan. 7 (4:30 a.m.) 30.5 mgd (47 cfs), 2.07 ft; Jan. 22 (4 p.m.) 49 mgd (76 cfs), 2.62 ft; May 16 (11 a.m.) 65 mgd (101 cfs), 2.98 ft.

Waihee Stream near Heeia

Location.--Lat 21°27'05", long. 157°51'35", on left bank 70 ft upstream from intake of Kihe ditch, 120 ft downstream from forest-reserve boundary, and 4.1 miles northwest of Kaneohe.

Drainage area.--1.1 sq mi.

Records available.--December 1935 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 193 ft (from topographic map).

Average discharge.--14 years (1936-50), 6.37 mgd (9.86 cfs).

Extremes.--Maximum discharge during year, 216 mgd (334 cfs) May 16 (gage height, 4.82 ft), from rating curve extended above 50 mgd by test on model of station site; minimum, 3.6 mgd (5.6 cfs) Dec. 1, 2, 5-7.

1935-50: Maximum discharge, 465 mgd (719 cfs) Feb. 28, 1939 (gage height, 5.47 ft, control then in use), from rating curve computed from 20 to 230 mgd by Parshall flume formula and extended above; minimum, 3.2 mgd (5.0 cfs) Oct. 1, 1946.

Remarks.--Records good except those for periods of no gage-height record, which are fair. A 2-inch pipe line diverts water above station for domestic use.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.9	4.8	4.6	4.2	3.95	3.6	3.85	4.5	5.2	4.8	a5.2	5.7
2	5.1	4.9	4.5	4.2	3.95	3.7	3.85	4.5	5.1	4.8	5.8	5.7
3	5.4	4.9	4.5	4.2	3.85	4.1	3.95	4.4	5.1	4.8	5.8	5.7
4	5.2	4.9	4.5	4.2	3.85	3.7	3.95	4.4	5.1	4.8	5.8	5.7
5	5.1	4.9	4.5	4.2	3.85	3.6	3.95	7.0	5.1	4.8	5.7	5.7
6	5.1	5.2	4.5	4.2	3.85	3.6	4.1	5.8	5.1	4.8	5.7	5.7
7	5.1	5.1	4.5	4.2	3.85	3.6	23	5.7	4.9	4.8	5.5	5.5
8	5.1	5.1	4.5	4.2	3.7	3.85	6.9	5.4	4.8	4.8	5.7	5.5
9	5.1	5.1	4.5	4.2	3.7	3.7	11.2	5.2	4.9	4.6	5.5	5.5
10	5.1	a5.1	4.5	4.2	3.7	3.7	9.1	5.2	5.2	4.6	5.5	5.5
11	5.1	a5.1	4.5	4.2	3.85	3.7	11.5	5.1	5.3	5.8	5.5	5.7
12	5.1	4.8	4.5	4.2	3.85	3.7	6.3	5.1	4.9	5.1	5.4	5.7
13	5.1	4.8	4.5	4.2	3.85	3.7	5.1	5.1	4.9	5.2	5.8	5.7
14	5.1	4.8	4.5	4.2	3.85	3.7	4.6	4.9	4.9	7.6	5.5	5.5
15	5.2	4.8	4.4	4.4	3.85	3.7	4.5	4.9	4.9	6.1	5.5	5.5
16	5.1	4.8	4.4	4.2	3.95	3.7	4.4	4.9	4.9	15.7	24	5.5
17	5.2	4.6	4.4	4.4	3.95	5.8	4.2	4.9	4.9	11.1	8.8	5.5
18	5.1	4.9	4.4	4.2	3.85	9.1	4.1	4.8	4.9	9.1	7.6	5.5
19	5.1	4.8	4.4	4.2	3.85	5.1	4.1	4.8	4.9	7.8	5.8	5.4
20	4.9	4.8	4.4	4.2	3.85	4.4	4.1	5.1	4.9	6.1	5.5	5.2
21	5.1	4.8	4.4	4.2	3.85	4.2	4.1	4.9	5.1	5.6	6.6	5.1
22	5.1	4.8	4.4	4.2	3.85	4.2	15.1	4.8	4.9	8.4	7.7	5.2
23	5.1	4.8	4.4	4.1	3.7	4.1	21	7.4	4.8	9.4	6.6	5.2
24	5.1	4.8	4.4	4.1	3.85	4.1	10.1	6.1	5.3	7.6	6.0	5.1
25	5.2	4.8	4.5	4.1	3.7	4.2	7.2	5.2	4.8	6.1	6.0	5.1
26	5.2	4.8	4.4	4.1	3.85	4.4	6.3	5.1	4.8	5.7	6.0	4.9
27	5.1	4.8	4.4	4.1	4.1	4.2	5.7	5.1	4.8	a5.8	6.0	4.9
28	4.8	4.6	4.4	4.3	4.2	4.2	4.9	6.1	4.8	a6.0	5.8	4.9
29	4.9	4.6	4.4	3.95	3.7	4.1	4.8	-	4.8	a5.6	5.7	5.1
30	5.1	4.6	4.2	3.95	3.85	4.1	4.6	-	4.8	a5.2	5.5	4.9
31	4.9	4.6	-	3.95	-	3.95	4.6	-	4.8	-	5.7	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	5.4	4.8	5.09	7.88	158	484
August	5.2	4.6	4.85	7.50	150	461
September	4.6	4.2	4.45	6.89	133	409
October	4.4	3.95	4.18	6.47	129	397
November	4.2	3.7	3.85	5.96	116	355
December	9.1	3.6	4.18	6.47	130	397
Calendar year 1949	58	3.6	5.43	8.40	1,980	6,080
January	23	3.85	6.94	10.7	215	660
February	7.4	4.4	5.23	8.09	146	449
March	5.3	4.8	4.95	7.66	154	471
April	15.7	4.6	6.42	9.93	193	591
May	24	5.2	6.55	10.1	203	624
June	5.7	4.9	5.39	8.34	162	497
Fiscal year 1949-50	24	3.6	5.17	8.00	1,890	5,800

Peak discharge (base, 90 mgd).--Jan. 7 (3 a.m.) 105 mgd (162 cfs), 3.46 ft; May 16 (5 p.m.) 216 mgd (334 cfs), 4.82 ft.

a No gage-height record; discharge estimated on basis of records for nearby streams.

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MISCELLANEOUS DISCHARGE MEASUREMENTS

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

Miscellaneous discharge measurements on Oahu during fiscal year July 1949 to June 1950

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
1949					
July 14	Makaha tunnel...	Farm land.....	At mouth, in Makaha Valley, near Waianae.	1.16	0.750
14	Makaha mauka ditch.	....do.....	At 4-foot Parshall flume about 2,000 ft below tunnel in Makaha Valley, near Waianae.	.838	.542
13	Tunnel 19.....	Kanewai Stream..	At weir 28, near Waianae.....	1.35	.873
Nov. 2	....do.....	....do.....	....do.....	1.145	.740
1950					
Feb. 1	....do.....	....do.....	....do.....	1.295	.840
Apr. 5	....do.....	....do.....	....do.....	1.345	.866
June 21	....do.....	....do.....	....do.....	1.331	.860
1949					
July 13	Tunnel 2.....	....do.....	At weir 8, near Waianae.....	.523	.338
Nov. 2	....do.....	....do.....	....do.....	.438	.283
1950					
Feb. 1	....do.....	....do.....	....do.....	.515	.333
Apr. 5	....do.....	....do.....	....do.....	.436	.282
June 21	....do.....	....do.....	....do.....	.374	.242
1949					
July 13	Tunnel 6.....	....do.....	At weir 7, near Waianae.....	.226	.146
Nov. 2	....do.....	....do.....	....do.....	.204	.132
1950					
Feb. 1	....do.....	....do.....	....do.....	.243	.157
Apr. 5	....do.....	....do.....	....do.....	.214	.138
June 21	....do.....	....do.....	....do.....	.207	.134
1949					
July 13	Tunnel 6-A.....	....do.....	At weir 20, near Waianae.....	.031	.020
Nov. 2	....do.....	....do.....	....do.....	.020	.013
1950					
Feb. 1	....do.....	....do.....	....do.....	.026	.017
Apr. 5	....do.....	....do.....	....do.....	.022	.014
June 21	....do.....	....do.....	....do.....	.023	.015
1949					
July 13	Tunnel 7.....	....do.....	At weir 21, near Waianae.....	.077	.050
Nov. 2	....do.....	....do.....	....do.....	.082	.053
1950					
Feb. 1	....do.....	....do.....	....do.....	.084	.054
Apr. 5	....do.....	....do.....	....do.....	.063	.041
June 21	....do.....	....do.....	....do.....	.110	.071
1949					
July 13	Tunnel 8.....	....do.....	At weir 22, near Waianae.....	.156	.101
Nov. 2	....do.....	....do.....	....do.....	.144	.093
1950					
Feb. 1	....do.....	....do.....	....do.....	.162	.105
Apr. 5	....do.....	....do.....	....do.....	.169	.109
June 21	....do.....	....do.....	....do.....	.128	.083
1949					
July 13	Tunnel 9.....	....do.....	At weir 23, near Waianae.....	.073	.047
Nov. 2	....do.....	....do.....	....do.....	.060	.039
1950					
Feb. 1	....do.....	....do.....	....do.....	.070	.045
Apr. 5	....do.....	....do.....	....do.....	.066	.043
June 21	....do.....	....do.....	....do.....	.070	.045
1949					
July 13	Kanewai.....	Honua Stream....	Above flume entrance, near Waianae.	2.94	1.90
Nov. 2	....do.....	....do.....	....do.....	2.58	1.67
1950					
Feb. 1	....do.....	....do.....	....do.....	3.26	2.11
Apr. 5	....do.....	....do.....	....do.....	2.92	1.89
June 21	....do.....	....do.....	....do.....	2.46	1.59
1949					
July 13	Coffee House Springs.	Kukaki Stream...	At weir 4, near Waianae.....	.026	.017
Nov. 2	....do.....	....do.....	....do.....	.023	.015
1950					
Feb. 1	....do.....	....do.....	....do.....	.043	.028
Apr. 5	....do.....	....do.....	....do.....	.032	.021
June 21	....do.....	....do.....	....do.....	.023	.015
1949					
July 13	Tunnel 1.....	Kanemimi Stream.	At weir 1-A, near Waianae.....	.025	.016
Nov. 2	....do.....	....do.....	....do.....	.020	.013
1950					
Feb. 1	....do.....	....do.....	....do.....	.043	.028
Apr. 5	....do.....	....do.....	....do.....	.031	.020
June 21	....do.....	....do.....	....do.....	.020	.013
1949					
July 12	Kanemimi.....	Honua Stream....	At weir 3, near Waianae.....	.056	.036
Nov. 2	....do.....	....do.....	....do.....	.043	.028
1950					
Feb. 1	....do.....	....do.....	....do.....	.084	.054
Apr. 5	....do.....	....do.....	....do.....	.060	.039
June 21	....do.....	....do.....	....do.....	.029	.019

MISCELLANEOUS DISCHARGE MEASUREMENTS

Miscellaneous discharge measurements on Oahu during fiscal year July 1949 to June 1950--Continued

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
1949					
July 13	Honua.....	Pacific Ocean...	At weir 2, above flume intake, near Waianae.	0.082	0.053
Nov. 3	....do.....	....do.....	....do.....	.051	.033
1950					
Jan. 31	....do.....	....do.....	....do.....	.184	.119
Apr. 5	....do.....	....do.....	....do.....	.084	.054
June 21	....do.....	....do.....	....do.....	.028	.018
1949					
July 12	Right Branch of West Fork Kalalula.	West Fork Kalalula Stream.	At weir 25, above tunnel 14, near Waianae.	.110	.071
Nov. 1	....do.....	....do.....	....do.....	.102	.066
1950					
Jan. 31	....do.....	....do.....	....do.....	.093	.060
Apr. 4	....do.....	....do.....	....do.....	.099	.064
June 20	....do.....	....do.....	....do.....	.104	.067
1949					
July 12	Tunnel 14.....	Right Branch of West Fork Kalalula Stream.	At weir 24, near Waianae.....	.111	.072
Nov. 2	....do.....	....do.....	....do.....	.099	.064
1950					
Jan. 31	....do.....	....do.....	....do.....	.114	.074
Apr. 4	....do.....	....do.....	....do.....	.105	.068
June 20	....do.....	....do.....	....do.....	.102	.066
1949					
July 12	Right Branch of West Fork Kalalula.	West Fork Kalalula Stream.	At weir 10, near Waianae.....	.246	.159
Nov. 1	....do.....	....do.....	....do.....	.232	.150
1950					
Jan. 31	....do.....	....do.....	....do.....	.223	.144
Apr. 4	....do.....	....do.....	....do.....	.232	.150
June 20	....do.....	....do.....	....do.....	.237	.153
1949					
July 12	Left Branch of West Fork Kalalula.	....do.....	At weir 9, below tunnel 11, near Waianae.	.098	.063
Nov. 1	....do.....	....do.....	....do.....	.019	.012
1950					
Jan. 31	....do.....	....do.....	....do.....	.019	.012
Apr. 4	....do.....	....do.....	....do.....	.014	.009
June 20	....do.....	....do.....	....do.....	.059	.038
1949					
July 12	Tunnel 15.....	....do.....	At weir 13, near Waianae.....	.280	.181
Nov. 1	....do.....	....do.....	....do.....	.299	.193
1950					
Jan. 31	....do.....	....do.....	....do.....	.380	.246
Apr. 4	....do.....	....do.....	....do.....	.297	.192
June 20	....do.....	....do.....	....do.....	.349	.226
1949					
July 12	West Fork Kalalula.	Kalalula Stream.	At weir 14, below tunnel 15, above pipeline diversion, near Waianae.	.728	.471
Nov. 1	....do.....	....do.....	....do.....	.464	.300
1950					
Jan. 31	....do.....	....do.....	....do.....	.592	.383
Apr. 4	....do.....	....do.....	....do.....	.589	.381
June 20	....do.....	....do.....	....do.....	.669	.432
1949					
July 12	East Fork Kalalula.	....do.....	At weir 30, near Waianae.....	.008	.005
Nov. 1	....do.....	....do.....	....do.....		No flow
July 12	Kalalula.....	Honua Stream....	At weir 15, near Waianae.....	.012	.008
Nov. 1	....do.....	....do.....	....do.....	.012	.008
1950					
Jan. 31	....do.....	....do.....	....do.....	.054	.035
Apr. 4	....do.....	....do.....	....do.....	.020	.013
June 20	....do.....	....do.....	....do.....	.014	.009
1949					
July 14	Hiu.....	....do.....	At weir 26, above flume outlet, near Waianae.	.043	.028
Nov. 3	....do.....	....do.....	....do.....	.029	.019
1950					
Feb. 2	....do.....	....do.....	....do.....	.060	.039
Apr. 6	....do.....	....do.....	....do.....	.050	.032
June 22	....do.....	....do.....	....do.....	.045	.029
1949					
July 14	....do.....	....do.....	At weir 17, near Waianae.....	.136	.088
Nov. 3	....do.....	....do.....	....do.....	.043	.028
1950					
Feb. 2	....do.....	....do.....	....do.....	.944	.610
Apr. 6	....do.....	....do.....	....do.....	.280	.181
June 22	....do.....	....do.....	....do.....	.119	.077
1949					
July 14	Kumaipo.....	....do.....	At weir 11, below tunnel 16, near Waianae.	.099	.064

MISCELLANEOUS DISCHARGE MEASUREMENTS

Miscellaneous discharge measurements on Oahu during fiscal year July 1949 to June 1950*-Continued

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
1949					
Nov. 3	Kumaipo.....	Honua Stream....	At weir 11, below tunnel 16, near Waianae.	0.046	0.030
1950					
Feb. 2	....do.....	....do.....	....do.....	.497	.321
Apr. 6	....do.....	....do.....	....do.....	.127	.082
June 22	....do.....	....do.....	....do.....	.093	.060
1949					
July 14	....do.....	....do.....	At weir 12, above diversion flume to Hiu Stream, near Waianae.	.149	.096
Nov. 3	....do.....	....do.....	....do.....	.045	.029
1950					
Feb. 2	....do.....	....do.....	....do.....	.832	.538
Apr. 6	....do.....	....do.....	....do.....	.272	.176
June 22	....do.....	....do.....	....do.....	.111	.072
1949					
July 14	Punanaula.....	....do.....	At weir 16, below tunnel 17, near Waianae.	.029	.019
Nov. 3	....do.....	....do.....	....do.....	.029	.019
1950					
Feb. 2	....do.....	....do.....	....do.....	.036	.023
Apr. 6	....do.....	....do.....	....do.....	.031	.020
June 22	....do.....	....do.....	....do.....	.028	.018
1949					
July 12	City and county of Honolulu.	....do.....	At 9-inch Parshall flume just below mouth of tunnel, near Waianae.	.669	.432
Nov. 1	....do.....	....do.....	....do.....	.671	.434
1950					
Feb. 2	....do.....	....do.....	....do.....	.697	.450
Apr. 6	....do.....	....do.....	....do.....	.698	.451
June 20	....do.....	....do.....	....do.....	2.02	1.31
1949					
July 12	Honua Stream diversion ditch.	Puea mauka ditch	At weir just above Puea powerhouse, near Waianae.	.560	.362
Nov. 1	....do.....	....do.....	....do.....	.501	.324
1950					
June 20	....do.....	....do.....	....do.....	1.82	1.18
1949					
July 14	Puea mauka ditch	Farm land.....	At 2-foot Parshall flume below powerplant, near Waianae.	2.32	1.50
Nov. 3	....do.....	....do.....	....do.....	1.78	1.15
1950					
Apr. 6	....do.....	....do.....	....do.....	1.92	1.24
June 22	....do.....	....do.....	....do.....	2.60	1.68
1949					
July 26	Wahiawa Reservoir ditch.	Canefields.....	Below Wahiawa Reservoir, near Wahiawa.	26.6	17.2
26	....do.....	....do.....	....do.....	28.5	18.4
Sept. 8	....do.....	....do.....	....do.....	72.1	46.6
8	....do.....	....do.....	....do.....	56.9	36.8
8	....do.....	....do.....	....do.....	41.9	27.1
8	....do.....	....do.....	....do.....	27.6	17.8
8	....do.....	....do.....	....do.....	14.7	9.50
1948					
Oct. 19	Waiahole tunnel.	....do.....	At Waianu, near Waiahole.....	36.1	23.3
19	....do.....	....do.....	....do.....	35.3	22.8
1950					
May 16	....do.....	....do.....	....do.....	84.3	54.5
1948					
Oct. 18	....do.....	....do.....	At North Portal, near Waiahole..	39.5	25.5
Nov. 18	....do.....	....do.....	....do.....	42.1	27.2
1949					
June 16	....do.....	....do.....	....do.....	43.3	28.0
1950					
Jan. 7	....do.....	....do.....	....do.....	2.87	1.85
19	....do.....	....do.....	....do.....	2.02	1.31
20	....do.....	....do.....	....do.....	1.42	.918
26	....do.....	....do.....	....do.....	17.3	11.2
26	....do.....	....do.....	....do.....	16.8	10.9
May 16	....do.....	....do.....	....do.....	66.7	43.1
Apr. 13	....do.....	....do.....	At South Portal of Waiahole tunnel, near Waipahu.	73.6	47.6
June 29	Pearl Harbor Springs leakage.	Pacific Ocean...	At Puukapu gaging station, near Pearl City.	.564	.365

* Includes discharge measurements made in the fiscal year July 1948 to June 1949.

Halawa Stream near Halawa

Location.--Lat 21°09'30", long. 156°46'00", on right bank 500 ft downstream from confluence of two main branches, 1.8 miles west of Halawa, and 6 miles northeast of Pukoo.

Drainage area.--4.5 sq mi.

Records available.--August 1917 to July 1932, November 1937 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 200 ft (from topographic map). Prior to June 24, 1923, water-stage recorder at site 250 ft upstream at different datum.

Average discharge.--26 years (1918-32, 1938-50), 19.1 mgd (29.6 cfs).

Extremes.--Maximum discharge during year, 1,110 mgd (1,720 cfs) Apr. 17 (gage height, 7.22 ft), from rating curve extended above 20 mgd by logarithmic plotting; minimum, 1.42 mgd (2.20 cfs) Feb. 17.
1917-32, 1937-50: Maximum discharge, 4,010 mgd (6,200 cfs) Apr. 2, 1948 (gage height, 12.30 ft), from rating curve extended above 100 mgd by logarithmic plotting; minimum, 0.8 mgd (1.2 cfs) Oct. 13-15, 19, 1917.

Remarks.--Records poor. A 2-inch pipeline diverts water about a quarter of a mile above station for domestic use of Halawa village.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.4	13.3	6.3	3.5	18.2	12.2	5.3	5.2	8.3	10.8	17.5	6.5
2	11.3	12.2	5.3	3.0	10.3	18.5	10.9	5.8	7.1	5.6	16.3	11.6
3	12.1	11.5	4.9	2.9	8.5	16.9	7.1	5.4	6.2	7.1	20	9.1
4	8.0	10.4	4.4	2.5	6.8	11.7	13.1	4.4	5.4	4.2	18.7	12.3
5	5.6	9.5	4.4	2.2	11.9	8.5	20.5	3.75	4.5	7.1	16.3	6.2
6	28.5	9.5	4.4	2.2	7.2	6.5	8.2	3.4	7.1	8.8	18.3	4.9
7	13.8	7.7	4.4	4.8	9.4	7.7	6.7	3.4	4.0	10.2	15.3	4.4
8	52	29	4.4	3.9	6.1	33	5.8	5.7	3.75	8.8	29	8.3
9	22	23.5	4.4	7.6	4.5	11.7	23	3.85	3.65	9.1	16.3	6.6
10	5.7	62	4.4	6.0	3.5	9.4	12.2	2.35	55	5.1	16.3	5.9
11	30	59	4.4	3.6	3.0	19.6	52	2.05	15.4	30.5	17.5	13.6
12	22	14.8	4.4	4.5	15.4	11.8	12.6	1.88	7.6	7.8	15.2	7.4
13	28	11.1	4.3	4.1	11.3	14.8	9.4	3.25	12.6	22	22.5	4.7
14	7.4	10.8	4.5	3.9	8.6	10.8	7.6	2.35	6.1	34	15.2	4.1
15	71	10.8	4.7	3.7	8.6	9.3	6.1	2.9	4.9	24	15.2	6.5
16	58	9.2	5.1	26	7.8	9.1	5.4	2.3	4.3	37	17.9	4.7
17	8.8	11.6	5.7	4.6	9.8	36	4.9	5.8	4.1	87	17.5	4.2
18	5.7	72	8.4	5.0	9.4	22	4.4	43	4.3	51	39	3.8
19	4.2	21.5	5.9	6.8	10.5	15.7	3.9	10.2	4.1	27	11.1	3.6
20	3.1	35.5	9.0	6.7	9.0	11.2	3.65	17.4	7.6	21.5	12.7	5.2
21	3.3	24.5	7.2	4.2	5.8	9.1	4.3	14.2	20	19.2	20	4.6
22	2.5	28	15	5.4	4.5	7.8	3.4	16.5	11.0	30.5	12.1	4.3
23	6.1	23.5	4.5	6.5	3.6	6.6	52	41	6.3	35	11.9	11.2
24	7.6	15.1	4.4	4.0	3.25	5.9	16.6	15.2	6.9	21	10.3	6.1
25	5.6	12.5	11	3.1	2.35	5.3	6.8	13.5	8.6	19.2	9.5	13.4
26	22.5	10.8	10	3.0	6.1	7.7	5.9	11.3	4.3	19.4	11.2	6.6
27	82	21	12	3.85	22	6.7	6.6	9.7	3.9	33	13.0	4.9
28	20	11.8	5.4	9.5	17.3	14.0	6.2	13.6	7.9	36	9.8	16.8
29	21.5	7.9	3.9	4.5	14.1	11.3	18.4	-	24	21	13.0	12.7
30	32	11.1	3.7	2.7	14.4	16.7	7.0	-	9.6	19.7	7.9	5.9
31	16.4	7.9	-	4.2	-	8.4	5.9	-	7.8	-	6.1	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	82	2.5	20.1	31.1	622	1,910
August	72	7.7	20.0	30.9	619	1,900
September	15	3.7	6.03	9.33	181	555
October	26	2.2	5.11	7.91	158	486
November	22	2.35	9.11	14.1	273	838
December	36	5.3	12.8	19.8	396	1,210
Calendar year 1949	292	2.2	14.5	22.4	5,310	16,280
January	52	3.4	11.5	17.8	356	1,090
February	43	1.88	9.62	14.9	269	827
March	55	3.65	9.24	14.3	286	879
April	87	4.2	22.4	34.7	673	2,060
May	39	6.1	15.9	24.6	493	1,510
June	16.8	3.6	7.34	11.4	220	675
Fiscal year 1949-50	87	1.88	12.5	19.3	4,550	13,940

Peak discharge (base, 950 mgd).--Apr. 17 (1 a.m.) 1,110 mgd (1,720 cfs), 7.22 ft.
Note.--No gage-height record Sept. 20 to Oct. 17; discharge estimated on basis of records for Pulena and Waiakeakua Streams near Wailau.

Pulena Stream near Wailau

Location.--Lat 21°07'40", long. 156°49'50", on left bank 0.5 mile upstream from confluence with Waiakeakua Stream, 3 miles south of Wailau, and 4 miles northwest of Pukoo.
Drainage area.--4.4 sq mi.
Records available.--October 1919 to December 1928, September 1937 to June 1950.
Gage.--Water-stage recorder. Datum of gage is 546 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Dec. 5, 1928, water-stage recorder at site 150 ft upstream at different datum.
Average discharge.--20 years (1920-28, 1938-50), 22.1 mgd (34.2 cfs).
Extremes.--1948-49: Maximum discharge during fiscal year, 1,260 mgd (1,950 cfs) Jan. 17 (gage height, 5.97 ft), from rating curve extended above 220 mgd as explained below; minimum daily, 6.7 mgd (10.4 cfs) May 23.

1949-50: Maximum discharge during fiscal year, 1,220 mgd (1,890 cfs) Jan. 9 (gage height, 5.90 ft), from rating curve extended above 220 mgd as explained below; minimum, 3.55 mgd (5.49 cfs) Oct. 4-6.

1919-28, 1937-50: Maximum discharge, 5,970 mgd (revised), 9,240 cfs Jan. 26, 1948 (gage height, 13.16 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 3.0 mgd (4.6 cfs) June 28, July 14, 1920.

Flood of Jan. 20, 1929, reached a stage of at least 22 ft (approximately 11,000 mgd, 17,000 cfs).

Revisions.--The figures of maximum discharge for fiscal years 1938 to 1948 have been revised as shown in the following table. They supersede those published in the water-supply papers indicated.

Water-Supply Paper	Year ending June 30	Date	Gage height (feet)	Discharge	
				Million gallons a day	Cubic feet per second
865.....	1938	Dec. 24	7.91	2,050	3,170
885.....	1939	Aug. 19	8.25	2,200	3,400
905.....	1940	May 12	6.97	1,740	2,690
935.....	1941	Nov. 20	8.97	2,640	4,080
965.....	1942	Mar. 9	5.48	1,030	1,590
985.....	1943	Mar. 18	11.68	4,730	7,320
1015.....	1944	Mar. 7	5.87	1,220	1,890
1045.....	1945	Apr. 7	7.93	2,050	3,170
1065.....	1946	Nov. 2	7.15	1,800	2,790
1095.....	1947	Dec. 7	11.76	4,810	7,440
1125.....	1948	Jan. 26	13.16	5,970	9,240

Note.--Maximum discharges revised on basis of rating curve extended above 220 mgd by test on model of station site.

Remarks.--Records for 1949 fiscal year are poor; and those for 1950 fiscal year are good except those for period of no gage-height record, which are fair. No diversions.

Discharge, in million gallons a day, 1948-50

1948-49

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.1	16	14	24	22	20.5	34.5	16.1	17.0	25.5	12.6	9.0
2	21.5	15	14	15.5	33	17.7	55	15.8	14.0	17.0	11.1	12.6
3	32	a15	13	15	16.1	14.6	37	15.5	14.0	14.0	10.5	11.0
4	15.8	a14	12	12	12.6	13.7	27.5	15.2	12.6	11.7	10.0	8.7
5	19.2	a14	12	15	10.5	12.6	23	14.9	11.1	26	9.7	8.9
6	14.9	a18	12	11	9.1	24.5	27.5	14.6	11.1	13.4	9.1	8.0
7	15.9	a14	13	11	34	15.0	19.4	14.6	9.7	11.1	9.7	7.7
8	21.5	a13	12	11	33	35.5	35	221	15.5	17.0	8.9	7.5
9	18.8	a13	11	10	16.1	38	37	36	14.0	9.7	8.3	7.6
10	14.0	a12	11	10	15.8	46	56	22	12.6	8.9	8.3	7.3
11	27.5	a15	11	18	14.6	32	70	20.5	12.6	78	8.3	7.6
12	21.5	a13	11	12	23.5	36.5	41	18.8	30	37.5	8.3	8.0
13	14.6	a15	10	11	14.6	56	25.5	22	59	20	15.1	7.3
14	11.4	a14	9.5	10	12.6	51	20.5	20.5	17.0	17.0	9.1	7.1
15	31	a40	10	10	15.5	37	42	18.8	11.7	13.4	8.6	7.0
16	14.0	a25	9.5	9.5	25.5	37	75	18.8	9.4	12.6	8.3	7.0
17	34	a17	10	11	18.4	34	258	17.0	8.9	10.5	8.0	7.0
18	31	a20	11	10	13.1	28	74	15.5	8.6	11.1	7.8	7.1
19	17.0	a15	10	9.5	10.8	21.5	79	14.0	8.6	10.3	7.5	7.0
20	16	a35	9.5	17	11.1	33.5	48	12.6	8.3	8.9	7.8	7.7
21	15	16.4	9.5	13	14.4	75	34.5	11.1	8.3	10.1	7.5	8.0
22	14	24	11	16	22.5	107	28	9.7	17.3	29.5	7.0	8.8
23	14	23	33	13	27	77	25.5	9.7	9.7	39	6.7	10.3
24	15	16.4	12.0	12	24.5	163	20.5	9.4	9.7	55	7.2	7.1
25	14	16	10	20	17.7	61	18.8	9.4	9.1	20.5	11.1	7.0
26	15	15	11	20	24	78	17.0	9.1	10.0	50	8.9	6.9
27	23.5	15	62	22	34.5	52	28.5	24	10.3	33	8.3	7.0
28	17.9	16	68	23	25	79	20.5	20.5	25.5	20.5	24	8.0
29	31	15	31.5	29.5	28	74	17.0	-	30	15.8	12.6	8.8
30	20	15	23.5	27	21	68	16.7	-	50	16.1	8.6	15.0
31	18	15	-	30	-	58	16.4	-	37	-	8.3	-

Peak discharge (base, 1,800 mgd).--No peak above base.
a No gage-height record; discharge estimated on basis of records for nearby streams.
Note.--Gage-height record not representative of stage in stream July 20-26, July 30 to Aug. 2, Aug. 25 to Sept. 22, Sept. 25, 26, Oct. 3-25; discharge estimated on basis of records for nearby streams.

Discharge, in million gallons a day, of Pulena Stream near Wailau, Molokai, 1948-50--Continued

1949-50

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.4	11.1	8.0	4.2	10.0	25	11.1	10.2	14.0	40	30.5	13.0
2	19.5	10.2	7.3	3.85	7.1	29	25	9.9	12.1	24	26.5	13.3
3	13.7	8.8	6.9	3.85	7.1	31	12.1	8.8	11.1	19.7	47	11.1
4	9.9	8.8	7.1	3.7	7.9	20	9.9	8.3	19.9	16.7	26.5	10.8
5	13.3	8.0	6.9	3.7	35	14.3	8.8	7.8	15.2	17.5	24	9.7
6	16.9	8.6	6.9	3.7	12.4	12.1	8.3	7.8	23	20	25	9.1
7	11.1	7.1	6.4	6.4	12.4	11.8	8.8	7.5	11.1	17.8	21.5	8.6
8	27.5	12.0	6.0	4.6	7.3	31.5	8.3	11.1	9.7	17.8	41	20
9	17.8	8.8	6.2	7.0	7.2	13.0	66	7.5	8.8	24.5	23.5	10.5
10	10.5	18.6	6.2	5.6	5.6	11.1	56	6.7	24	14.7	23.5	9.9
11	14.9	38.5	5.6	4.2	5.6	18.5	270	6.7	18.5	21.5	24.5	12.7
12	18.2	14.0	5.4	4.9	49	14.2	52	6.7	12.1	14.9	18.6	9.4
13	25	10.8	5.2	4.6	20.5	18.1	29	18.6	14.5	40	42	8.8
14	19.0	9.9	5.1	4.4	a15	20	20	8.0	10.2	79	23.5	7.5
15	66	8.8	5.4	4.2	a13	14.3	16.0	7.5	8.8	83	22	10.2
16	42	12.1	5.4	12.5	a11	13.6	14.0	6.4	8.3	92	27	8.3
17	19.7	17.4	5.1	6.4	a19	11.4	12.4	9.6	8.6	98	21.5	8.8
18	15.0	42	6.4	7.8	a25	17.3	11.1	82	8.3	55	54	7.8
19	12.1	27.5	4.9	8.8	a16	13.3	9.9	21	7.3	73	28	7.1
20	9.7	36	6.9	6.5	a12	10.5	9.4	23.5	39	40	33.5	10.0
21	10.2	26	5.1	5.1	a9	9.1	10.2	34	104	30	34.5	12.2
22	8.0	29.5	9.4	6.9	a9	8.6	10.6	31	35	58	23	11.7
23	14.2	25	5.8	5.8	a8	7.8	170	50	19.0	117	21.5	21.5
24	12.4	20.5	5.8	5.4	a8	7.3	58	32	23	53	23	13.3
25	15.0	15.7	8.0	4.4	a7	7.3	27	24.5	28	37	21	21
26	20.5	13.0	8.0	4.4	a9	9.4	19.4	17.5	15.7	32.5	27	13.3
27	51	17.2	8.6	5.2	a17	14.2	16.0	14.0	18.8	47	27	11.1
28	15.7	11.8	5.1	7.9	a13	32	14.0	28.5	27	144	21.5	13.0
29	17.1	9.9	4.6	4.6	a25	18.4	19.0	-	161	55	19.7	8.8
30	16.0	10.2	4.2	4.0	a34	21.5	13.3	-	56	39	15.3	7.8
31	15.3	8.6	-	3.85	-	13.0	11.4	-	39	-	13.6	-

Peak discharge, base, 1,800 mgd).--No peak above base.
a No gage-height record; discharge estimated on basis of records for nearby streams.

Monthly discharge, in million gallons a day, 1948-50

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July 1948	34	9.1	19.3	29.9	598	1,840
August	40	12	17.4	26.9	540	1,660
September	68	9.5	16.6	25.7	497	1,530
October	30	9.5	15.4	23.8	478	1,470
November	34.5	9.1	20.0	30.9	600	1,840
December	163	12.6	48.3	74.7	1,500	4,590
Calendar year 1948	2,190	7.0	33.7	52.1	12,330	37,850
January 1949	258	16.4	42.8	66.2	1,330	4,080
February	221	9.1	23.8	36.8	667	2,050
March	59	8.3	16.9	26.1	523	1,600
April	78	8.9	22.1	34.2	663	2,030
May	24	6.7	9.59	14.8	297	912
June	15.0	6.9	8.27	12.9	248	761
Fiscal year 1948-49	258	6.7	21.7	33.6	7,940	24,360
July 1949	66	8.0	19.1	29.6	591	1,810
August	42	7.1	16.3	25.2	506	1,550
September	9.4	4.2	6.26	9.69	188	577
October	12.5	3.7	5.43	8.40	168	517
November	49	5.6	14.6	22.6	437	1,340
December	32	7.3	16.1	24.9	499	1,530
Calendar year 1949	258	3.7	16.8	26.0	6,120	18,760
January 1950	270	8.3	33.1	51.2	1,030	3,150
February	82	6.4	18.1	28.0	507	1,560
March	161	7.3	26.2	40.5	811	2,490
April	144	14.7	47.4	73.3	1,420	4,360
May	54	13.6	26.8	41.5	831	2,550
June	21.5	7.1	11.3	17.5	340	1,040
Fiscal year 1949-50	270	3.7	20.1	31.1	7,330	22,470

Waiakeakua Stream near Wailau

Location.--Lat 21°07'30", long. 156°49'40", on right bank 0.8 mile upstream from confluence with Pulena Stream, 3.2 miles south of Wailau, and 3.8 miles northwest of Pukoo.

Drainage area.--1.4 sq mi.

Records available.--October 1919 to September 1929, September 1937 to June 1950.

Gage.--Water-stage recorder. Datum of gage is 698 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Dec. 6, 1919, at datum 0.17 ft higher.

Average discharge.--21 years (1920-29, 1938-50), 7.50 mgd (11.6 cfs).

Extremes.--Maximum discharge during year, 295 mgd (456 cfs) Jan. 9 (gage height, 4.99 ft), from rating curve extended above 25 mgd by logarithmic plotting; minimum, 1.15 mgd (1.78 cfs) Nov. 1.
1919-29, 1937-50: Maximum discharge, 1,360 mgd (2,100 cfs) Jan. 26, Apr. 2, 1948, from rating curve extended above 170 mgd by logarithmic plotting; maximum gage height, 9.90 ft Jan. 26, 1948; minimum discharge, that of Nov. 1, 1949.

Remarks.--Records fair. No diversions.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.0	4.0	2.3	1.63	1.85	6.0	3.5	2.8	3.8	8.3	6.3	4.9
2	6.2	3.8	2.65	1.52	1.41	9.7	7.2	2.95	3.4	5.2	6.0	5.2
3	4.7	3.5	2.55	1.52	1.63	8.4	3.8	2.7	3.25	5.1	6.7	4.5
4	4.3	3.4	2.4	1.41	2.15	5.4	4.1	2.7	3.1	4.2	6.3	5.1
5	5.6	3.1	2.3	1.30	8.3	4.3	3.25	2.55	3.25	5.2	6.2	4.0
6	9.8	3.5	2.3	1.30	4.3	4.0	2.95	2.55	3.5	7.0	7.5	3.8
7	6.1	2.95	2.2	2.5	4.5	3.8	2.95	2.4	2.8	8.1	7.4	3.65
8	18.8	6.8	2.2	1.63	3.1	16.2	2.95	3.25	2.7	6.8	11.0	5.9
9	8.9	3.8	2.2	2.3	2.8	4.7	13.3	2.55	2.55	5.4	5.8	3.8
10	5.4	10.4	2.2	1.96	2.55	4.2	5.4	2.3	5.7	4.3	5.8	3.65
11	10.0	14.3	2.05	1.74	2.55	10.1	33.5	2.3	6.3	10.6	8.0	6.5
12	9.5	4.9	2.05	1.85	16.1	4.9	6.5	2.3	3.25	5.2	5.6	4.0
13	9.7	4.2	1.96	1.74	4.2	5.9	4.9	2.8	5.5	18.4	12.1	3.5
14	6.6	3.65	2.05	1.63	3.4	4.5	4.3	2.3	3.1	31	6.0	3.4
15	22.5	3.4	1.96	1.63	3.4	4.0	4.0	2.3	2.8	22.5	5.6	4.2
16	14.8	3.25	1.96	6.2	3.1	4.0	3.65	2.2	2.7	33	6.6	3.5
17	6.7	4.5	1.96	2.95	3.8	4.0	3.5	4.0	2.7	22	5.2	3.65
18	5.2	15.2	2.2	3.1	4.3	5.6	3.5	27	2.7	18.8	19.3	3.4
19	4.3	5.6	1.85	3.8	4.2	3.8	3.4	5.6	2.55	16.4	7.5	3.4
20	3.8	9.4	2.3	3.1	3.4	3.4	3.25	6.6	8.3	9.4	10.1	3.8
21	3.8	6.0	2.05	2.7	2.8	3.1	3.4	7.4	18.9	7.1	13.3	3.5
22	3.4	6.0	5.0	3.5	2.55	2.95	2.95	7.9	6.3	16.2	7.1	5.3
23	4.6	5.8	2.3	2.95	2.4	2.8	27.5	23.5	4.2	21.5	8.4	6.2
24	4.0	4.7	2.2	2.7	2.3	2.8	6.7	7.6	4.6	8.6	6.7	4.2
25	3.65	3.8	2.55	2.4	2.2	2.7	4.3	6.0	5.0	7.1	6.0	7.4
26	5.5	3.65	2.2	2.55	3.3	2.95	3.65	4.7	3.5	6.5	7.7	4.3
27	20.5	4.7	2.2	2.7	7.4	3.55	3.5	4.0	3.75	15.1	6.9	3.8
28	4.7	3.4	1.85	4.0	8.4	9.1	3.4	5.4	6.2	23.5	6.7	6.6
29	6.6	3.1	1.74	1.96	7.3	5.0	4.3	-	37	9.9	6.0	4.2
30	5.4	3.2	1.74	1.74	7.4	8.0	3.4	-	9.4	7.4	5.1	3.5
31	4.7	2.95	-	1.41	-	4.2	2.95	-	7.1	-	4.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	22.5	3.4	7.54	11.7	234	717
August	15.2	2.95	5.19	8.03	161	494
September	5.0	1.74	2.27	3.51	68.0	209
October	6.2	1.30	2.37	3.67	73.4	225
November	16.1	1.41	4.24	6.56	127	390
December	16.2	2.7	5.29	8.18	164	503
Calendar year 1949	48	1.30	4.94	7.64	1,800	5,530
January	33.5	2.95	6.00	9.28	186	571
February	27	2.2	5.38	8.32	151	462
March	37	2.55	5.80	8.97	180	552
April	33	4.2	12.3	19.0	370	1,130
May	19.3	4.5	7.53	11.7	233	716
June	7.4	3.4	4.43	6.85	133	408
Fiscal year 1949-50	37	1.30	5.70	8.82	2,080	6,380

Peak discharge (base, 240 mgd).--Jan. 9 (4 p.m.) 295 mgd (456 cfs), 4.99 ft.

Pelekunu Stream near Pelekunu

Location.--Lat 21°08'20", long. 156°52'50", on right bank 0.8 mile upstream from Lanipuni Stream, 1.8 miles south of Pelekunu, and 6.8 miles northwest of Pukoo.

Drainage area.--2.4 sq mi.

Records available.--December 1919 to January 1929, September 1937 to June 1950.

Gage.--Water-stage recorder. Datum of gage is 546 ft above mean sea level (levels by Bureau of Reclamation). Prior to Sept. 15, 1937, at site 250 ft upstream at different datum.

Average discharge.--19 years (1920-28, 1938-47, 1948-50), 10.6 mgd (16.4 cfs).

Extremes.--Maximum discharge during year, 620 mgd (959 cfs) Jan. 11, 23, from rating curve extended above 20 mgd by test on model of station site; maximum gage height, 6.42 ft Jan. 23; minimum discharge, 2.0 mgd (3.1 cfs) Oct. 25, 26, 30, 31.
1919-29, 1937-50: Maximum discharge, 3,080 mgd (4,770 cfs) Nov. 20, 1940 (gage height, 6.81 ft), from rating curve extended above 80 mgd by logarithmic plotting, but may have been greater Jan. 26, 1948, when discharge was not determined; minimum, 1.46 mgd (2.26 cfs) Nov. 26, 27, 1943.

Remarks.--Records fair. No diversions.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.5	5.2	3.8	2.4	3.9	18.3	5.4	3.8	8.8	21	15.3	5.4
2	7.7	4.9	3.8	2.4	3.4	14.3	12.4	3.6	6.9	13.0	13.8	5.7
3	5.4	4.3	3.6	2.4	3.4	14.0	5.4	3.2	6.0	9.9	15.2	4.9
4	3.8	4.6	3.6	2.4	3.8	9.9	4.9	3.0	5.4	8.0	16.7	4.6
5	6.0	4.0	3.4	2.6	16.2	6.9	4.6	2.6	15.4	7.3	13.5	4.3
6	8.0	4.3	3.4	2.4	4.6	5.7	4.0	2.6	13.8	7.7	12.9	4.3
7	4.9	3.6	3.4	2.6	4.6	5.2	5.2	2.6	6.3	6.3	11.0	4.0
8	6.7	5.2	3.2	2.6	3.2	13.0	4.6	3.5	5.4	5.7	33	7.5
9	5.4	4.6	3.2	4.0	2.8	6.0	49	2.8	4.9	10.0	14.4	4.6
10	3.8	6.6	3.2	3.4	2.6	4.9	58	2.6	14.8	5.4	12.5	4.9
11	4.6	14.2	3.0	2.4	2.6	5.2	290	2.4	11.2	7.5	11.6	5.2
12	5.4	5.7	3.0	2.8	53	5.7	52	2.8	6.9	5.6	9.6	4.6
13	12.8	4.6	3.0	2.8	10.6	10.6	17.6	6.6	7.3	13.9	21	4.3
14	7.4	4.3	3.4	2.6	6.9	13.6	10.7	3.4	5.4	44	12.1	3.8
15	28	4.0	3.0	2.4	6.3	7.3	7.7	3.2	4.6	43	10.7	4.6
16	14.5	5.6	3.0	4.5	5.4	6.0	6.0	2.6	4.0	64	12.2	4.0
17	7.7	8.1	2.8	3.0	6.3	5.2	4.9	3.15	4.0	78	10.2	4.3
18	6.0	15.3	3.4	3.4	7.4	8.1	4.0	31	3.8	34	21	4.0
19	4.9	10.7	2.8	3.2	6.3	5.7	3.6	7.6	3.4	55	12.1	3.6
20	4.3	13.4	3.2	2.6	4.9	4.6	3.2	9.4	18.7	25	14.4	4.7
21	4.3	9.9	2.6	2.4	4.0	4.3	3.9	24.5	49	16.3	13.9	6.2
22	3.8	13.2	3.6	2.6	3.8	4.0	17.4	20.5	19.1	29	9.6	5.6
23	6.2	10.4	3.0	2.6	3.6	3.8	169	25	9.9	97	8.4	10.8
24	5.4	8.8	3.0	2.4	3.4	3.6	39.5	15.7	14.7	32	8.9	6.3
25	8.6	7.9	3.4	2.0	3.2	3.6	14.8	13.2	17.1	20.5	8.8	9.3
26	10.0	6.0	3.0	2.0	3.95	4.0	10.3	9.2	8.8	16.3	11.2	6.0
27	26	7.6	3.2	2.4	7.0	7.2	7.7	6.9	9.8	20	11.0	4.9
28	7.7	5.2	2.8	2.6	4.9	16.3	6.0	19.8	15.0	140	8.4	6.0
29	7.5	4.6	2.6	2.2	13.5	10.1	10.4	-	170	35	8.0	4.6
30	8.5	4.6	2.6	2.0	25	11.1	5.7	-	40	21.5	6.3	3.8
31	6.9	4.0	-	2.0	-	6.3	4.6	-	23.5	-	5.7	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	28	3.8	8.09	12.5	251	769
August	15.3	3.6	6.95	10.8	215	661
September	3.8	2.6	3.17	4.90	95.0	292
October	4.5	2.0	2.65	4.10	82.1	252
November	53	2.6	7.68	11.9	231	708
December	18.3	3.6	7.89	12.2	244	750
Calendar year 1949	317	2.0	9.49	14.7	3,460	10,630
January	290	3.2	27.2	42.1	842	2,590
February	31	2.4	8.47	13.1	237	728
March	170	3.4	17.2	26.6	534	1,640
April	140	5.4	29.7	46.0	892	2,740
May	33	5.7	12.7	19.6	393	1,210
June	10.8	3.6	5.23	8.09	157	481
Fiscal year 1949-50	290	2.0	11.4	17.6	4,170	12,820

Peak discharge (base, 300 mgd).--Jan. 11 (8:30 a.m.) 620 mgd (959 cfs), 6.38 ft; Jan. 23 (2 a.m.) 620 mgd (959 cfs), 6.42 ft; Mar. 29 (10 a.m.) 316 mgd (489 cfs), 5.81 ft; Apr. 23 (1 a.m.) 365 mgd (565 cfs), 5.92 ft.

Lanipuni Stream near Pelekunu

Location.--Lat 21°08'40", long. 156°52'30", on left bank 0.4 mile upstream from mouth, 1.5 miles southeast of Pelekunu, and 6.8 miles northwest of Pukoo.

Drainage area.--0.8 sq mi.

Records available.--December 1919 to September 1929, September 1937 to June 1950.

Gage.--Water-stage recorder. Datum of gage is 418 ft above mean sea level (hand levels from Geological Survey benchmark).

Average discharge.--20 years (1920-29, 1938-47, 1948-50), 9.54 mgd (14.8 cfs).

Extremes.--Maximum discharge during year, 490 mgd (758 cfs) Jan. 23, Apr. 23, from rating curve extended above 35 mgd by logarithmic plotting; maximum gage height, 4.10 ft Apr. 23; minimum discharge, 1.67 mgd (2.58 cfs) Oct. 31.
1919-29, 1937-50: Maximum discharge, 3,470 mgd (5,370 cfs) Mar. 18, 1943 (gage height, 9.02 ft), from rating curve extended above 35 mgd by logarithmic plotting; minimum, 1.45 mgd (2.24 cfs) Jan. 29, 1944.

Remarks.--Records fair. No diversions.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 1, 2)

0.2	1.38	0.8	13.4
.3	2.5	1.0	20.5
.4	3.95	1.3	33.5
.5	5.8	1.6	50
.6	8.0	2.1	91
.7	10.5		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.9	6.2	3.5	2.25	6.7	12.1	3.95	3.5	5.6	16.7	8.8	5.8
2	8.3	5.2	3.2	2.25	4.4	15.0	12.1	3.85	4.7	8.8	8.5	5.6
3	7.2	4.3	3.2	2.1	4.0	12.8	4.9	3.2	4.1	7.1	9.0	4.7
4	5.0	4.1	3.2	2.1	3.8	7.8	3.95	3.05	3.65	6.0	12.4	4.5
5	8.1	3.8	3.05	2.1	18.1	5.8	3.5	2.9	7.4	5.8	9.0	4.1
6	8.9	3.8	3.2	2.0	5.6	4.9	3.2	2.9	7.8	7.3	9.5	3.95
7	6.7	3.35	3.05	2.65	5.2	4.6	3.55	2.75	4.1	5.6	13.1	3.95
8	10.5	5.5	2.9	2.3	3.5	10.1	3.2	2.9	3.8	5.2	27	9.3
9	7.1	4.2	3.05	3.4	3.05	5.1	13.9	2.5	3.5	11.8	9.5	5.1
10	4.5	8.7	3.05	2.5	2.65	4.1	11.0	2.5	36	5.4	9.2	5.1
11	7.4	14.1	2.65	2.25	2.65	4.8	68	2.5	12.2	11.2	10.0	6.2
12	7.4	5.8	2.5	2.75	47	4.5	12.2	3.05	6.7	7.0	7.6	4.7
13	13.2	4.5	2.65	2.7	9.0	9.3	6.9	6.4	6.2	12.9	18.1	4.5
14	8.0	4.1	3.05	2.5	6.7	10.0	5.4	3.05	4.7	19.3	8.8	3.95
15	25.5	3.8	2.65	2.5	6.2	5.4	4.5	2.9	3.95	11.7	8.2	4.9
16	13.5	7.0	2.65	4.2	4.9	4.5	3.95	2.5	3.8	13.4	9.9	3.95
17	6.9	8.5	2.5	2.65	8.9	3.95	3.65	5.1	3.8	25	8.8	4.1
18	5.6	19.0	3.05	3.1	10.0	5.1	3.2	30	3.65	33.5	22.5	3.95
19	4.5	10.2	2.5	2.95	7.1	4.1	3.05	7.4	3.2	30.5	9.0	3.8
20	3.8	12.8	2.75	2.5	5.2	3.5	2.9	16.9	27	15.5	14.1	6.9
21	3.8	9.2	2.65	2.25	4.1	3.2	3.05	19.0	51	9.2	10.5	5.3
22	3.35	14.5	4.6	2.65	3.5	2.9	6.2	12.6	14.8	25	7.6	6.5
23	6.2	9.0	3.05	2.5	3.2	2.9	56	13.0	7.6	45	6.9	8.3
24	5.8	7.3	2.9	2.35	3.05	2.75	10.8	9.0	14.9	24.5	10.3	6.0
25	9.3	6.5	3.8	2.0	2.75	2.75	6.5	7.1	13.0	10.5	7.8	8.7
26	15.3	5.2	3.05	2.0	3.85	3.95	5.2	5.2	6.7	8.8	10.2	6.2
27	24.5	6.2	3.25	2.25	8.3	7.2	4.5	4.7	15.5	23	10.8	5.2
28	7.1	4.7	2.9	2.75	10.9	11.4	3.95	14.2	14.3	66	8.7	8.0
29	9.3	4.1	2.5	2.0	13.2	9.3	9.7	-	91	15.1	7.3	5.2
30	8.9	4.3	2.35	1.89	15.1	8.4	4.9	-	20.5	10.8	6.0	4.5
31	8.2	3.8	-	1.89	-	5.1	3.8	-	14.3	-	5.4	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	25.5	3.35	8.73	13.5	271	831
August	19.0	3.35	6.90	10.7	214	656
September	4.6	2.35	2.98	4.61	89.4	274
October	4.2	1.89	2.46	3.81	76.3	234
November	47	2.65	7.75	12.0	233	714
December	15.0	2.75	6.36	9.84	197	605
Calendar year 1949	108	1.89	7.53	11.7	2,750	8,440
January	68	2.9	9.41	14.6	292	895
February	30	2.5	6.95	10.8	195	597
March	91	3.2	13.5	20.9	419	1,290
April	66	5.2	16.6	25.7	498	1,530
May	27	5.4	10.5	16.2	324	996
June	9.3	3.8	5.43	8.40	163	500
Fiscal year 1949-50	91	1.89	8.14	12.6	2,970	9,120

Peak discharge (base, 300 mgd).--Jan. 11 (8 a.m.) 320 mgd (495 cfs), 3.52 ft; Jan. 23 (2 a.m.) 490 mgd (758 cfs), 4.06 ft; Mar. 29 (9 a.m.) 308 mgd (477 cfs), 3.46 ft; Apr. 23 (2:30 a.m.) 490 mgd (758 cfs), 4.10 ft.

Waikolu Stream below pipe-line crossing, near Kalaupapa

Location.--Lat 21°09'50", long. 156°56'00", on left bank 0.8 mile upstream from mouth, and 3.9 miles southeast of Kalaupapa Post Office.
Drainage area.--4.0 sq mi.
Records available.--June 1919 to July 1932, September 1937 to June 1950. Prior to November 1930, published as Waikolu Stream at pipe-line crossing.
Gage.--Water-stage recorder and artificial control. Datum of gage is 253 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Nov. 18, 1930, water-stage recorder at site 500 ft upstream at different datum. Sept. 20, 1937, to July 1948, water-stage recorder at same site at datum 0.49 ft higher.
Average discharge.--20 years (1919-29, 1938-47, 1949-50), 11.6 mgd (17.9 cfs).
Extremes.--Maximum discharge during year, 566 mgd (876 cfs) Jan. 23 (gage height, 4.95 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 4.5 mgd (7.0 cfs) Oct. 23-26, 28-31.
1919-32, 1937-50: Maximum discharge, 3,700 mgd (5,720 cfs) Jan. 26, 1948 (gage height, about 10.25 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 1.3 mgd (2.0 cfs) Nov. 1, 2, 1925, June 5, 1926.
Remarks.--Records good except those for period of no gage-height record, which are fair. Kalaupapa water-supply system diverts water above station.
Revisions (fiscal years).--W 1155: 1932, 1938-48(M).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.9	4.3	2.4	25.5
2.0	6.2	2.6	45
2.1	9.0	2.8	68
2.2	13.0	3.0	95
2.3	18.2	3.3	140

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	a7.5	6.5	5.2	5.1	10.2	13.8	5.4	5.6	6.5	16.2	9.8	6.5
2	a8.5	5.8	5.2	5.1	6.8	9.0	10.8	5.6	5.8	8.2	10.4	6.2
3	a7	5.6	5.2	5.1	6.2	9.5	6.0	5.4	5.4	7.0	12.2	6.0
4	a5.5	5.6	5.2	5.1	5.2	6.2	5.4	5.4	5.2	6.5	14.0	6.0
5	a7.5	5.4	5.2	5.1	41	5.4	5.2	5.4	8.6	6.2	11.0	5.8
6	a9	5.4	5.2	5.1	6.9	5.2	5.2	5.4	22.5	6.2	9.0	5.8
7	a7	5.4	5.2	5.1	5.6	5.1	6.6	5.4	6.0	6.2	9.6	5.8
8	a11	5.6	5.2	5.1	5.1	6.3	6.2	5.4	5.6	6.5	25	6.0
9	a7	6.2	5.2	5.6	4.9	5.8	24	5.4	5.4	10.8	9.8	6.0
10	6.0	6.8	5.1	5.6	4.7	5.4	37.5	5.2	54	6.8	16.1	5.8
11	5.8	10.1	5.1	5.2	4.7	5.2	134	5.2	23.5	10.2	9.4	6.0
12	6.2	6.8	5.1	5.2	64	5.2	21	5.4	7.6	7.0	7.9	6.2
13	13.6	5.6	5.2	5.4	10.9	13.8	8.2	6.0	6.5	9.9	10.3	6.0
14	8.5	5.4	5.2	5.4	9.7	13.3	6.5	5.6	6.0	24.5	8.2	5.8
15	21.5	5.2	5.1	5.2	9.3	6.2	5.8	5.4	5.8	18.6	7.9	5.8
16	13.3	5.2	5.1	5.4	6.5	5.6	5.6	5.2	5.6	25.5	7.8	6.0
17	6.5	7.3	5.1	5.2	12.4	5.4	5.6	5.4	5.4	50	9.0	5.8
18	5.8	11.2	5.1	4.9	9.6	7.6	5.4	29	5.4	32.5	11.8	5.8
19	5.6	8.6	5.1	4.9	7.6	6.8	5.4	7.6	5.4	55	8.2	5.8
20	5.4	10.2	5.1	4.9	6.0	5.8	5.4	23	19.2	15.9	8.2	6.0
21	5.4	7.6	5.1	4.7	5.1	5.4	5.4	43	55	8.7	9.8	8.1
22	5.2	9.0	5.1	4.7	4.9	5.2	23.5	25	15.5	10.9	7.3	6.2
23	5.6	8.5	5.2	4.5	4.7	5.2	100	11.9	7.3	54	7.0	11.4
24	7.0	6.5	5.2	4.5	4.7	5.2	17.0	10.2	13.9	13.9	6.8	7.9
25	11.6	7.5	5.2	4.5	4.7	5.2	7.6	7.3	21	9.8	7.3	8.1
26	14.0	5.8	5.2	4.5	4.7	5.2	6.2	6.5	6.8	8.2	7.9	6.8
27	24.5	6.2	5.2	4.7	5.4	5.2	5.8	5.8	10.3	30.5	9.4	6.2
28	6.5	6.2	5.2	4.5	11.6	9.7	6.0	21.5	17.8	69	7.3	6.5
29	6.2	5.6	5.1	4.5	21.5	9.0	16.0	-	112	13.3	7.0	6.5
30	8.2	5.4	5.1	4.5	23	11.2	7.8	-	18.8	11.7	6.8	5.8
31	8.0	5.2	-	4.5	-	6.2	6.0	-	13.6	-	6.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	24.5	5.2	8.72	13.5	270	830
August	11.2	5.2	6.69	10.4	207	636
September	5.2	5.1	5.16	7.98	155	475
October	5.6	4.5	4.96	7.67	154	472
November	64	4.7	10.9	16.9	328	1,010
December	13.8	5.1	7.07	10.9	219	673
Calendar year 1949	149	4.5	8.58	13.3	3,130	9,620
January	134	5.2	16.7	25.8	516	1,590
February	43	5.2	10.1	15.6	283	869
March	112	5.2	16.4	25.4	507	1,560
April	69	6.2	18.7	28.9	560	1,720
May	25	6.5	9.64	14.9	299	917
June	11.4	5.8	6.42	9.93	193	591
Fiscal year 1949-50	134	4.5	10.1	15.6	3,690	11,340

Peak discharge (base, 450 mgd).--Jan. 23 (3 a.m.) 566 mgd (876 cfs), 4.95 ft.
a No gage-height record; discharge estimated on basis of records for nearby streams.

Waialala Springs near Kalae

Location.--Lat 21°10'20", long. 157°00'05", on left bank on highway from Kalae to Kalaupapa Pali, 0.8 mile northeast of Kalae and 5.7 miles northeast of Kaunakakai Post Office.

Records available.--September 1940 to June 1950.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 1,600 ft above mean sea level (from topographic map).

Average discharge.--9 years (1941-50), 0.019 mgd (0.029 cfs).

Extremes.--1940-50: Maximum daily discharge, 0.275 mgd (0.425 cfs) Mar. 11, 1942; minimum daily, 0.002 mgd (0.003 cfs) Jan. 2, 11-13, 1947, Mar. 3-12, 14-17, 1949.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Maui County Water Works diverts entire flow for domestic supply from tail bay at station.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.007	0.013	0.012	0.010	0.009	0.009	0.009	0.012	0.012	0.011	0.018	0.020
2	a.007	.013	.012	.010	.009	.008	.009	.012	.012	.011	.018	.019
3	a.007	.013	.012	.010	.009	.008	.009	.010	.012	.011	.018	.019
4	a.007	.013	.012	.010	.009	.008	.009	.010	.010	.011	.018	.019
5	a.007	.013	.012	.010	.009	.008	.009	.009	.009	.011	.018	.019
6	a.012	.013	.012	.010	.009	.008	.009	.009	.007	.011	.018	.019
7	a.012	.013	.012	.010	.009	.008	.009	.009	a.007	.011	.020	.019
8	.012	.013	.012	.010	.009	.008	.009	.009	a.007	.011	.020	.019
9	.012	.013	.012	.010	.009	.008	.009	.009	a.007	.011	.019	.019
10	.012	.013	.012	.010	.009	.008	.009	.009	a.015	.010	.019	.019
11	.012	.013	.012	.010	.009	.008	.011	.009	a.010	.010	.019	.019
12	.012	.013	.012	.010	.009	.008	.010	.009	a.009	.010	.019	.019
13	.012	.013	.012	.010	.009	.008	.010	.009	.009	.010	.020	.019
14	.012	.013	.010	.010	.009	.008	.010	.009	.009	.010	.020	.019
15	.012	.013	.010	.010	.009	.008	.009	.009	.009	.010	.020	.019
16	.012	.013	.010	.010	.009	.008	.009	.008	.009	.010	.020	.019
17	.012	.013	.010	.010	.009	.008	.009	.008	.009	.014	.021	.019
18	.012	.013	.010	.010	.009	.009	.009	.008	.009	.014	.021	.019
19	.012	.013	.010	.010	.009	.009	.009	.008	.009	.013	.021	.019
20	.012	.013	.010	.010	.009	.009	.009	.012	.009	.013	.021	.019
21	.012	.013	.010	.010	.009	.009	.009	.007	.010	.013	.021	.019
22	.012	.012	.010	.010	.009	.009	.009	.005	.010	.013	.021	.019
23	.012	.012	.010	.009	.009	.009	.015	.005	.010	.016	.021	.019
24	.012	.012	.010	.009	.009	.009	.011	.007	.009	.015	.021	.019
25	.012	.012	.010	.009	.009	.009	.011	.012	.009	.015	.021	.019
26	.012	.012	.010	.009	.009	.009	.010	.012	.009	.013	.021	.019
27	.013	.012	.010	.009	.009	.009	.010	.012	.009	.013	.021	.019
28	.013	.012	.010	.009	.009	.009	.010	.012	.009	.018	.021	.019
29	.013	.012	.010	.009	.009	.009	.012	-	.011	.018	.021	.019
30	.013	.012	.010	.009	.009	.009	.012	-	.012	.018	.021	.018
31	.013	.012	-	.009	-	.009	.012	-	.011	-	.020	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	0.013	0.007	0.011	0.017	0.352	1.1
August	.013	.012	.013	.020	.393	1.2
September	.012	.010	.011	.017	.326	1.0
October	.010	.009	.010	.016	.301	.9
November	.009	.009	.009	.014	.270	.8
December	.009	.008	.008	.012	.263	.8
Calendar year 1949	.017	.002	.010	.016	3.60	11
January	.015	.009	.010	.016	.306	.9
February	.012	.005	.009	.014	.259	.8
March	.015	.007	.010	.016	.298	.9
April	.018	.010	.012	.019	.375	1.2
May	.021	.018	.020	.031	.618	1.9
June	.020	.018	.019	.029	.570	1.7
Fiscal year 1949-50	.021	.005	.012	.019	4.33	13

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

Kapuna Stream near Kalae

Location.--Lat 21°09'05", long. 156°59'00", on right bank 2.1 miles southeast of Kalae and 4.9 miles northeast of Kaunakakai Post Office.

Records available.--June 1940 to December 1949 (discontinued).

Gage.--Water-stage recorder and artificial control. Altitude of gage is 1,900 ft (from topographic map).

Average discharge.--9 years, 0.032 mgd (0.050 cfs).

Extremes.--Maximum discharge during period July to December, 0.02 mgd (0.03 cfs) Nov. 12 (gage height, 0.11 ft); no flow Sept. 20 to Nov. 12.
1940-49: Maximum discharge, 10.0 mgd (15.5 cfs) Mar. 11, 1942 (gage height, 2.00 ft); no flow at times.

Remarks.--Records good. No diversions.

Discharge, in million gallons, fiscal year July 1949 to December 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		0.01	0.01		0	0.01						
2		.01	.01		0							
3		.01	.01		0							
4		.01	.01		0	e.004						
5	e0.004	.01	.01		0							
6		.01	.01		0							
7		.01	.01		0							
8		.01	.01		0							
9	e.004	.01	.01		0							
10		.01	.01		0							
11	.01	.01	.01		0							
12	.01	.01	.01		.01							
13	.01	.01			.01							
14	.01	.01			.01							
15	.01	.01	e.004		.01							
16	.01	.01			.01							
17	.01	.01			.01							
18	.01	.01	.003		.01							
19	.01	.01	.002		.01							
20	.01	.01	0		.01							
21	.01	.01	0		.01							
22	.01	.01	0		.01							
23	.01	.01	0		.01							
24	.01	.01	0		.01							
25	.01	.01	0		.01							
26	.01	.01	0		.01							
27	.01	.01	0		.01							
28	.01	.01	0		.01							
29	.01	.01	0		.01							
30	.01	.01	0		.01							
31	.01	.01	-		-							

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July 1949	0.01	-	0.008	0.012	0.250	0.8
August	.01	.01	.01	.02	.31	1.0
September	.01	0	.005	.008	.145	.4
October	0	0	0	0	0	0
November	.01	0	.006	.009	.19	.6
December 1-6	.01	-	.005	.008	.030	.09
Calendar year 1949	-	-	-	-	-	-
January						
February						
March						
April						
May						
June						
Fiscal year						

e Daily discharge less than 0.01 mgd.

Right Branch of East Fork Kawela Stream near Kamalo

Location.--Lat 21°06'50", long. 156°54'30", on left bank at Molokai Ranch pipe-line intake, 4.7 miles northwest of Kamalo and 7.6 miles northeast of Kaunakakai.

Drainage area.--0.2 sq mi.

Records available.--September 1946 to June 1950.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,624.86 ft above mean sea level (Territorial Survey benchmark).

Extremes.--Maximum discharge during year, 101 mgd (156 cfs) Jan. 23 (gage height, 4.21 ft); no flow for many days.
1946-50: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft); no flow for many days.

Remarks.--Records good except those above 2.1 mgd and those for periods of doubtful or no gage-height record, which are fair. Molokai Ranch diverts low flow from stream above station.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

2.28	0	2.8	1.18
2.3	.01	2.9	1.84
2.4	.03	3.1	4.2
2.5	.14	3.3	12.5
2.6	.36	3.5	25.5
2.7	.71		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.3	0.30	0	0	d0.39	d3.65	0	0	0.20	3.45	1.48	0
2	3.1	.05	0	0	d.57	d2.2	3.75	0	0	.45	1.92	.02
3	1.75	0	0	0	d.76	d2.6	.26	0	0	.08	3.3	0
4	.44	.12	0	0	d.47	d.80	0	0	0	0	3.4	0
5	1.33	.17	0	0	d8.4	d.17	0	0	.14	0	a3.3	0
6	2.05	.25	0	0	d.76	0	0	0	2.1	.06	a2.3	0
7	1.08	.07	0	0	d1.24	0	.13	0	.05	.25	a1.5	0
8	1.88	.96	0	0	d.31	d.81	.27	.19	0	0	4.8	1.26
9	1.35	.98	0	.86	d.06	d.17	6.9	.02	0	1.14	.57	.22
10	.08	1.64	0	.70	0	0	9.1	0	1.76	.08	.44	.35
11	.03	3.5	0	.19	0	0	25	0	1.85	1.54	.80	.57
12	.96	.71	0	.47	d7.7	.40	3.6	0	.08	.28	.39	.20
13	5.0	.02	0	.52	d1.84	4.2	1.03	1.36	.45	2.7	2.75	0
14	1.26	.01	0	.45	d1.81	2.75	.20	.18	.06	8.5	.68	0
15	8.3	.05	0	0	d1.77	.32	.02	.29	0	8.0	.61	.53
16	2.8	a0	0	.90	d.94	0	0	.05	0	7.8	.67	.12
17	.32	a.25	0	.25	d2.25	0	0	.16	0	6.6	.51	.33
18	.01	a3.1	.18	.26	d2.05	1.21	0	6.7	0	2.95	3.4	.35
19	0	a1.3	0	.36	d1.13	.51	0	1.16	0	5.7	.44	.10
20	0	a2.7	.01	.10	d.44	.08	0	1.20	2.45	1.22	1.85	.73
21	0	a1.5	0	0	d.01	0	0	5.8	8.1	.32	1.38	2.0
22	0	a2.1	.27	0	0	0	1.39	3.2	3.6	2.45	.17	1.54
23	1.02	1.51	.05	0	0	0	21.5	3.2	.56	9.5	0	4.0
24	1.74	1.18	.11	0	0	0	2.95	1.26	3.6	1.55	.29	1.68
25	4.2	1.53	.68	0	0	0	.39	.92	3.45	.69	.72	2.7
26	3.4	.21	.18	0	0	0	.01	.27	.17	.77	1.71	.99
27	4.4	1.75	.61	0	d1.03	.46	0	.01	.79	2.05	1.91	.58
28	.16	.67	.03	0	d.92	3.3	0	3.4	3.05	12.8	.32	1.76
29	.68	.03	0	0	d5.0	2.45	.99	-	16.6	1.38	.70	.59
30	2.6	0	0	0	d7.4	2.6	.39	-	2.2	1.71	.04	.02
31	1.35	0	-	0	-	.36	0	-	4.7	-	0	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.3	0	1.79	2.77	55.6	171
August	3.5	0	.860	1.33	26.7	82
September	.68	0	.071	.110	2.12	6.5
October	.90	0	.163	.252	5.06	16
November	8.4	0	1.58	2.44	47.2	145
December	4.2	0	.937	1.45	29.0	89
Calendar year 1949	27.5	0	1.09	1.69	396	1,220
January	25	0	2.51	3.88	77.9	239
February	6.7	0	1.05	1.62	29.4	90
March	16.6	0	1.81	2.80	56.0	172
April	12.8	0	2.80	4.33	84.0	258
May	4.8	0	1.37	2.12	42.4	130
June	4.0	0	.688	1.06	20.6	63
Fiscal year 1949-50	25	0	1.30	2.01	476	1,460

Peak discharge (base, 100 mgd).--Jan. 23 (3 a.m.) 101 mgd (156 cfs), 4.21 ft.
a No gage-height record; discharge estimated on basis of records for nearby streams.
d Intake action faulty; discharge estimated on basis of doubtful gage-height record.

Punaula Stream near Pukoo

Location.--Lat 21°05'40", long. 156°48'40", on right bank 1.5 miles northwest (revised) of Pukoo and 5.5 miles northeast of Kamalo.

Drainage area.--0.4 sq mi.

Records available.--March 1947 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 1,200 ft (from topographic map).

Extremes.--Maximum discharge during year, 70 mgd (108 cfs) Jan. 11 (gage height, 2.92 ft), from rating curve extended above 2 mgd by test on model of station site; minimum, 0.02 mgd (0.03 cfs) Oct. 3-6.
1947-50: Maximum discharge, 330 mgd (511 cfs) Apr. 2, 1948 (gage height, 6.35 ft), from rating curve extended above 2 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Mar. 13, 1947.

Remarks.--Records good.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.01	1.0	2.3
.5	.04	1.1	3.55
.6	.16	1.2	5.2
.7	.39	1.4	9.5
.8	.78	1.6	14.7
.9	1.37		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feh.	Mar.	Apr.	May	June
1	0.39	0.30	0.09	0.03	0.05	0.61	0.12	0.07	0.20	1.56	0.30	0.16
2	.78	.24	.07	.03	.10	1.34	.48	.07	.10	.30	.28	.38
3	.46	.26	.06	.02	.22	1.56	.16	.08	.08	.20	.53	.38
4	.43	.20	.06	.02	.08	.46	.31	.05	.07	.14	.45	.77
5	.48	.18	.05	.02	1.41	.22	.32	.04	.11	.18	.56	.20
6	1.42	.22	.04	.02	.72	.12	.10	.03	.49	.48	.56	.12
7	.68	.16	.04	.37	.65	.14	.08	.04	.09	.48	.45	.10
8	2.55	1.08	.04	.10	.18	2.65	.08	.15	.06	.48	1.43	.55
9	1.00	.44	.04	.11	.09	.34	2.4	.08	.05	.24	.33	.18
10	.22	1.83	.04	.30	.06	.20	1.30	.04	.22	.16	.22	.14
11	.89	2.8	.03	.12	.05	1.53	9.6	.03	.93	1.17	.36	.51
12	1.32	.43	.03	.18	3.4	.48	.66	.03	.14	.51	.34	.25
13	.99	.20	.03	.12	.47	.78	.24	.06	.83	2.3	1.65	.11
14	.55	.18	.03	.07	.26	.33	.12	.04	.20	6.1	.42	.08
15	3.35	.16	.03	.06	.35	.20	.09	.05	.11	2.75	.28	.22
16	2.2	.12	.03	1.71	.28	.16	.08	.04	.07	9.0	.46	.12
17	.35	.15	.03	.63	.60	.24	.06	.09	.07	2.45	.24	.09
18	.20	2.4	.04	.24	.64	.72	.05	5.8	.08	1.51	2.4	.07
19	.14	.84	.03	.67	.68	.31	.05	.74	.07	1.70	.54	.06
20	.11	1.46	.38	.20	.36	.18	.04	.94	.62	.52	.97	.07
21	.12	.96	.07	.08	.14	.10	.08	2.0	2.8	.33	1.78	.08
22	.10	.70	.81	.13	.09	.08	.05	1.30	.85	3.05	.69	.22
23	.16	.42	.26	.16	.07	.07	6.2	4.9	.24	2.8	.69	.83
24	.42	.28	.12	.14	.05	.06	1.12	.82	.16	.39	.45	.36
25	.20	.20	.24	.06	.04	.05	.28	.39	.26	.30	.33	1.14
26	.31	.20	.12	.05	.08	.06	.12	.24	.11	.30	.58	.34
27	4.1	.50	.10	.07	.89	.09	.18	.14	.16	1.55	1.08	.20
28	.28	.26	.06	.61	1.28	1.25	.19	.77	1.61	4.4	.54	.68
29	.83	.14	.04	.11	.97	.59	.54	-	6.6	.73	.77	.24
30	1.06	.27	.04	.06	.79	1.17	.20	-	.86	.48	.24	.11
31	.52	.14	-	.04	-	.32	.10	-	.85	-	.16	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.1	0.10	0.858	1.33	26.6	82
August	2.8	.12	.572	.885	17.7	54
September	.81	.03	.102	.158	3.05	9.4
October	1.71	.02	.211	.326	6.53	20
November	3.4	.04	.502	.777	15.0	46
December	2.65	.05	.529	.818	16.4	50
Calendar year 1949	13.1	.02	.489	.757	178	550
January	9.6	.04	.819	1.27	25.4	78
February	5.8	.03	.680	1.05	19.0	58
March	6.6	.05	.616	.953	19.1	59
April	9.0	.14	1.55	2.40	46.6	143
May	2.4	.16	.648	1.00	20.1	62
June	1.14	.06	.292	.452	8.76	27
Fiscal year 1949-50	9.6	.02	.614	.950	224	688

Peak discharge (base, 70 mgd).--Jan. 11 (6 a.m.) 70 mgd (108 cfs), 2.92 ft.

Left Branch Makamakaole Stream near Waihee

Location.--Lat 20°57'35", long. 156°32'55", on left bank, at intake to Marshall Ranch diversion ditch, 0.2 mile upstream from mouth, 2.8 miles south of Kahakuloa village, and 3 miles northwest of Waihee.

Drainage area.--0.4 sq mi.

Records available.--July 1939 to June 1950.

Gage.--Water-stage recorder and combined orifice and concrete control. Altitude of gage is 1,500 ft (by barometer).

Average discharge.--11 years, 1.86 mgd (2.88 cfs).

Extremes.--Maximum discharge during year, 113 mgd (175 cfs) Apr. 19 (gage height, 3.28 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.50 mgd (0.77 cfs) Oct. 31.

1939-51: Maximum discharge, 287 mgd (444 cfs) Apr. 2, 1948 (gage height, 4.98 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.43 mgd (0.66 cfs) Jan. 10, 11, 1946.

Remarks.--Records good except those above 20 mgd, which are fair. Marshall Ranch diversion ditch diverts water from gage pool for watering stock.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.1	0.48	1.7	2.6
1.2	.56	1.8	3.9
1.3	.66	1.9	5.9
1.4	.76	2.0	8.8
1.5	1.09	2.1	12.0
1.6	1.68	2.3	26

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.76	1.38	0.73	0.59	0.81	1.50	1.09	1.33	1.33	3.5	2.15	1.38
2	.96	1.27	.71	.61	1.91	2.9	1.37	2.5	1.15	1.77	1.96	1.50
3	.82	1.09	.68	.57	1.28	1.96	1.80	3.1	1.04	1.50	1.77	1.56
4	.73	.99	.67	.58	.84	1.33	1.49	1.38	.99	1.44	1.86	1.33
5	.76	1.09	.71	.65	2.95	1.09	1.15	1.27	.94	1.50	2.7	1.09
6	.76	1.29	.67	1.24	1.48	1.04	1.04	1.15	1.76	1.38	1.86	1.09
7	.84	.90	.73	1.71	.84	.90	1.20	1.04	1.04	1.44	1.62	1.09
8	1.28	.99	.68	.74	.75	.99	1.21	.99	.90	1.21	3.0	1.87
9	1.04	1.09	.68	.68	.71	.88	1.33	.94	.86	2.45	1.77	1.27
10	.94	3.3	.92	.90	.68	.84	2.1	.90	1.81	8.0	2.2	1.15
11	1.46	1.38	.75	.68	.63	1.35	25	2.45	4.0	14.9	2.9	2.75
12	1.23	1.04	.70	.66	1.87	.94	4.6	1.33	1.38	2.5	1.77	1.44
13	.84	.94	.72	.62	1.13	.90	2.15	2.15	1.38	2.3	1.56	1.21
14	.84	.94	.71	.59	.82	1.04	1.77	1.21	.99	1.96	1.50	1.15
15	1.57	1.09	.76	.68	.80	.82	1.56	1.21	.90	1.77	1.50	1.28
16	.90	.99	.68	.79	.88	.78	1.38	1.27	.84	3.05	1.38	1.09
17	.99	.90	.60	.61	1.47	.76	1.33	2.3	.86	16.1	1.50	1.34
18	.82	1.04	.59	.59	2.6	1.18	1.27	15.1	.84	23	8.7	1.09
19	.74	1.12	.60	.59	1.82	.82	1.15	2.3	.82	23	2.4	.99
20	.73	1.53	.59	.70	.94	.73	1.09	2.2	2.65	4.8	2.05	1.04
21	.72	.94	.60	.61	.80	.73	1.09	2.0	6.3	2.75	3.5	1.04
22	.71	1.24	1.68	.74	.75	.70	1.04	2.25	2.7	2.25	2.05	.94
23	.70	.99	.97	.64	.71	.68	5.6	3.1	1.38	3.4	1.86	.99
24	.95	.86	.80	.78	.73	.68	1.39	1.96	2.2	3.25	2.25	.94
25	.89	.90	1.05	.71	.68	.69	.99	1.56	1.50	2.25	1.62	1.04
26	6.6	.82	.76	.58	4.0	.75	.86	1.38	1.15	2.7	1.68	.99
27	6.7	.78	.80	.57	8.1	.72	.84	1.27	1.13	10.2	3.1	1.09
28	1.27	.76	.68	.60	5.9	2.1	.82	2.25	1.76	5.6	1.77	3.05
29	1.33	.78	.63	.56	2.25	.90	6.7	-	15.9	2.75	1.56	1.38
30	1.75	.76	.62	.53	2.5	5.4	3.3	-	3.4	2.4	1.44	1.09
31	2.15	.74	-	.52	-	1.46	1.62	-	2.15	-	1.38	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.7	0.70	1.38	2.14	42.8	131
August	3.3	.74	1.09	1.69	33.9	104
September	1.68	.59	.749	1.16	22.5	69
October	1.71	.52	.697	1.08	21.6	66
November	8.1	.63	1.72	2.66	51.6	158
December	5.4	.68	1.21	1.87	37.6	115
Calendar year 1949	23	.50	1.45	2.24	528	1,620
January	25	.82	2.56	3.96	79.3	243
February	15.1	.90	2.21	3.42	61.9	190
March	15.9	.82	2.13	3.30	66.0	203
April	23	1.21	5.17	8.00	155	476
May	8.7	1.38	2.21	3.42	68.4	210
June	3.05	.94	1.31	2.03	39.3	120
Fiscal year 1949-50	25	.52	1.86	2.88	680	2,080

Peak discharge (base, 90 mgd).--Apr. 19 (12:30 a.m.) 113 mgd (175 cfs), 3.28 ft.

Kahakuloa Stream near Honokohau

Location.--Lat 20°58'50", long. 156°33'25", on right bank just downstream from Kapuna Stream, 1.3 miles south of Kahakuloa, 2 miles west of Puu Makawana, and 4.3 miles southeast of Honokohau.
Drainage area.--3.4 sq mi.
Records available.--January 1913 to December 1914 (fragmentary), July 1939 to August 1943, September 1947 to June 1950.
Gage.--Water-stage recorder and concrete control. Jan. 22, 1913, to Dec. 16, 1914, water-stage recorder at site 1 mile upstream at different datum.
Average discharge.--5 years (1940-43, 1948-50), 12.9 mgd (20.0 cfs).
Extremes.--Maximum discharge during year, 370 mgd (572 cfs) Feb. 18 (gage height, 5.65 ft), from rating curve extended above 30 mgd on basis of slope-area determination at gage height 8.35 ft; minimum, 2.5 mgd (3.9 cfs) Oct. 31.
1939-43, 1947-50: Maximum discharge, 1,990 mgd (3,080 cfs) Dec. 14, 1942 (gage height, 7.02 ft, control then in use), from rating curve extended above 55 mgd by test on model of station site; minimum, that of Oct. 31, 1949.
Remarks.--Records good except those above 30 mgd and those for period of no gage-height record, which are poor.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

2.9	1.9	3.6	22
3.0	3.2	3.8	34
3.1	4.9	4.0	50
3.2	7.2	4.5	108
3.4	13.3		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.3	8.0	3.2	2.9	4.6	9.0	4.4	5.9	4.9	17	10.6	7.0
2	7.7	6.6	3.05	2.8	13.1	20	9.3	12.6	4.2	7.5	8.8	7.6
3	4.4	6.2	2.9	2.8	8.7	15.6	9.3	9.2	3.85	5.5	7.7	6.5
4	3.5	4.9	3.05	2.8	4.9	7.2	6.6	4.5	3.7	5	9.5	5.6
5	3.7	4.9	3.2	3.15	23	5.4	4.2	4.2	3.7	6	14.2	5.1
6	4.6	6.2	3.05	4.8	10.5	5.1	3.7	3.7	18.9	15	8.8	5.4
7	7.4	4.4	3.35	11.1	5.4	4.5	3.7	3.7	4.4	10	10.3	5.1
8	13.9	5.5	2.9	4.0	4.0	4.9	4.0	3.5	3.7	7	24.5	14.4
9	7.2	5.4	2.9	3.5	3.7	4.2	3.7	3.5	3.5	11	8.0	7.5
10	5.0	34.5	4.8	4.4	3.85	3.85	10.1	3.35	22	13	13.5	5.4
11	11.0	12.9	4.0	3.7	3.35	5.8	89	10.4	19.9	40	17.0	19.8
12	9.3	5.4	3.05	3.5	21	4.9	23	5.6	5.6	20	8.0	7.7
13	5.6	4.4	3.85	3.2	9.1	4.9	7.0	11.2	10.3	15	7.7	5.6
14	5.2	4.5	3.5	2.9	5.8	9.1	5.4	4.5	4.9	10	6.5	5.1
15	15.2	7.1	4.2	3.35	4.5	4.2	4.5	4.4	4.2	7	6.5	5.9
16	6.5	5.1	3.7	5.6	5.2	3.7	4.0	6.1	3.85	17	6.0	5.4
17	8.7	4.7	3.05	3.35	14.0	3.5	3.85	26.5	3.85	28	7.1	7.6
18	4.4	8.6	2.9	2.9	20	4.3	3.7	64	4.2	55	72	5.4
19	3.7	6.5	2.9	3.05	11.8	4.0	3.5	10.8	3.7	65	13.6	4.9
20	3.35	10.0	2.9	3.95	5.9	3.35	3.5	10.9	60	15	11.6	5.6
21	3.5	5.4	2.8	3.05	4.4	3.2	3.35	9.3	20	9	26.5	8.8
22	3.05	8.4	9.1	4.9	3.7	3.05	3.2	11.8	10	18	8.8	4.9
23	3.05	6.2	5.7	3.5	3.35	2.9	26.5	15.9	5.5	25	15.1	5.1
24	4.8	4.7	4.4	5.1	3.5	2.9	6.4	7.9	22	100	12.0	5.4
25	4.4	4.9	5.4	3.95	3.2	2.9	4.4	5.6	9	16.3	8.6	5.6
26	27.5	4.0	4.2	3.05	43	3.35	3.7	4.7	5	26.5	10.3	5.6
27	30.5	3.7	4.7	2.9	64	3.7	3.5	4.4	7.5	67	21	5.8
28	5.4	3.7	3.5	3.05	37	26.5	3.5	10.7	6	38	7.5	13.2
29	5.3	3.7	3.2	2.9	15.0	5.0	20.5	-	90	13.3	6.7	6.8
30	8.5	3.5	2.9	2.8	20.5	40	17.8	-	20	12.7	6.0	5.1
31	11.5	3.35	-	2.65	-	7.1	6.8	-	13	-	5.6	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	30.5	3.05	7.81	12.1	242	743
August	34.5	3.35	6.69	10.4	207	636
September	9.1	2.8	3.74	5.79	112	345
October	11.1	2.65	3.73	5.77	116	355
November	64	3.2	12.7	19.6	380	1,170
December	40	2.9	7.36	11.4	228	700
Calendar year 1949	73	2.65	7.56	11.7	2,760	8,470
January	89	3.2	9.87	15.3	306	939
February	64	3.35	9.96	15.4	279	856
March	90	3.5	12.9	20.0	401	1,230
April	100	5	23.2	35.9	695	2,130
May	72	5.6	12.9	20.0	400	1,230
June	19.8	4.9	6.96	10.8	209	641
Fiscal year 1949-50	100	2.65	9.80	15.2	3,580	10,980

Peak discharge (base, 400 mgd).--No peak above base.
Note.--No gage-height record Mar. 20 to Apr. 24; discharge estimated on basis of records for nearby streams.

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Honokohau Stream near Honokohau

Location.--Lat 20°57'45", long. 156°35'20", on right bank 1,000 ft upstream from intake of Honokohau ditch and 5 miles southeast of Honokohau.

Drainage area.--4.2 sq mi.

Records available.--March 1913 to September 1920, May 1922 to June 1950.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 950 ft (by barometer).

Average discharge.--32 years (1916-20, 1922-50), 25.4 mgd (39.3 cfs).

Extremes.--Maximum discharge during year, 760 mgd (1,180 cfs) Jan. 11 (gage height, 5.52 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 7.6 mgd (11.8 cfs) Oct. 31, Nov. 1.
1913-20, 1922-50: Maximum discharge, 2,420 mgd (3,740 cfs) Dec. 14, 1942 (gage height, 8.40 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 5.4 mgd (8.4 cfs) May 1, 1945, Jan. 5, 1946.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.9	6.9	2.7	45
2.0	9.4	3.0	73
2.1	12.4	3.3	114
2.3	20	3.6	165
2.5	31	4.0	250

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10	17.8	10.6	8.4	9.7	25	11.2	10.9	10.6	41	37	20
2	22	13.4	9.2	8.4	15.7	63	50	13.4	9.7	14.2	24.5	21
3	17	11.5	8.9	8.4	15.2	43	16.2	10.3	9.2	12.1	21	18.8
4	13	12.3	10.0	8.4	10.5	16.8	11.5	9.4	8.9	11.2	34.5	18.0
5	9.5	10.9	9.4	8.4	80	12.8	10.0	9.2	9.3	18.7	34	17.5
6	15	13.1	9.2	8.6	16.7	11.5	9.4	8.9	35	35.5	30	18.0
7	35	9.7	9.2	16.6	11.2	10.3	9.7	8.9	10.0	28.5	82	18.0
8	50	21.5	8.9	12.2	9.4	10.0	9.7	8.9	9.2	14.2	102	94
9	33	14.9	8.9	12.3	9.4	9.4	10.9	8.9	8.9	24	26.5	24.5
10	18	84	12.9	12.1	10.9	9.2	45	8.6	22	25.5	47	26
11	27	44	9.4	9.7	10.0	18.5	201	14.4	23	96	53	59
12	25	12.4	8.9	12.4	61	11.9	37.5	16.1	13.4	57	27.5	20
13	22	10.6	15.6	10.3	23	42	12.4	42	20	63	32	18.0
14	20	11.5	11.6	12.6	14.8	28.5	10.9	10.0	10.3	43	28	17.1
15	54	18.9	13.0	17.3	11.5	10.6	10.3	10.6	9.2	14.5	39	18.4
16	22	22.5	10.0	13.1	13.3	9.4	10.0	12.1	8.9	29	35.5	18.8
17	25	22	9.2	8.9	37	8.9	9.7	79	9.2	93	42	25
18	19	44	9.4	8.6	52	10.0	9.4	154	8.9	146	200	18.0
19	14	19.2	8.9	18.4	20	9.7	9.4	21	8.9	165	38	17.5
20	9.5	36	10.0	10.4	11.2	9.2	9.2	17.5	176	58	68	25.5
21	10	14.2	9.2	8.4	9.2	8.6	9.2	26.5	160	30	51	30
22	9	42	15.8	12.8	8.4	8.6	9.2	28.5	28	89	23	17.5
23	9	14.1	10.6	9.2	8.2	8.4	45	29	15.7	119	55	19.2
24	13	12.1	10.3	10.3	8.4	8.4	14.2	17.5	63	244	47	18.8
25	11	15.2	13.4	9.2	8.4	8.6	10.3	13.1	22.5	75	32	28
26	60	10.0	10.3	8.2	103	14.8	9.7	10.3	11.2	105	53	35
27	70	10.3	12.1	8.2	148	40	9.4	9.7	25.5	183	64	20
28	14.2	10.3	9.4	10.0	61	93	9.2	24	27.5	162	22	21
29	26.5	9.7	8.9	8.2	56	24.5	18.6	-	200	27.5	21.5	16.7
30	27.5	9.4	8.6	7.9	48	83	21.5	-	46	35	19.2	15.6
31	22.5	9.7	-	7.6	-	15.6	12.4	-	30	-	18.4	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	70	9.5	23.6	36.5	733	2,250
August	84	9.4	19.6	30.3	607	1,860
September	15.8	8.6	10.4	16.1	312	957
October	18.4	7.6	10.5	16.2	326	999
November	148	8.2	30.0	46.4	901	2,770
December	93	8.4	22.0	34.0	683	2,100
Calendar year 1949	148	7.6	18.8	29.1	6,860	21,060
January	201	9.2	21.7	33.6	672	2,060
February	154	8.6	22.6	35.0	633	1,940
March	200	8.9	33.9	52.5	1,050	3,220
April	244	11.2	68.6	106	2,060	6,320
May	200	18.4	45.4	70.2	1,410	4,320
June	94	15.6	24.5	37.9	735	2,260
Fiscal year 1949-50	244	7.6	27.7	42.9	10,120	31,060

Peak discharge (base, 700 mgd).--Jan. 11 (7:30 a.m.) 760 mgd (1,180 cfs), 5.52 ft; Apr. 27 (2:30 a.m.) 720 mgd (1,110 cfs), 5.45 ft.
Note.--No gage-height record July 1-27; discharge estimated on basis of records for Halawa and Kahakuloa Streams.

Honokowai ditch near Lahaina

Location.--Lat 20°56'00", long. 156°37'30", on left bank just downstream from intake on Honokowai Stream, 2.5 miles upstream from Pioneer Mill Co.'s powerhouse and 5.5 miles northeast of Lahaina.

Records available.--July 1912 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 1,900 ft (from topographic map). Prior to Dec. 31, 1917, staff gage at site 0.5 mile downstream at different datum. Nov. 14, 1918, to May 27, 1921, water-stage recorder at site 1.5 miles downstream at different datum.

Average discharge.--31 years (1919-50), 5.91 mgd (9.14 cfs).

Extremes.--1912-50: Maximum daily discharge, 43 mgd (66 cfs) June 30, 1930; no flow at times.

Remarks.--Ditch diverts water for power and irrigation from Honokowai Stream just above station. Flow regulated by headgates at intake.

Cooperation.--Records of daily discharges furnished by Pioneer Mill Co.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.0	6.3	4.4	3.9	3.8	16.0	5.5	4.1	4.3	10.0	10.0	4.2
2	11.9	5.5	4.4	4.0	4.1	18.0	17.7	3.9	4.1	6.6	9.8	4.7
3	7.5	5.2	4.4	3.9	4.6	13.0	9.9	3.9	3.9	4.3	8.8	4.5
4	5.8	5.2	4.4	3.8	4.5	8.2	6.0	4.0	3.9	3.9	9.3	4.5
5	10.8	5.5	4.4	3.8	18.0	7.0	4.1	4.0	3.9	4.0	15.2	4.5
6	12.6	5.8	4.3	3.8	7.8	5.7	4.1	3.9	5.2	3.9	8.2	4.2
7	8.3	5.7	4.3	3.9	4.7	4.3	4.1	3.9	4.1	8.2	18.0	4.1
8	9.0	8.2	4.2	4.4	4.3	4.3	4.0	3.9	3.9	4.0	21	13.3
9	7.4	6.5	4.2	5.1	4.1	4.3	4.1	3.9	3.8	9.7	9.2	8.3
10	5.3	14.8	4.2	3.85	4.1	4.3	13.0	3.8	3.8	3.8	9.4	4.7
11	9.3	12.9	4.2	3.4	3.9	5.0	22	3.8	5.2	19.1	12.8	12.6
12	11.6	7.0	4.2	4.0	10.3	9.6	16.0	9.8	4.2	4.2	7.6	5.8
13	12.4	5.5	5.0	4.1	13.2	17.0	5.0	19.0	5.9	15.0	10.0	4.7
14	10.0	5.5	4.6	4.2	13.1	7.2	5.0	6.1	4.2	10.0	8.6	4.1
15	12.8	6.7	5.8	6.4	7.0	4.3	5.0	4.9	4.1	6.0	6.0	4.1
16	11.3	8.8	4.6	5.7	7.5	5.2	5.0	4.1	3.9	10.0	11.0	4.1
17	8.7	10.4	4.4	5.0	17.6	5.2	4.1	12.0	3.9	19.0	12.0	4.1
18	6.2	14.9	4.4	4.5	19.5	5.2	4.0	26.5	3.9	12.0	18.0	4.7
19	5.3	9.5	4.4	6.0	13.3	5.6	4.0	6.6	3.8	22.5	8.0	4.1
20	5.2	9.0	4.3	6.0	7.4	5.2	4.0	7.4	22	9.2	12.8	10.0
21	5.2	3.3	4.3	4.6	5.2	5.0	3.9	14.1	22.5	6.1	8.6	9.7
22	5.4	10.4	4.4	4.6	5.2	5.0	3.9	19.2	12.0	10.3	6.1	4.2
23	5.5	5.8	4.4	3.55	5.2	5.0	19.6	10.1	8.3	20.5	7.8	5.1
24	5.9	5.1	4.2	3.8	5.2	5.0	8.8	6.0	23	20.5	14.0	7.6
25	7.6	5.6	4.5	3.8	5.2	5.0	5.5	5.2	10.0	11.9	11.0	9.8
26	16.0	4.6	4.3	3.8	13.5	9.0	4.1	5.2	5.2	13.6	14.9	12.3
27	10.7	4.4	3.95	3.8	24	16.6	4.0	4.0	9.2	26	12.0	8.3
28	5.7	4.5	3.9	3.8	5.5	19.5	4.0	9.0	8.3	27	5.2	4.7
29	9.4	4.4	4.0	3.8	16.0	10.7	4.0	-	23.5	12.8	5.5	4.7
30	9.8	4.5	3.9	3.8	20	16.6	3.9	-	18.2	15.5	5.6	4.7
31	9.3	4.5	-	3.8	-	6.0	3.9	-	6.6	-	4.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	16.0	5.2	8.74	13.5	271	831
August	14.9	3.3	6.97	10.8	216	663
September	5.8	3.9	4.36	6.75	131	402
October	6.4	3.4	4.29	6.64	133	408
November	24	3.8	9.26	14.3	278	853
December	19.5	4.3	8.32	12.9	258	792
Calendar year 1949	24	3.3	6.89	10.7	2,520	7,720
January	22	3.9	6.85	10.6	212	651
February	26.5	3.8	7.58	11.7	212	652
March	23.5	3.8	8.03	12.4	249	764
April	27	3.8	11.7	18.1	350	1,070
May	21	4.2	10.3	15.9	321	984
June	13.3	4.1	6.21	9.61	186	572
Fiscal year 1949-50	27	3.3	7.72	11.9	2,820	8,640

Olowalu ditch near Olowalu

Location.--Lat 20°49'30", long. 156°36'50", on left bank 40 ft (revised) upstream from intake of pipe line to hydroelectric plant, 1.2 miles northeast of Olowalu, and 5.5 miles southeast of Lahaina.

Records available.--August 1911 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Prior to June 30, 1916, staff gage in tailrace of powerhouse 1,000 ft downstream at different datum. July 28, 1916, to June 8, 1919, staff gage and June 9, 1919, to June 21, 1932, water-stage recorder at site 300 ft upstream at different datum. July 1, 1932, to Oct. 7, 1933, records obtained by combining flows of three stations about 1,000 ft downstream.

Average discharge.--32 years (1917-20, 1921-50), 4.92 mgd (7.61 cfs).

Extremes.--1911-50: Maximum daily discharge, 13.7 mgd (21.2 cfs) Apr. 17, 1935; no flow at times.

Remarks.--Ditch diverts water from Olowalu Stream at altitude of about 450 ft. Water used for power and irrigation. Regulated by headgates.

Cooperation.--Records of daily discharges furnished by Pioneer Mill Co.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Deo.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.75	5.0	3.0	2.3	1.90	8.5	4.8	4.5	4.8	9.0	9.3	7.8
2	5.2	4.5	2.8	2.25	1.89	8.9	6.3	4.6	4.4	8.9	8.9	7.6
3	3.25	4.0	2.7	2.15	2.0	9.1	4.4	4.1	4.2	7.7	8.8	7.2
4	2.85	3.65	2.8	2.3	1.95	8.3	3.85	3.85	4.2	6.6	8.8	6.8
5	2.85	3.4	2.65	2.3	8.2	6.5	3.5	3.7	4.3	6.3	8.5	6.6
6	3.85	3.3	2.6	2.2	3.9	5.4	3.25	3.6	4.2	5.8	8.2	6.5
7	4.7	3.05	2.5	2.35	2.8	4.6	3.4	3.6	3.6	5.7	8.7	6.1
8	4.5	3.85	2.45	2.2	2.45	4.1	3.2	3.6	3.45	5.2	9.4	7.7
9	4.9	3.35	2.45	2.15	2.35	3.8	3.4	3.3	3.4	5.2	8.8	7.8
10	3.55	9.1	2.6	2.25	2.35	3.5	8.8	3.15	3.4	5.0	8.7	7.1
11	5.2	9.1	2.4	2.1	2.35	3.4	8.7	3.5	3.45	9.5	8.8	7.8
12	6.7	7.0	2.4	2.05	6.0	3.25	8.7	3.7	3.4	9.1	8.6	7.3
13	5.6	5.2	2.7	2.0	5.2	3.85	8.6	6.3	4.1	9.5	8.5	6.6
14	5.2	4.6	2.75	2.05	5.0	5.4	8.3	4.0	3.25	9.2	8.5	6.1
15	8.3	4.8	2.8	2.2	4.4	3.55	7.4	3.5	3.05	9.2	8.5	5.8
16	7.6	4.7	2.5	2.3	4.1	3.2	6.1	3.6	2.95	9.8	8.6	5.7
17	5.6	5.0	2.35	2.05	6.2	3.15	5.3	5.1	2.9	9.0	8.6	5.9
18	4.4	6.6	2.3	2.05	8.0	4.1	4.8	10.0	2.9	9.0	9.3	5.4
19	3.7	6.8	2.25	2.05	7.7	3.4	4.5	8.8	2.8	10.3	8.9	5.3
20	3.3	8.8	2.25	2.05	4.9	3.1	4.2	8.0	7.0	9.7	8.7	5.5
21	3.3	6.8	2.2	1.95	3.75	2.85	4.0	7.4	9.2	9.6	8.7	6.4
22	3.0	7.4	2.8	2.2	3.2	2.7	3.8	8.8	8.2	9.9	8.5	5.2
23	2.9	5.9	2.55	1.99	2.85	2.7	8.4	8.1	7.8	10.3	8.4	5.1
24	2.95	4.9	2.4	1.95	2.7	2.65	8.9	6.9	8.2	10.5	8.5	4.9
25	3.15	4.5	2.55	1.89	2.55	2.65	7.8	6.1	8.0	10.4	8.4	5.4
26	8.6	3.85	2.35	1.86	6.4	2.65	6.2	5.4	7.5	10.3	8.5	6.6
27	9.1	3.65	2.6	1.89	9.5	2.85	5.7	4.8	7.1	10.7	8.4	5.5
28	6.3	3.45	2.35	1.89	9.4	5.8	5.4	6.6	8.0	10.4	8.3	5.3
29	5.5	3.2	2.3	1.89	9.2	5.2	4.8	-	8.8	9.6	8.2	4.8
30	5.8	3.05	2.3	1.86	9.4	6.4	5.6	-	8.6	9.4	8.0	4.5
31	5.8	3.0	-	1.84	-	5.4	4.8	-	8.3	-	7.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	9.1	2.75	4.85	7.50	150	462
August	9.1	3.0	5.02	7.77	156	477
September	3.0	2.2	2.52	3.90	75.6	232
October	2.35	1.84	2.08	3.22	64.6	198
November	9.5	1.89	4.75	7.35	143	438
December	9.1	2.65	4.55	7.04	141	433
Calendar year 1949	9.7	1.84	4.10	6.34	1,500	4,600
January	8.9	3.2	5.71	8.83	177	543
February	10.0	3.15	5.31	8.22	149	456
March	9.2	2.8	5.34	8.26	165	508
April	10.7	5.0	8.69	13.4	261	800
May	9.4	7.9	8.61	13.3	267	819
June	7.8	4.5	6.21	9.61	186	572
Fiscal year 1949-50	10.7	1.84	5.30	8.20	1,940	5,940

Oheo Stream below diversion dam, near Kipahulu

Location.--Lat 20°41'05", long. 156°04'10", on left bank just downstream from old diversion dam 2 miles northwest of Kipahulu and 2.5 miles upstream from mouth.

Drainage area.--5.8 sq mi.

Records available.--February 1927 to September 1929, December 1931 to June 1950. Published as "at elevation 1,550 ft, near Kipahulu" 1927-29.

Gage.--Water-stage recorder. Altitude of gage is 1,550 ft (from topographic map). Prior to Sept. 6, 1929, water-stage recorder at site 100 ft upstream at different datum.

Average discharge.--15 years (1927-29, 1932-35, 1940-50), 37.0 mgd (57.2 cfs).

Extremes.--Maximum discharge during year, 2,950 mgd (4,560 cfs) Dec. 17 (gage height, 9.68 ft), from rating curve extended above 750 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Sept. 20, 21.
1927-29, 1931-50: Maximum discharge, 6,000 mgd (9,280 cfs) Mar. 4, 1939, estimated on basis of computation of peak flow over dam; no flow at times.

Remarks.--Records good. Small diversion below station for domestic supply and livestock.

Revisions (fiscal years).--W 1155: 1932-35(M), 1937-40(M).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0	0	0.6	1.95	2.5	91
.1	.04	.8	4.1	3.0	136
.2	.14	1.0	7.5	4.0	254
.3	.35	1.3	15.3	5.0	465
.4	.67	1.6	27.5	6.0	760
.5	1.18	2.0	51		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16.4	19.8	0.41	0.02	0.02	149	5.0	0.18	2.35	5.0	65	0.77
2	35.5	15.9	.31	.02	.02	137	189	.12	.77	1.07	37.5	.82
3	21	6.0	.24	.02	.03	137	16.3	.11	.77	.82	31	.66
4	4.9	5.4	.24	.03	.04	13.5	26.5	.07	23.5	.61	96	1.62
5	44	1.87	.16	.02	57	2.75	8.6	.04	1.32	4.1	57	.61
6	24.5	8.4	.11	.03	2.75	.87	1.71	.03	.87	11.2	36.5	.77
7	5.8	1.54	.07	76	5.2	13.3	7.6	.32	.57	45	32	.51
8	3.05	33.5	.04	16.1	13.8	145	2.25	.33	.45	20.5	200	58
9	2.15	14.7	.03	11.2	2.85	23	4.6	.14	.35	11.4	18.1	24
10	.57	58	.03	46	2.75	25.5	23.5	.04	.31	1.16	21.5	10.4
11	21.5	108	.03	4.2	1.40	47	397	.03	.27	36	56	91
12	24	22.5	.04	47	17.7	24	110	.03	.20	34.5	21.5	16.4
13	47	5.9	.88	12.3	1.37	261	5.3	24.5	.95	219	127	4.4
14	8.8	2.45	.05	4.8	.07	222	1.75	.39	.44	331	31	1.55
15	56	5.5	1.46	.28	.03	170	1.13	.24	.20	85	32	8.2
16	11.8	12.0	.48	31	.03	283	.82	.16	.15	18.8	197	2.15
17	1.92	27	.02	2.7	.03	417	.64	4.1	.38	53	71	3.15
18	2.9	77	.02	.47	1.18	116	.54	249	.27	33	319	1.04
19	.83	29.5	.02	27	.72	87	.48	22.5	.14	223	36	.67
20	.51	51	.02	12.0	.05	71	.38	42	46	9.1	92	17.8
21	56	23.5	.02	1.86	.03	5.9	.33	151	276	8.7	90	16.9
22	5.2	58	.02	2.8	.02	2.25	.29	300	28	241	28.5	3.45
23	6.0	51	.03	.51	.02	1.41	.50	393	7.7	473	49	13.4
24	4.4	18.6	.03	.18	.02	1.03	.58	44	127	445	41	9.7
25	11.9	12.3	.03	.14	.02	.82	.32	47	88	58	22.5	24
26	123	2.3	.04	.06	31	23.5	.20	18.2	3.5	75	27.5	60
27	45	5.1	.04	.03	78	184	25	10.1	.97	330	64	8.4
28	8.7	2.35	.03	7.4	11.0	192	2.6	14.8	1.50	525	9.2	3.0
29	65	.87	.03	.18	38	170	.41	-	236	36.5	4.9	.92
30	30	.61	.03	.03	161	140	.35	-	41	44	1.45	.61
31	7.0	.48	-	.02	-	16.2	.24	-	8.6	-	.93	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	123	0.51	22.4	34.7	695	2,130
August	108	.48	22.0	34.0	681	2,090
September	1.46	.02	.165	.255	4.96	15
October	76	.02	9.82	15.2	304	934
November	161	.02	14.2	22.0	426	1,310
December	417	.82	99.4	154	3,080	9,460
Calendar year 1949	712	.02	27.8	43.0	10,150	31,140
January	397	.20	26.9	41.6	834	2,560
February	393	.03	47.2	73.0	1,320	4,060
March	276	.14	29.0	44.9	899	2,760
April	525	.61	113	175	3,380	10,370
May	319	.93	61.8	95.6	1,920	5,880
June	91	.51	12.8	19.8	385	1,180
Fiscal year 1949-50	525	.02	38.2	59.1	13,930	42,750

Peak discharge (base, 1,600 mgd).--Dec. 17 (10 p.m.) 2,950 mgd (4,560 cfs), 9.68 ft; Feb. 22 (2 a.m.) 2,400 mgd (3,710 cfs), 9.30 ft; Apr. 27 (4 p.m.) 2,250 mgd (3,480 cfs), 9.25 ft.

Right Branch Kahalawe Stream near Kipahulu

Location.--Lat 20°41'05", long. 156°03'00", on left bank at old ditch intake, 2 miles north of Kipahulu.

Records available.--February 1927 to April 1937, April 1938 to June 1950.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,100 ft (from topographic map). Prior to Apr. 21, 1938, at same site at datum 8 ft lower.

Average discharge.--20 years (1927-34, 1935-36, 1938-50), 3.53 mgd (5.46 cfs).

Extremes.--Maximum discharge during year, 382 mgd (591 cfs) Dec. 18 (gage height, 3.54 ft), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.53 mgd (0.82 cfs) Oct. 3-5.

1927-37, 1938-50: Maximum discharge, 1,940 mgd (3,000 cfs) Apr. 29, 1937 (gage height, 15.74 ft, datum then in use), from rating curve extended above 22 mgd; minimum, 0.15 mgd (0.23 cfs) Dec. 18, 1929.

Remarks.--Records good.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.8	0.35	1.3	3.3	1.8	17.4
.9	.62	1.4	4.8	1.9	23
1.0	1.01	1.5	6.8	2.0	29.5
1.1	1.54	1.6	9.3	2.2	47
1.2	2.3	1.7	12.4		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.6	4.4	1.35	0.62	0.79	3.35	1.73	0.79	1.35	2.8	4.4	1.73
2	5.9	3.5	1.25	.58	.75	6.9	8.4	.75	1.25	1.60	2.95	1.87
3	3.1	2.2	1.25	.55	.75	7.1	2.05	.87	1.25	1.47	2.85	2.05
4	1.73	2.05	1.20	.55	.84	2.05	11.4	.71	7.4	1.25	4.6	3.2
5	4.8	1.80	1.15	.55	5.9	1.54	9.4	.68	1.30	3.9	3.3	1.73
6	4.7	2.25	1.10	.58	1.20	1.30	1.95	.68	1.25	2.85	2.7	1.88
7	2.5	1.66	1.01	11.8	1.72	3.55	5.2	1.79	1.10	3.3	2.2	1.54
8	4.0	4.2	.97	1.95	2.4	16.2	2.2	1.38	1.05	1.87	2.75	4.0
9	2.4	2.95	.92	1.10	1.53	3.25	1.98	1.13	1.28	1.66	2.3	3.0
10	1.87	11.0	1.10	4.8	1.90	3.5	5.7	.68	1.05	1.41	2.9	1.80
11	9.5	11.1	1.05	1.35	1.62	9.2	19.9	.65	1.25	11.2	4.7	9.5
12	5.5	2.85	1.05	2.5	3.15	3.2	6.9	1.18	1.01	3.95	3.15	2.35
13	4.2	2.4	1.23	1.35	1.35	8.9	2.45	5.7	2.8	12.3	5.0	1.80
14	3.65	2.05	.97	1.20	1.10	3.95	1.95	.83	1.10	12.4	2.5	1.54
15	7.5	2.75	1.10	1.10	.97	4.4	1.66	.83	1.05	10.1	2.35	2.25
16	3.05	3.05	.92	2.35	.92	4.5	1.54	.83	.92	2.75	7.6	1.60
17	2.2	2.65	.87	1.35	1.20	18.6	1.41	1.51	1.15	12.0	5.4	2.1
18	1.95	14.1	.83	1.10	3.6	38	1.30	7.1	1.15	4.7	21.5	1.54
19	1.73	5.1	.75	3.5	1.54	8.8	1.25	2.2	1.01	17.7	3.6	1.41
20	1.54	5.6	.90	6.5	1.20	4.7	1.15	1.97	3.1	2.95	7.0	3.6
21	4.2	3.6	.75	1.88	1.01	2.45	1.10	5.4	14.5	2.3	8.9	1.94
22	1.73	3.9	2.3	2.65	.92	1.95	1.05	11.7	2.25	7.4	8.8	1.47
23	2.65	3.1	1.15	1.41	.83	1.80	1.10	12.5	1.41	16.1	10.1	1.66
24	2.15	2.55	.97	1.25	.79	1.66	1.10	2.95	1.91	14.1	5.2	1.60
25	2.2	2.3	1.01	1.30	.75	1.54	.97	3.7	1.61	3.85	3.45	2.4
26	15.7	2.05	.83	1.10	2.4	1.87	.92	2.3	1.20	6.1	3.45	7.3
27	3.0	2.2	.83	1.01	5.0	8.0	2.15	4.8	1.10	11.4	5.0	2.05
28	3.0	1.95	.75	2.2	4.6	5.2	1.16	1.66	1.20	21	2.75	2.5
29	6.7	1.80	.68	1.10	2.15	3.4	.97	-	12.1	4.1	2.75	1.66
30	3.55	1.54	.62	.97	2.95	6.9	1.01	-	6.4	3.95	2.2	1.41
31	2.55	1.47	-	.87	-	2.05	.87	-	2.1	-	1.87	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	15.7	1.54	3.93	6.08	122	374
August	14.1	1.47	3.68	5.69	114	350
September	2.3	.62	1.03	1.59	30.9	95
October	11.8	.55	1.97	3.05	61.1	188
November	5.9	.75	1.86	2.88	55.8	171
December	38	1.30	6.12	9.47	190	583
Calendar year 1949	49	.55	3.02	4.67	1,100	3,380
January	19.9	.87	3.29	5.09	102	313
February	12.5	.65	2.76	4.27	77.3	237
March	14.5	.92	2.54	3.93	78.6	241
April	21	1.25	6.75	10.4	202	621
May	21.5	1.87	4.78	7.40	148	455
June	9.5	1.41	2.48	3.84	74.5	229
Fiscal year 1949-50	38	.55	3.44	5.32	1,260	3,860

Peak discharge (base, 200 mgd).--Dec. 18 (1 a.m.) 382 mgd (591 cfs), 3.54 ft; Jan. 4 (11:30 p.m.) 295 mgd (456 cfs), 3.30 ft.

Makapipi ditch near Nahiku

Location.--Lat 20°48'20", long. 156°06'25", on right bank at entrance to tunnel No. 1, 1.8 miles south of Nahiku and 4.8 miles southeast of Keanae.

Records available.--July 1948 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,350 ft (from topographic map).

Extremes.--1948-50: Maximum daily discharge, 7.2 mgd (11.1 cfs) Dec. 25, 1948, Dec. 3, 1949; minimum daily, 0.76 mgd (1.18 cfs) Oct. 6, 1949.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.12	4.3	2.65	0.87	1.21	6.6	4.6	1.35	3.65	6.0	2.05	3.95
2	1.12	4.2	2.5	.83	1.25	6.6	6.0	1.35	3.4	5.9	1.94	3.75
3	1.17	4.1	2.4	.83	1.21	7.2	5.4	1.30	3.1	5.5	1.88	3.5
4	1.17	3.9	2.2	.80	1.17	6.6	4.6	1.30	2.9	4.8	1.81	3.25
5	1.12	3.75	2.05	.80	2.1	5.6	4.1	1.30	2.65	4.3	1.81	2.9
6	1.21	3.55	1.94	.76	1.94	5.1	3.95	1.25	3.8	3.95	1.81	a2.7
7	1.35	3.4	1.81	.83	1.81	4.6	3.8	1.17	2.75	3.8	1.88	a2.7
8	1.40	3.2	1.70	.80	1.88	4.1	3.65	1.17	2.6	3.75	1.88	a3.5
9	1.50	3.05	1.65	.80	1.88	3.9	3.25	1.17	2.5	3.55	1.88	a3
10	1.50	3.25	1.60	.80	1.94	3.75	2.95	1.12	3.4	3.55	1.88	a2.5
11	1.60	4.1	1.50	.83	2.0	3.5	3.8	1.12	4.7	5.1	1.88	a2.5
12	1.75	4.2	1.50	.83	3.55	3.2	3.05	1.08	3.9	4.6	1.88	a2
13	1.94	3.95	1.40	.87	3.35	3.4	2.65	1.50	3.65	5.8	1.81	a2
14	2.15	3.75	1.35	.87	3.5	4.6	2.5	1.25	3.5	6.0	1.81	a2
15	2.6	3.55	1.30	.87	3.5	4.1	2.4	1.21	3.35	5.6	3.9	a2
16	2.9	3.4	1.25	.91	3.5	5.6	2.25	1.17	3.2	5.2	4.8	a1.5
17	3.25	3.25	1.21	.91	3.5	4.4	2.05	1.61	2.95	3.45	4.8	a1.5
18	3.4	3.25	1.17	.96	3.55	4.2	2.0	4.3	2.9	2.45	5.3	a1.5
19	3.4	3.4	1.12	.96	3.8	4.1	1.94	2.9	2.65	3.15	5.5	a1.5
20	3.35	3.65	1.12	1.00	3.9	4.5	1.81	2.9	3.35	2.6	5.4	a1.5
21	3.25	3.9	1.08	1.04	3.8	3.9	1.81	3.3	5.0	2.4	5.4	a1.5
22	3.05	3.9	1.04	1.08	3.55	3.65	1.75	5.5	4.9	2.4	5.5	a1.5
23	2.8	3.95	1.04	1.08	3.5	3.4	1.65	5.6	4.4	2.95	5.2	a1.5
24	2.6	4.1	1.04	1.08	3.25	3.1	1.60	5.6	5.0	2.15	5.2	a1.5
25	2.45	3.9	1.00	1.12	2.95	2.9	1.60	4.8	5.5	2.4	5.1	a2
26	4.8	3.8	.96	1.12	3.1	2.65	1.50	4.3	4.9	2.25	5.0	a2
27	4.6	3.65	.96	1.17	3.75	2.85	1.40	4.1	4.6	2.4	5.2	a2
28	3.75	3.5	.96	1.17	4.3	4.7	1.35	3.9	3.25	2.4	5.2	a1.5
29	3.75	3.25	.87	1.17	4.2	4.7	1.35	-	5.6	2.25	4.8	a1.5
30	4.1	3.1	.87	1.12	6.0	6.3	1.50	-	6.4	2.15	4.6	a1.5
31	3.95	2.9	-	1.12	-	5.6	1.40	-	6.3	-	4.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.8	1.12	2.52	3.90	78.1	240
August	4.3	2.9	3.65	5.65	113	347
September	2.65	.87	1.44	2.23	43.2	133
October	1.17	.76	.948	1.47	29.4	90
November	6.0	1.17	2.96	4.58	88.9	273
December	7.2	2.65	4.50	6.96	139	428
Calendar year 1949	7.2	.76	2.60	4.02	950	2,920
January	6.0	1.35	2.70	4.18	83.7	257
February	5.6	1.08	2.45	3.79	68.6	211
March	6.4	2.5	3.90	6.03	121	371
April	6.0	2.15	3.76	5.82	113	346
May	5.5	1.81	3.59	5.55	111	342
June	3.95	1.5	2.21	3.42	66.2	203
Fiscal year 1949-50	7.2	.76	2.89	4.47	1,060	3,240

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

Hanawi Stream near Nahiku

Location.--Lat 20°48'35", long. 156°06'50", on left bank 200 ft upstream from Koolau ditch intake and trail, 1.8 miles southwest of Nahiku, and 4.5 miles southeast of Keanae.
Drainage area.--0.8 sq mi.
Records available.--January 1914 to January 1916, November 1921 to June 1950.
Gage.--Water-stage recorder. Jan. 9, 1914, to Jan. 6, 1916, at site 50 ft downstream in same pool at datum 0.12 ft lower.
Average discharge.--28 years (1922-50), 13.6 mgd (21.0 cfs).
Extremes.--Maximum discharge during year, 1,280 mgd (1,980 cfs) Apr. 28 (gage height, 6.97 ft), from rating curve extended above 260 mgd by test on model of station site; minimum, 1.54 mgd (2.38 cfs) Oct. 31.
1914-16, 1921-50: Maximum discharge, about 3,600 mgd (5,570 cfs) Jan. 18, 1916 (gage height, 11.6 ft at site of present gage), by test on model of station site; minimum, 1.1 mgd (1.7 cfs) Feb. 19, 20, 1944.
Remarks.--Records good except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.
Revisions (fiscal years).--W 1045: 1922-45(M).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.2	1.43	2.0	33
.3	1.98	2.5	54
.5	3.4	3.0	85
.7	5.3	3.5	125
1.0	9.0	4.0	176
1.3	14.3	4.5	250
1.6	21	5.0	370

Discharge, in million gallons, fiscal year July 1949to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.87	16.6	2.55	1.70	3.0	71	5.6	2.55	3.55	24	37.5	5.1
2	8.7	5.9	2.45	1.70	2.05	61	48	2.6	2.95	7.3	24.5	5.0
3	4.4	3.65	2.3	1.65	2.5	54	8.8	2.45	2.7	5.6	18.3	4.6
4	2.3	3.4	2.25	1.65	2.2	11.4	5.6	2.25	2.5	4.8	37	4.4
5	2.5	3.0	2.25	1.60	53	6.4	4.5	2.15	2.35	4.6	17.5	4.2
6	4.5	3.3	2.15	1.60	7.5	5.1	3.9	2.1	55	6.5	14.0	4.1
7	4.4	2.7	2.1	2.55	5.1	4.1	3.65	2.25	3.35	8.1	38	3.9
8	3.1	3.65	2.05	2.3	4.7	3.8	3.4	3.85	2.6	5.1	93	19
9	2.8	4.2	1.98	2.9	4.2	3.4	14.7	2.45	2.5	6.2	34	8.0
10	2.45	10.8	2.35	6.7	3.8	3.15	4.8	2.1	52	25.5	26.5	8.0
11	4.3	8.2	2.05	2.55	3.8	3.1	97	2.05	27.5	39.5	31.5	8.0
12	4.8	4.8	1.98	7.4	62	3.4	30.5	3.15	6.5	20.5	13.4	5.0
13	8.8	3.8	2.75	6.4	20.5	21.5	4.4	26.5	4.5	28	15.8	4.0
14	5.5	3.65	2.15	3.9	6.1	9.0	3.5	4.2	3.55	14.5	9.9	3.5
15	16.4	4.8	2.9	3.0	5.0	13.5	3.0	3.35	3.1	25	8.6	3.3
16	8.2	4.2	2.45	3.15	16.3	59	2.85	6.3	2.85	12.4	10.3	3.2
17	5.3	4.5	2.25	2.45	14.5	5.7	2.7	24.5	2.7	19.0	16.4	3.1
18	5.5	8.3	2.15	2.75	18.8	5.5	2.55	51	2.5	93	72	3.0
19	3.55	8.8	2.1	3.7	6.2	5.9	2.55	8.9	2.5	273	15.2	3.1
20	2.8	11.9	2.25	3.1	3.65	7.6	2.45	10.0	62	46	31	3.4
21	2.6	6.7	1.98	2.3	2.95	5.0	2.35	51	126	11.4	20	3.3
22	2.5	8.0	2.55	2.25	2.6	4.0	2.3	134	13.3	34	9.8	3.2
23	2.25	5.7	2.15	2.1	2.35	3.8	3.15	28	19.1	215	18.7	4.6
24	2.8	7.9	1.98	1.98	2.15	3.55	2.5	7.6	107	140	30.5	6.5
25	6.2	7.0	2.05	1.87	2.1	3.4	2.15	5.4	34	19.8	19.0	9.0
26	88	4.0	2.05	1.82	8.5	4.1	2.15	4.2	6.2	31.5	28.5	12
27	19.0	3.7	2.1	1.82	12.8	21	2.1	3.55	8.0	151	18.0	7.0
28	4.2	3.55	2.1	1.82	7.2	15.8	1.98	9.2	8.3	347	8.5	4.1
29	11.3	3.25	1.87	1.70	31.5	18.6	3.9	-	252	38	6.8	3.6
30	9.8	2.85	1.76	1.60	102	20	6.8	-	70	46	6.1	3.4
31	9.2	2.8	-	1.60	-	8.0	2.85	-	27.5	-	5.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	88	1.87	8.39	13.0	260	798
August	16.6	2.7	5.66	8.76	176	539
September	2.9	1.76	2.20	3.40	66.0	203
October	7.4	1.60	2.70	4.18	83.6	257
November	102	2.05	14.0	21.7	419	1,290
December	71	3.1	15.0	23.2	465	1,430
Calendar year 1949	105	1.60	8.41	13.0	3,070	9,420
January	97	1.98	9.25	14.3	287	880
February	134	2.05	14.6	22.6	408	1,250
March	252	2.35	29.6	45.8	919	2,820
April	347	4.6	56.7	87.7	1,700	5,220
May	93	5.5	23.7	36.7	736	2,260
June	19	3.0	5.42	8.39	163	499
Fiscal year 1949-50	347	1.60	15.6	24.1	5,680	17,450

Peak discharge (base, 850 mgd).--Mar. 29 (8:30 a.m.) 990 mgd (1,530 cfs), 6.05 ft; Apr. 19 (2:30 a.m.) 990 mgd (1,530 cfs), 5.87 ft; Apr. 23 (7 a.m.) 1,250 mgd (1,930 cfs), 6.93 ft; Apr. 28 (11:30 a.m.) 1,280 mgd (1,980 cfs), 6.97 ft.
Note.--No gage-height record June 5-30; discharge estimated on basis of records for nearby streams.

Kapaula Stream near Nahiku

Location.--Lat 20°48'50", long. 156°07'05", on right bank 40 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 1.8 miles southwest of Nahiku, and 4 miles southeast of Keanae.
Records available.--November 1921 to June 1950.
Gage.--Water-stage recorder.
Average discharge.--28 years (1922-50, 10.8 mgd (16.7 cfs).
Extremes.--Maximum discharge during year, 916 mgd (1,420 cfs) Apr. 23 (gage height, 5.98 ft), from rating curve extended above 220 mgd by logarithmic plotting; minimum, 0.60 mgd (0.93 cfs) Oct. 5, 6.
1921-50: Maximum discharge, 1,780 mgd (2,750 cfs) Apr. 6, 1938 (gage height, 8.40 ft), from rating curve extended above 220 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) Nov. 23-25, 1933, Oct. 2-5, 1938.
Remarks.--Records good except those for periods of no gage-height record, which are poor. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.55	1.4	12.8
.5	1.20	1.6	17.0
.6	2.35	1.8	23.5
.7	3.8	2.0	33
.8	5.2	2.4	60
1.0	7.6	2.8	101
1.2	10.0	3.2	156

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.20	14.6	1.39	0.70	2.8	49	4.1	2.1	3.35	19.4	a18	2.95
2	6.9	6.2	1.29	.70	1.72	45	38.5	1.96	2.1	5.8	a13	2.5
3	4.5	3.5	1.20	.65	2.95	40	9.1	1.72	1.72	3.65	a12	2.2
4	2.1	2.95	1.20	.65	1.72	11.2	4.4	1.39	1.49	2.8	a19	2.1
5	2.1	2.5	1.11	.60	46	5.4	3.2	1.20	1.85	2.5	a14	1.84
6	4.4	2.95	1.03	.60	9.1	3.95	2.65	1.11	46	3.65	a12	1.84
7	4.5	2.2	1.03	1.99	6.8	3.1	2.35	1.20	3.55	5.8	a18	1.84
8	2.95	3.1	1.03	1.43	5.4	2.5	2.1	5.2	2.1	3.35	a55	18.5
9	2.65	4.3	1.03	1.94	4.5	2.2	5.7	2.35	1.60	4.4	a17	7.3
10	2.1	12.7	1.29	6.6	3.95	1.96	4.8	1.49	31.5	19.1	21.5	7.8
11	4.5	8.8	1.20	2.5	4.1	1.72	41	1.29	38.5	31.5	21.5	7.7
12	4.9	4.7	1.11	9.9	54	1.84	15.9	2.6	6.2	17.9	10.4	3.65
13	8.3	3.2	2.9	8.2	20.5	14.2	4.9	24	4.1	21	12.2	2.5
14	5.8	2.8	1.39	4.1	7.6	10.6	3.5	4.9	2.35	9.1	7.6	1.96
15	16.8	4.5	2.5	2.65	4.8	3.65	2.5	4.1	1.72	13.0	6.2	1.84
16	8.8	4.0	1.84	2.95	21	27	2.2	5.0	1.49	8.3	7.7	1.60
17	5.3	4.2	1.29	1.84	15.7	4.1	1.96	23.5	1.39	16.3	12.0	1.60
18	5.2	9.2	1.20	2.8	15.7	3.95	1.60	43	1.20	69	55	1.49
19	3.2	8.6	1.11	3.8	7.7	4.6	1.49	8.5	1.11	140	12.1	1.49
20	2.35	14.3	1.29	2.5	3.8	5.7	1.39	6.8	40	29	22	2.1
21	2.2	6.8	.95	1.72	2.65	3.65	1.29	35	97	7.0	18.4	1.72
22	2.1	7.0	1.93	1.60	2.1	2.5	1.20	77	13.0	25	7.5	3.25
23	1.72	5.3	1.20	1.39	1.72	2.2	4.3	18.5	16.6	122	12.4	4.6
24	2.65	7.2	1.03	1.29	1.49	1.84	2.5	5.8	69	89	25	5.7
25	7.5	6.8	.95	1.20	1.29	1.72	1.49	4.2	29	13.2	18.8	8.5
26	76	3.65	.95	1.11	10.4	2.65	1.20	3.2	5.2	24	23	12.1
27	17.6	2.95	1.03	1.03	12.6	13.6	1.20	2.2	5.1	a140	15.9	5.1
28	4.1	2.65	.95	1.11	8.0	15.9	1.11	7.2	8.3	150	5.9	2.95
29	8.7	2.2	.82	.95	26.5	14.2	3.4	-	144	a19	4.4	2.5
30	10.6	1.84	.76	.88	71	19.1	7.5	-	48	a20	3.65	1.96
31	9.3	1.60	-	.88	-	6.3	2.8	-	21	-	3.1	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	76	1.20	7.77	12.0	241	740
August	14.6	1.60	5.40	8.36	167	513
September	2.9	.76	1.27	1.96	38.0	117
October	9.9	.60	2.27	3.51	70.3	216
November	71	1.29	12.6	19.5	378	1,160
December	49	1.72	10.5	16.2	325	998
Calendar year 1949	85	.60	6.58	10.2	2,400	7,370
January	41	1.11	5.85	9.05	181	556
February	77	1.11	10.6	16.4	297	910
Maroh	144	1.11	20.9	32.3	649	1,990
April	150	2.5	34.5	53.4	1,030	3,180
May	55	3.1	16.3	25.2	504	1,550
June	18.5	1.49	4.11	6.36	123	378
Fiscal year 1949-50	150	.60	11.0	17.0	4,000	12,310

Peak discharge (base, 450 mgd).--July 26 (4:30 a.m.) 534 mgd (826 cfs), 4.79 ft; Feb. 22 (2 a.m.) 534 mgd (826 cfs), 4.84 ft; Mar. 29 (9 a.m.) 534 mgd (826 cfs), 4.80 ft; Apr. 23 (7 a.m.) 916 mgd (1,420 cfs), 5.98 ft; Apr. 28 (12 m.) 594 mgd (919 cfs), 5.03 ft.
a No gage-height record; discharge estimated on basis of records for Waiohue Stream near Nahiku.

Koolau ditch at Nahiku weir, near Nahiku

Location.--Lat 20°48'55", long. 156°07'15", on right bank between Kapaula and Waiohue Streams, 1.8 miles southwest of Nahiku and 3.8 miles southeast of Keanae.

Records available.--February 1919 to June 1950. Gage-height records collected in this vicinity since 1904 are contained in files of East Maui Irrigation Co.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft above mean sea level. Prior to Apr. 28, 1922, staff gage at same site and datum.

Average discharge.--31 years, 21.7 mgd (33.6 cfs).

Extremes.--1919-50: Maximum daily discharge, 58 mgd (90 cfs) Apr. 11, 1942; no flow at times.

Remarks.--Records excellent. Flow regulated by spillways and gates. Ditch diverts water from nearly all streams from the Makapipi west to the Alo. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	39	11.0	5.9	11.7	48	28.5	10.7	16.8	45	0	18.1
2	21.5	27	10.4	5.9	7.9	48	49	10.7	14.5	35.5	0	17.2
3	14.5	18.8	9.8	5.7	9.5	50	40	9.8	12.9	27.5	0	17.9
4	9.2	16.8	9.5	5.7	7.9	45	28	8.7	11.9	22.5	0	18.1
5	10.1	15.5	8.9	5.4	39	32.5	22.5	8.4	11.3	21	0	17.2
6	15.8	15.5	8.7	5.7	24.5	25.5	21.5	8.2	39	22.5	0	16.8
7	16.8	13.8	8.2	9.6	19.5	20.5	17.5	8.4	15.7	28.5	0	16.2
8	12.5	15.8	7.9	8.4	17.5	18.5	16.2	14.0	12.5	20.5	0	41
9	12.1	17.6	7.6	9.2	16.5	16.5	21	9.5	11.6	22.5	.31	30
10	10.4	39	8.4	17.9	15.5	14.8	20.5	8.4	28.5	25	.02	29.5
11	17.0	37	7.9	10.1	15.5	13.8	37	7.9	32.5	36.5	0	33
12	18.4	25	7.4	21	43	13.8	39.5	10.8	16.6	39	0	22.5
13	27.5	19.5	9.7	21	45	34.5	19.2	24	21.5	42	0	19.2
14	21.5	17.5	7.6	13.8	28.5	35.5	15.5	15.3	17.2	33	0	17.2
15	37.5	20.5	9.3	11.0	21	22	13.5	12.9	14.8	37	17.6	16.2
16	29	18.9	8.2	11.9	38	40	12.5	15.3	13.5	39	32.5	14.8
17	23	19.2	7.4	9.2	38	23.5	11.6	17.1	12.9	15.4	34.5	14.5
18	22	28.5	7.1	10.6	40	23.5	11.2	25.5	11.6	1.41	49	13.8
19	16.2	33.5	6.9	12.9	29	22	10.4	23.5	11.0	0	40	13.5
20	13.8	38	7.4	10.8	20.5	28.5	9.8	23.5	35.5	0	45	13.6
21	12.9	28	6.6	8.7	17.2	21.5	9.2	24.5	52	0	45	14.8
22	11.9	30	8.7	8.4	15.2	17.5	8.9	25.5	20	0	35.5	13.5
23	11.0	25	7.1	7.6	13.8	16.2	12.9	25.5	0	0	34.5	18.8
24	12.5	28	6.6	7.1	12.5	14.8	10.1	24	18.7	0	40	19.6
25	19.3	26	6.9	6.9	11.6	13.8	8.4	23	40	0	40	25.5
26	48	17.8	6.6	6.4	36.5	16.2	5.5	21	23.5	0	40	33.5
27	39	16.5	7.1	5.9	40	32.5	7.6	17.5	24	0	42	21.5
28	21.5	15.2	6.9	6.1	34.5	45	7.4	24.5	29	0	31	16.8
29	24.5	13.8	6.4	5.7	39	44	12.7	-	27.5	0	26.5	14.5
30	33	12.9	6.1	5.4	48	48	21.5	-	37	0	22.5	13.5
31	33.5	11.9	-	5.2	-	38	11.6	-	32	-	19.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	48	7.4	20.1	31.1	623	1,910
August	39	11.9	22.6	35.0	702	2,150
September	11.0	6.1	7.94	12.3	238	731
October	21	5.2	9.20	14.2	285	875
November	48	7.9	25.2	39.0	756	2,320
December	50	13.8	28.5	44.1	884	2,710
Calendar year 1949	50	5.2	19.1	29.6	6,970	21,380
January	49	5.5	18.1	28.0	561	1,720
February	25.5	7.9	16.4	25.4	458	1,410
March	52	0	21.5	33.3	666	2,040
April	45	0	17.1	26.5	514	1,580
May	49	0	19.2	29.7	596	1,830
June	41	13.5	19.7	30.5	592	1,820
Fiscal year 1949-50	52	0	18.8	29.1	6,880	21,100

Waiohue Stream near Nahiku

Location.--Lat 20°49'05", long. 156°07'40", on left bank 200 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 2.2 miles southwest of Nahiku, and 3.5 miles southeast of Keanae.
Drainage area.--1.5 sq mi.
Records available.--October 1921 to June 1950.
Gage.--Water-stage recorder.
Average discharge.--28 years (1922-50), 7.84 mgd (12.1 cfs).
Extremes.--Maximum discharge during year, 410 mgd (634 cfs) Apr. 23 (gage height, 4.73 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 1.63 mgd (2.52 cfs) Oct 6.
1921-50: Maximum discharge, 760 mgd (1,180 cfs) Apr. 7, 1938 (gage height, 6.24 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 1.37 mgd (2.12 cfs) Feb. 21, 1944, June 2, 1945.
Remarks.--Records good. Water used for irrigation in central Maui.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 22

0.5	1.45	1.2	10.6
.6	2.05	1.4	16.3
.7	2.85	1.6	24
.8	3.8	1.8	33.5
.9	5.1	2.0	45
1.0	6.6	2.5	84
1.1	8.4		

Apr. 23 to June 30

0.6	2.23	1.0	7.0
.7	3.05	1.2	11.1
.8	4.1	1.4	16.5
.9	5.4	1.6	24

Note.--Same as preceding table above 1.6 ft.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.15	7.8	2.7	1.81	3.65	20	3.7	2.45	2.75	11.2	14.2	3.9
2	4.1	4.1	2.6	1.75	2.45	20	19.9	2.55	2.55	4.6	10.7	3.8
3	2.85	3.25	2.55	1.75	2.8	18.9	5.0	2.2	2.45	3.6	10.0	3.55
4	2.15	3.05	2.55	1.69	2.25	6.3	3.6	2.05	2.35	3.25	14.4	3.45
5	2.75	2.95	2.45	1.69	20	4.2	3.25	1.99	2.45	3.3	11.7	3.35
6	3.9	3.15	2.35	1.69	4.1	3.7	2.95	1.93	22.5	3.6	8.7	3.35
7	3.1	2.75	2.3	2.8	3.3	3.3	2.75	1.99	2.75	4.3	13.4	3.25
8	2.85	3.6	2.3	2.3	3.6	3.25	2.7	2.9	2.45	3.25	29.5	10.5
9	2.6	4.1	2.2	2.3	3.3	3.05	3.7	2.05	2.35	3.8	11.4	5.0
10	2.45	9.4	2.6	3.85	3.25	2.85	2.85	1.93	23	10.9	14.7	6.6
11	4.8	6.3	2.3	2.3	3.05	2.75	14.9	1.93	16.0	19.0	11.6	6.4
12	3.7	4.2	2.2	4.8	23.5	3.0	6.9	2.75	4.2	14.8	7.8	3.8
13	4.9	3.5	2.3	3.25	9.4	11.6	2.95	11.8	3.4	12.7	8.9	3.35
14	4.0	3.25	2.2	2.7	3.95	5.7	2.7	2.85	2.85	6.9	7.0	3.15
15	8.6	4.4	2.35	2.75	4.3	3.4	2.55	2.45	2.7	7.0	6.2	3.05
16	4.7	4.1	2.15	2.95	8.4	12.7	2.35	3.05	2.55	6.1	7.6	2.95
17	4.4	3.7	2.15	2.2	7.3	3.4	2.3	14.6	2.45	10.3	9.7	2.95
18	3.6	6.9	2.15	2.7	7.9	3.25	2.2	18.9	2.35	34.5	28.5	2.9
19	2.85	5.6	2.05	2.75	4.0	4.2	2.2	5.2	2.35	77	8.0	2.95
20	2.6	7.4	2.3	2.45	3.05	4.3	2.15	4.3	20.5	17.3	13.2	3.2
21	2.75	4.7	1.93	2.15	2.75	3.15	2.05	17.7	39.5	6.6	11.8	3.05
22	2.55	5.6	2.75	2.3	2.6	2.75	2.05	28	6.8	19.6	6.0	2.95
23	2.55	4.4	2.15	2.05	2.55	2.6	2.8	12.1	7.7	56	8.5	3.7
24	2.85	4.7	2.05	2.05	2.45	2.55	2.3	4.1	28.5	42	11.7	4.0
25	4.6	4.7	2.15	2.05	2.35	2.45	2.05	3.3	12.6	11.5	9.9	5.8
26	31	3.5	1.99	1.93	10.7	3.2	1.99	3.15	3.6	18.0	11.8	7.3
27	8.4	3.3	2.15	1.93	9.0	10.0	1.93	2.75	3.6	63	10.5	3.9
28	3.3	3.25	1.99	1.99	7.2	10.1	1.87	4.6	5.0	64	5.4	3.45
29	6.3	3.05	1.87	1.87	11.9	10.2	3.6	-	56	14.9	4.8	3.05
30	5.9	2.85	1.81	1.81	28.5	11.4	4.9	-	24	15.4	4.2	2.9
31	5.2	2.75	-	1.75	-	4.7	2.7	-	10.6	-	4.0	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	31	2.15	4.79	7.41	148	456
August	9.4	2.75	4.40	6.81	136	418
September	2.75	1.81	2.25	3.48	67.6	207
October	4.8	1.69	2.33	3.61	72.4	222
November	28.5	2.25	6.78	10.5	204	625
December	20	2.45	6.55	10.1	203	623
Calendar year 1949	49	1.69	4.78	7.40	1,750	5,360
January	19.9	1.87	3.87	5.99	120	368
February	28	1.93	5.91	9.14	166	508
March	56	2.35	10.4	16.1	323	991
April	77	3.25	18.9	29.2	568	1,740
May	29.5	4.0	10.8	16.7	336	1,030
June	10.5	2.9	4.05	6.27	122	373
Fiscal year 1949-50	77	1.69	6.75	10.4	2,470	7,560

Peak discharge (base, 300 mgd).--Apr. 23 (7 a.m.) 410 mgd (634 cfs), 4.73 ft; Apr. 27 (2 a.m.) 390 mgd (603 cfs), 4.60 ft.

West Kopiliula Stream near Keanae

Location.--Lat 20°49'10", long. 156°08'15", on left bank 600 ft upstream from Koolau ditch crossing and highway bridge and 3 miles southeast of Keanae Post Office.
Drainage area.--3.9 sq mi.
Records available.--January 1914 to September 1917, October 1921 to June 1950.
Gage.--Water-stage recorder. Datum of gage is 1,292.30 ft above mean sea level. Prior to Dec. 9, 1935, water-stage recorder at several sites within 200 ft of present site at various datums.
Average discharge.--28 years (1915-17, 1922-34, 1936-50), 18.7 mgd (28.9 cfs).
Extremes.--Maximum discharge during year, 1,360 mgd (2,100 cfs) Apr. 28 (gage height, 5.70 ft), from rating curve extended above 75 mgd by logarithmic plotting; minimum, 0.80 mgd (1.24 cfs) Oct. 5, 6.
1914-17, 1921-50: Maximum discharge, at least 5,050 mgd (7,810 cfs) Jan. 26, 1948 (gage height, about 9.50 ft), from rating curve extended above 75 mgd by logarithmic plotting; minimum, 0.6 mgd (0.9 cfs) Sept. 15-17, 1917.
Remarks.--Records good except those for periods of doubtful or no gage-height record and those above 50 mgd, which are poor. Water used for irrigation in central Maui.
Revisions (fiscal years).--W 755: 1931-32.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 28

0.0	0.80	0.9	19.0
.1	1.62	1.3	36
.2	2.85	1.7	66
.3	4.3	2.0	97
.4	5.9	2.5	165
.5	7.7	3.0	260
.7	12.4	3.5	390

Apr. 29 to June 30

0.1	2.05	0.5	8.1
.2	3.3	.6	10.2
.3	4.6	.9	19.0
.4	6.3		

Note.--Same as preceding table above 0.9 ft.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.52	15.3	2.45	1.07	3.55	55	3.85	2.3	4.0	22.5	26	5.1
2	8.9	7.4	2.3	.99	2.3	46	34	2.8	3.0	10.8	19.3	4.8
3	3.75	4.5	2.2	.99	3.5	41	10.6	2.2	2.6	7.0	17.0	4.6
4	1.84	3.85	2.05	.92	1.67	16.2	5.1	1.73	2.3	5.4	23.5	4.4
5	2.3	3.4	2.2	.86	57	8.9	3.85	1.52	2.05	5.3	15.7	4.2
6	4.5	3.75	2.05	.86	13.7	6.1	3.15	1.43	a80	7.3	12.8	4.1
7	4.7	2.7	1.84	2.8	10.0	4.8	2.85	1.97	a7.0	8.1	24.5	3.95
8	2.55	3.6	1.73	1.98	7.5	4.0	2.7	10.9	a4.0	4.6	56	18.9
9	2.4	4.4	1.73	3.05	5.6	3.4	18.1	3.3	a3.5	5.9	21.5	8.7
10	1.84	12.9	2.4	7.9	4.7	3.15	10.2	2.05	a45	15.1	22	8.0
11	5.1	9.2	1.84	2.95	5.0	2.85	94	1.73	a26	36	22	7.8
12	4.4	4.6	1.88	13.7	60	3.05	32	3.9	a7.0	17.5	13.2	5.1
13	8.3	3.55	3.85	13.2	25.5	13.8	8.9	27.5	a4.7	19.4	13.5	d4.2
14	6.1	3.55	2.3	5.8	11.7	8.6	6.0	7.4	a3.6	10.1	10.2	d3.3
15	17.1	5.2	3.65	3.55	8.5	3.4	4.0	5.5	3.25	15.6	8.3	d3.1
16	10.1	4.3	2.6	3.4	25.5	22.5	3.25	7.9	2.7	14.2	9.9	d3.0
17	5.6	4.2	2.05	2.45	19.2	4.1	2.85	24	2.6	21.5	13.4	d2.9
18	5.3	9.3	1.95	4.3	18.8	4.0	2.45	47	2.3	72	45	d2.8
19	3.15	10.1	1.84	4.9	10.2	4.7	2.3	11.6	2.05	254	13.9	d3.0
20	2.45	15.3	2.2	3.15	5.9	4.4	2.05	8.5	43	36	21.5	d3.2
21	2.7	8.1	1.62	2.2	4.5	3.15	1.95	39.5	119	13.5	17.2	d3.1
22	2.2	8.9	2.65	2.3	3.4	2.6	1.84	106	17.8	25	10.0	d3.0
23	2.2	5.9	1.84	1.95	2.85	2.45	10.3	18.4	20.5	163	15.3	7.1
24	3.0	9.3	1.62	1.84	2.6	2.3	5.0	8.6	73	102	24.5	8.7
25	8.1	8.9	1.95	1.73	2.45	2.2	2.5	6.1	40	18.8	19.6	11.1
26	70	4.8	1.52	1.52	11.5	3.45	2.05	4.6	9.9	23	23	12.3
27	26	4.2	1.84	1.43	13.1	12.5	1.84	3.55	7.6	164	16.5	6.2
28	5.2	3.55	1.62	1.43	9.9	13.0	1.73	10.4	12.2	351	9.6	4.6
29	8.4	3.0	1.25	1.25	29.5	12.8	5.2	-	232	32	7.6	5.5
30	12.2	2.7	1.16	1.16	83	16.0	9.7	-	63	34.5	6.1	4.4
31	11.7	2.6	-	1.07	-	5.9	3.0	-	25.5	-	5.3	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	70	1.52	8.18	12.7	254	778
August	15.3	2.6	6.23	9.64	193	592
September	3.85	1.16	2.07	3.20	62.2	191
October	13.7	.86	3.12	4.83	96.7	297
November	83	1.67	15.4	23.8	463	1,420
December	55	2.2	10.8	16.7	336	1,030
Calendar year 1949	95	.86	7.81	12.1	2,850	8,740
January	94	1.73	9.59	14.8	297	912
February	106	1.43	13.3	20.6	372	1,140
March	232	2.05	28.1	43.5	871	2,670
April	351	4.6	50.5	78.1	1,520	4,650
May	56	5.3	18.2	28.2	564	1,730
June	18.9	2.8	5.70	8.82	171	525
Fiscal year 1949-50	351	.86	14.2	22.0	5,200	15,940

Peak discharge (base, 1,000 mgd).--Apr. 23 (6:30 a.m.) 1,300 mgd (2,010 cfs), 5.59 ft; Apr. 28 (12 m.) 1,360 mgd (2,100 cfs), 5.70 ft.
a No gage-height record; discharge estimated on basis of records for nearby streams.
d Doubtful gage-height record; discharge estimated as in footnote "a."

East Wailuaiki Stream near Keanae

Location.--Lat 20°49'05", long. 156°08'25", on left bank 1,000 ft upstream from Koolau ditch crossing and trail and 3 miles southeast of Keanae Post Office.
Drainage area.--3.7 sq mi.
Records available.--December 1913 to October 1917, July 1922 to June 1950.
Gage.--Water-stage recorder. Dec. 21, 1913, to Oct. 22, 1917, at site 50 ft downstream.
Average discharge.--30 years (1915-17, 1922-50), 20.3 mgd (31.4 cfs).
Extremes.--Maximum discharge during year, 1,480 mgd (2,290 cfs) Apr. 23 (gage height, 7.35 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, 1.6 mgd (2.5 cfs) Oct. 4-6, 29-31.
1913-17, 1922-50: Maximum discharge, 3,060 mgd (4,730 cfs) Apr. 6, 1938 (gage height, 9.26 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, 1.0 mgd (1.6 cfs) Oct. 22, 23, 1917, Aug. 1, 2, 1922.
Remarks.--Records good except those for periods of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.5	1.0	6.0	2.8	72
.5	1.8	1.2	8.8	3.2	105
.6	2.4	1.4	12.5	3.6	151
.7	3.0	1.7	19.2	4.0	213
.8	3.9	2.0	28.5	4.5	310
.9	4.9	2.4	46		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	22.5	3.2	1.8	5.2	84	5.2	2.3	4.2	33	43	6.8
2	17.8	8.6	2.9	1.7	3.05	82	61	3.95	3.4	11.8	28.5	6.3
3	5.8	5.2	2.8	1.7	5.2	76	12.5	2.35	3.0	7.8	23.5	5.7
4	2.5	5.1	2.8	1.6	2.25	19.3	6.1	1.9	2.8	6.3	39.5	5.4
5	3.1	4.6	2.8	1.6	a94	11.2	4.9	1.8	2.85	6.0	24	5.1
6	7.2	5.0	2.7	1.6	a12.5	6.9	4.1	1.8	77	10.6	18.8	5.6
7	7.3	3.6	2.5	4.0	a8.8	5.6	3.7	2.25	5.6	10.7	46	5.1
8	3.4	5.2	2.3	2.95	a7.6	4.8	3.4	9.1	3.7	5.3	96	39.5
9	3.15	6.7	2.3	5.0	a6.4	4.4	20	2.85	3.2	7.5	37	12.3
10	2.55	21.5	3.4	12.1	a5.7	3.9	13.1	2.0	59	32.5	41	12.4
11	7.7	13.4	2.4	3.0	7.2	3.6	95	1.8	51	60	35.5	11.5
12	7.1	6.6	3.25	16.6	95	3.85	43	6.4	10.2	32.5	17.5	5.9
13	13.7	5.2	6.7	11.9	36	26	9.2	40	6.0	31.5	17.4	5.1
14	8.8	4.9	3.15	5.6	13.2	11.2	5.2	8.3	4.3	11.5	12.7	4.6
15	29.5	8.1	4.5	3.8	11.2	4.1	3.5	4.9	3.6	14.1	10.5	4.3
16	12.8	6.9	2.85	3.6	37	25	3.0	10.7	3.2	13.2	13.5	4.1
17	7.3	7.9	3.05	2.4	28.5	4.6	2.7	50	2.9	27.5	21.5	4.2
18	6.9	16.7	2.4	4.2	26.5	4.4	2.6	74	2.8	103	91	4.0
19	3.95	13.0	2.2	4.6	a10.5	4.5	2.4	12.9	2.65	301	19.4	4.1
20	3.1	18.6	2.8	3.0	a5.7	5.2	2.3	8.9	82	62	40	4.5
21	3.9	9.6	2.2	2.2	4.7	3.65	2.1	63	184	16.2	26	4.9
22	2.9	11.9	3.75	2.3	3.8	2.9	2.1	129	24	44	12.7	4.7
23	2.95	7.3	2.5	2.0	3.3	2.7	10.2	22.5	30.5	300	25.5	10.4
24	4.6	13.1	2.2	2.0	3.0	2.6	5.2	8.7	114	163	48	10.3
25	10.2	10.3	2.65	1.9	2.8	2.6	2.5	6.4	54	32.5	32.5	14.6
26	115	5.6	2.2	1.7	18.1	4.2	2.1	5.1	10.3	44	40	16.2
27	41	5.2	2.6	1.7	22.5	25	1.9	4.1	10.0	228	24	6.6
28	6.3	4.7	2.25	1.7	16.5	19.6	1.8	12.8	14.3	296	12.1	5.4
29	16.2	4.1	1.9	1.6	a59	22.5	8.2	-	240	56	9.6	7.6
30	14.9	3.6	1.8	1.6	a132	29	13.8	-	101	56	8.5	5.1
31	14.3	3.4	-	1.6	-	8.4	3.35	-	39	-	7.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	115	2.3	12.5	19.3	388	1,190
August	22.5	3.4	8.65	13.4	268	823
September	6.7	1.8	2.84	4.39	85.0	261
October	16.6	1.6	3.65	5.65	113	347
November	132	2.25	22.9	35.4	687	2,110
December	84	2.6	16.6	25.7	514	1,580
Calendar year 1949	171	1.6	11.5	17.8	4,190	12,870
January	95	1.8	11.5	17.8	356	1,090
February	129	1.8	17.8	27.5	500	1,530
March	240	2.65	37.2	57.6	1,150	3,540
April	301	5.3	67.4	104	2,020	6,210
May	96	7.2	29.8	46.1	922	2,830
June	39.5	4.0	8.08	12.5	242	744
Fiscal year 1949-50	301	1.6	19.9	30.8	7,240	22,260

Peak discharge (base, 600 mgd).--Feb. 22 (2 a.m.) 605 mgd (936 cfs), 5.63 ft; Mar. 29 (9:30 a.m.) 605 mgd (936 cfs) 5.60 ft; Apr. 19 (2:30 a.m.) 760 mgd (1,180 cfs), 6.02 ft; Apr. 23 (7 a.m.) 1,480 mgd (2,290 cfs), 7.35 ft; Apr. 28 (2:30 p.m.) 1,130 mgd (1,750 cfs), 6.82 ft.
a No gage-height record; discharge estimated on basis of records for West Wailuaiki Stream near Keanae.

West Wailuaiki Stream near Keanae

Location.--Lat 20°49'20", long 156°08'35", on left bank 500 ft upstream from Koolau ditch crossing and trail bridge and 2.8 miles south of Keanae Post Office.

Drainage area.--3.6 sq mi.

Records available.--January 1914 to October 1917, November 1921 to June 1950.

Gage.--Water-stage recorder.

Average discharge.--28 years (1922-50), 24.8 mgd (38.4 cfs).

Extremes.--Maximum discharge during year, 1,940 mgd (3,000 cfs) Apr. 23 (gage height, 8.86 ft), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 1.56 mgd (2.41 cfs) Oct. 4, 5.
1914-17, 1921-50: Maximum discharge, 4,500 mgd (6,960 cfs) Jan. 14, 1923 (gage height, about 13.5 ft, from floodmarks), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 0.3 mgd (0.5 cfs) July 26, 1922.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.4	0.9	4.9	1.6	21	3.5	185
.5	1.8	1.0	6.2	1.8	29.5	4.0	270
.6	2.4	1.1	7.7	2.2	51	4.5	375
.7	3.0	1.2	9.5	2.6	81	5.0	510
.8	3.9	1.4	14.0	3.0	121		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	24	3.45	1.72	4.4	91	5.3	2.9	5.6	39	51	6.4
2	14.6	9.8	3.2	1.68	3.25	81	62	3.2	4.6	14.1	33	5.8
3	5.1	6.6	3.0	1.64	5.0	80	14.3	3.0	4.1	9.9	25.5	5.4
4	2.7	5.9	3.0	1.68	2.55	22.5	6.8	2.45	3.7	7.7	41	5.2
5	3.15	5.3	2.95	1.64	95	11.5	5.3	2.3	6.3	7.2	24.5	4.7
6	6.3	5.3	2.95	1.64	16.7	8.4	4.6	2.2	80	10.9	20	5.2
7	6.4	4.3	2.6	4.4	11.0	6.8	4.1	2.85	7.4	10.7	36	4.7
8	3.65	5.2	2.4	3.05	9.0	5.9	3.7	11.0	5.2	6.5	112	40
9	3.25	5.9	2.4	4.9	6.8	5.3	16.3	3.9	4.5	7.8	42	13
10	2.8	18.6	3.25	10.7	6.1	4.8	9.9	2.7	61	31	45	12
11	6.4	12.9	2.5	3.9	7.2	4.5	93	2.35	61	75	41	12
12	6.4	6.8	3.5	17.0	106	4.6	36	5.5	11.8	31.5	19	7.0
13	11.8	5.6	6.6	13.6	43	21.5	7.8	43	7.7	34	17.8	5.6
14	8.2	5.2	4.1	7.4	14.6	12.1	5.3	8.7	5.8	12.6	12.0	5.0
15	31	7.2	4.7	4.6	11.0	4.7	4.1	6.2	4.9	13.3	10.1	4.5
16	12.9	6.3	3.2	4.1	42	21	3.65	10.5	4.3	14.7	12.5	4.3
17	7.2	5.9	2.8	3.1	31	5.3	3.4	42	4.0	32	20	4.2
18	7.2	12.8	2.6	4.0	26.5	4.8	3.2	94	3.7	92	92	4.0
19	4.7	12.6	2.3	4.9	13.4	4.9	3.0	14.2	3.45	378	20.5	4.1
20	3.9	18.0	2.7	3.65	7.7	6.1	2.8	9.8	86	75	39.5	4.5
21	4.4	10.1	2.2	2.8	6.2	4.2	2.7	64	226	19.5	26	5.1
22	3.45	11.3	3.55	2.8	5.2	3.65	2.5	152	30.5	46	12.5	4.8
23	3.55	7.7	2.5	2.6	4.5	3.25	11	24	36.5	291	27.5	9.5
24	4.8	11.1	2.2	2.45	4.1	3.1	6.5	10.3	123	206	52	9.8
25	9.3	10.3	2.7	2.3	3.7	2.9	3.4	7.9	67	38.5	34.5	14
26	131	6.5	2.15	2.05	15.1	4.3	2.5	6.2	13.0	46	44	15
27	38.5	5.7	2.5	1.92	20	18.5	2.3	5.2	12.4	346	25.5	8.2
28	7.6	4.9	2.3	1.92	17.0	16.0	2.2	12.1	15.1	476	12.0	5.4
29	16.4	4.5	1.86	1.76	57	17.3	5.6	-	272	68	9.3	7.0
30	16.1	4.0	1.76	1.68	144	25	10	-	119	69	7.7	5.4
31	14.0	3.75	-	1.60	-	7.9	4.2	-	47	-	6.8	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	131	2.3	12.9	20.0	399	1,220
August	24	3.75	8.52	13.2	264	810
September	6.6	1.76	2.93	4.53	87.9	270
October	17.0	1.60	3.97	6.14	123	378
November	144	2.55	24.6	38.1	739	2,270
December	91	2.9	16.5	25.5	513	1,570
Calendar year 1949	200	1.60	11.9	18.4	4,350	13,350
January	93	2.2	11.2	17.3	347	1,070
February	152	2.2	19.8	30.6	554	1,700
March	272	3.45	43.1	66.7	1,340	4,100
April	476	6.5	83.6	129	2,510	7,700
May	112	6.8	31.4	48.6	972	2,980
June	40	4.0	8.06	12.5	242	742
Fiscal year 1949-50	476	1.60	22.2	34.3	8,090	24,810

Peak discharge (base, 1,200 mgd).--Apr. 23 (7 a.m.) 1,940 mgd (3,000 cfs), 8.86 ft; Apr. 28 (3 p.m.) 1,860 mgd (2,880 cfs), 8.69 ft.
Note.--No gage-height record Jan. 17 to Feb. 2, June 6-30; discharge estimated on basis of records for East Wailuaiki Stream near Keanae.

West Wailuanui Stream near Keanae

Location.--Lat 20°49'40", long. 156°08'55", on left bank 150 ft upstream from Koolau ditch crossing and intake and 2.2 miles south of Keanae Post Office.

Drainage area.--0.7 sq mi.

Records available.--December 1913 to October 1917, July 1922 to June 1950.

Gage.--Water-stage recorder and Columbus-type control. Prior to Oct. 24, 1917, water-stage recorder at site 100 ft downstream at different datum.

Average discharge.--28 years (1922-50), 9.19 mgd (14.2 cfs).

Extremes.--Maximum discharge during year, 770 mgd (1,190 cfs) Apr. 27 (gage height, 5.62 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.79 mgd (1.22 cfs) Oct. 4, 5.
1913-17, 1922-50: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 25, 1948 (gage height, 7.32 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) July 16-21, 1922.

Remarks.--Records good. Water used for irrigation of sugarcane in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.55	1.3	5.8	2.0	36
.8	.89	1.4	8.0	2.2	51
.9	1.36	1.5	10.5	2.5	81
1.0	2.0	1.6	13.7	3.0	151
1.1	2.9	1.7	18.0	3.1	168
1.2	4.1	1.8	23		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.08	9.4	1.68	0.86	3.85	37.5	2.9	1.66	2.55	15.6	17.4	2.9
2	5.5	4.0	1.55	.82	1.83	29	19.0	2.5	2.1	7.1	12.3	2.7
3	2.3	2.7	1.49	.82	2.75	27	5.2	1.55	1.87	4.6	10.5	2.45
4	1.17	2.65	1.49	.79	1.31	10.8	3.25	1.27	1.74	3.75	13.6	2.25
5	1.66	2.45	1.36	.79	27	6.0	2.65	1.17	2.15	3.5	11.9	2.0
6	3.7	2.55	1.36	.82	5.0	4.3	2.25	1.08	23	5.0	9.6	2.1
7	3.3	1.87	1.22	2.2	3.25	3.5	1.94	1.27	3.0	4.5	14.2	1.87
8	1.88	2.7	1.12	1.53	4.3	3.0	1.87	4.0	2.25	2.8	32.5	14.5
9	1.70	3.4	1.12	2.35	3.45	2.65	7.1	1.55	1.94	3.55	13.4	4.5
10	1.36	11.7	1.64	3.9	3.1	2.35	4.5	1.22	27.5	10.1	17.1	5.9
11	4.6	7.4	1.22	1.49	3.95	2.1	32	1.22	18.0	28.5	11.7	5.9
12	3.9	3.7	1.29	4.1	34	2.25	15.1	9.0	4.8	18.7	7.6	2.65
13	5.6	2.9	2.2	3.35	15.0	13.2	3.4	14.2	3.25	14.4	8.4	2.2
14	4.0	2.7	1.42	2.25	7.0	6.1	2.2	2.85	2.55	6.5	6.0	1.94
15	9.8	4.6	2.1	1.81	4.6	2.55	1.81	2.15	2.1	5.3	5.3	1.74
16	5.2	3.9	1.31	2.1	12.7	9.3	1.62	4.3	1.87	5.1	8.1	1.68
17	3.7	3.5	1.17	1.49	12.9	2.65	1.42	16.1	1.81	11.8	10.2	1.68
18	3.15	6.8	1.08	1.85	9.6	2.35	1.31	35	1.62	33.5	35	1.55
19	2.1	5.8	.98	1.94	5.5	2.7	1.27	7.3	1.55	139	8.5	1.55
20	1.81	7.6	1.20	1.62	3.6	2.75	1.22	5.1	25	33	15.1	1.78
21	2.15	5.0	.94	1.31	3.0	1.94	1.12	18.4	81	9.9	11.8	1.98
22	1.68	6.3	2.3	1.36	2.55	1.68	1.08	46	12.8	24.5	6.0	1.86
23	1.62	4.0	1.17	1.22	2.2	1.55	3.45	13.4	9.4	91	10.5	3.45
24	2.1	4.8	.98	1.17	1.94	1.49	2.35	5.5	42	73	15.1	2.9
25	4.6	4.5	1.27	1.12	1.87	1.42	1.27	4.0	25	19.0	10.9	5.0
26	36	2.9	.98	1.03	13.0	2.6	1.17	3.15	6.5	22.5	14.6	6.9
27	12.6	2.7	1.20	.98	12.7	12.0	1.08	2.55	5.0	108	12.1	2.85
28	3.4	2.55	1.17	1.03	9.9	10.1	.98	4.3	5.8	161	5.6	2.95
29	6.8	2.2	.94	.94	14.5	11.2	4.2	-	115	29.5	4.4	2.6
30	5.9	1.94	.89	.89	44	14.0	6.9	-	52	24.5	3.6	2.0
31	5.2	1.81	-	.86	-	4.3	1.88	-	17.6	-	3.25	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	36	1.08	4.82	7.46	150	459
August	11.7	1.81	4.23	6.54	131	402
September	2.3	.89	1.33	2.06	39.8	122
October	4.1	.79	1.57	2.43	48.8	150
November	44	1.31	9.01	13.9	270	830
December	37.5	1.42	7.56	11.7	234	719
Calendar year 1949	62	.72	4.77	7.38	1,740	5,340
January	32	.98	4.44	6.87	137	422
February	46	1.08	7.56	11.7	212	650
March	115	1.55	16.2	25.1	503	1,540
April	161	2.8	30.6	47.3	919	2,820
May	35	3.25	11.8	18.3	366	1,120
June	14.5	1.55	3.21	4.97	96.3	296
Fiscal year 1949-50	161	.79	8.51	13.2	3,110	9,530

Peak discharge (base, 300 mgd).--Apr. 23 (8 a.m.) 455 mgd (704 cfs), 4.38 ft; Apr. 27 (3 a.m.) 770 mgd (1,190 cfs), 5.62 ft.

East Wailuanui Stream near Keanae

Location.--Lat 20°49'25", long. 156°08'40", on left bank 125 ft upstream from Koolau ditch intake, 250 ft upstream from trail, and 2.5 miles south of Keanae.
Drainage area.--0.6 sq mi.
Records available.--January 1914 to October 1917, November 1921 to June 1950.
Gage.--Water-stage recorder. Jan. 1, 1914, to Oct. 23, 1917, water-stage recorder at site 500 ft upstream at different datum.
Average discharge.--28 years (1922-50), 5.72 mgd (8.85 cfs).
Extremes.--Maximum discharge during year, 1,020 mgd (1,580 cfs) Apr. 27 (gage height, 6.31 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.59 mgd (0.91 cfs) Jan. 28, 29.
1914-17, 1921-50: Maximum discharge, 1,050 mgd (1,620 cfs) Feb. 12, 1925 (gage height, 6.96 ft), from rating curve extended above 100 mgd; minimum, 0.1 mgd (0.2 cfs) Apr. 11, 1926.
Remarks.--Records good except those above 50 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.30	0.9	13.0
.4	.89	1.1	22
.5	2.1	1.3	32.5
.6	4.2	1.5	45
.7	6.7	1.8	68
.8	9.6	2.2	105

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.99	9.3	1.40	0.72	3.3	15.8	2.75	1.19	1.52	10.2	10.1	1.95
2	5.9	3.55	1.29	.65	1.52	21.5	19.1	1.95	1.40	3.55	7.9	1.80
3	2.3	2.75	1.29	.65	2.3	18.2	3.8	1.19	1.29	2.5	7.5	1.65
4	1.09	2.3	1.19	.65	1.22	6.7	2.5	.89	1.19	1.95	10.7	1.52
5	1.62	2.1	1.19	.65	17.2	3.8	1.95	.80	1.31	1.95	10.6	1.40
6	4.2	2.3	1.09	.65	3.15	2.95	1.65	.80	15.9	3.6	8.5	1.52
7	3.4	1.80	.99	1.81	2.3	2.5	1.40	.89	1.52	2.95	11.3	1.29
8	1.95	2.5	.89	1.29	3.25	2.1	1.40	2.0	1.40	1.80	25	13.5
9	1.65	3.35	.89	2.25	3.15	1.80	1.29	.89	1.19	2.3	10.3	3.9
10	1.40	12.1	1.29	3.65	2.95	1.65	1.19	.72	25.5	10.6	15.6	6.0
11	5.1	7.6	.99	1.19	3.55	1.52	3.05	.80	13.3	18.7	7.9	5.5
12	4.2	3.8	1.09	3.95	16.8	1.80	1.52	2.9	3.15	18.9	5.2	2.3
13	6.0	2.95	1.52	2.95	7.3	13.5	1.19	11.4	2.1	11.9	6.3	1.80
14	4.2	2.75	1.19	1.95	3.55	5.1	1.09	1.80	1.65	5.0	4.4	1.52
15	10.3	4.4	1.65	1.80	4.1	1.95	.99	1.40	1.40	3.85	3.8	1.40
16	5.2	3.7	1.09	1.95	6.2	8.7	.89	3.95	1.40	2.95	6.8	1.29
17	4.0	3.35	.99	1.29	8.6	2.1	.89	17.3	1.29	7.4	9.8	1.29
18	3.15	6.6	.89	1.65	7.9	1.80	.89	20.5	1.19	32.5	30	1.19
19	2.1	5.7	.89	1.80	4.0	1.95	.80	5.3	1.19	58	6.7	1.19
20	1.65	7.3	1.09	1.40	2.75	2.5	.80	4.2	22.5	19.0	13.2	1.52
21	1.95	5.0	.80	1.19	2.1	1.52	.72	16.2	34.5	5.6	10.5	1.56
22	1.52	6.4	1.65	1.19	1.80	1.40	.72	17.4	6.2	25	4.7	1.75
23	1.52	4.0	.99	1.09	1.65	1.19	1.19	9.4	4.9	49	9.1	2.95
24	1.95	4.7	.89	1.09	1.52	1.09	.89	3.8	27.5	39	12.2	2.1
25	4.6	4.2	1.09	.99	1.40	1.09	.65	2.75	9.7	11.1	7.9	4.2
26	28.5	2.75	.80	.89	13.0	1.80	.65	1.95	2.95	19.6	11.1	6.6
27	10.6	2.5	1.09	.80	12.3	12.7	.65	1.65	3.0	102	10.4	2.3
28	2.75	2.1	.89	.80	11.1	10.9	.59	2.95	2.95	38.5	4.2	2.35
29	6.5	1.95	.72	.72	7.4	13.4	3.7	-	39	9.2	2.95	1.65
30	5.2	1.65	.72	.72	18.3	14.7	6.4	-	19.4	8.4	2.5	1.40
31	4.4	1.52	-	.65	-	4.2	1.52	-	7.9	-	2.1	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	28.5	0.99	4.51	6.98	140	429
August	12.1	1.52	4.10	6.34	127	390
September	1.65	.72	1.08	1.67	32.5	100
October	3.95	.65	1.39	2.15	43.0	132
November	18.3	1.22	5.86	9.07	176	539
December	21.5	1.09	5.87	9.08	182	558
Calendar year 1949	45	.41	3.57	5.52	1,300	3,990
January	19.1	.59	2.16	3.34	66.8	205
February	20.5	.72	4.89	7.57	137	420
March	39	1.19	8.37	13.0	259	796
April	102	1.80	17.6	27.2	527	1,620
May	30	2.1	9.33	14.4	289	888
June	13.5	1.19	2.68	4.15	80.4	247
Fiscal year 1949-50	102	.59	5.64	8.73	2,060	6,320

Peak discharge (base, 300 mgd).--Apr. 23 (6 a.m.) 390 mgd (603 cfs), 3.97 ft; Apr. 27 (2 a.m.) 1,020 mgd (1,580 cfs), 6.31 ft.

Taro patch feeder ditch at Keanae

Location.--Lat 20°51'40", long. 156°09'00", on right bank 25 ft downstream from intake, 500 ft downstream from highway bridge over Palauhulu Stream at Keanaę, 4.2 miles northwest of Nahiku, and 4.8 miles southeast of Kailua.

Records available.--September 1934 to June 1950.

Gage.--Water-stage recorder and Parshall flume.

Average discharge.--15 years (1935-50), 2.29 mgd (3.54 cfs).

Extremes.--1934-50: Maximum daily discharge, 7.9 mgd (12.2 cfs) June 30, 1941; minimum daily, 0.05 mgd (0.08 cfs) Mar. 5, 1939.

Remarks.--Records excellent.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.51	2.15	1.39	1.51	1.55	3.0	2.15	1.68	1.68	2.85	1.95	2.25
2	1.80	1.86	1.34	1.51	1.55	3.1	3.05	1.73	1.64	2.75	1.81	2.25
3	1.51	1.77	1.34	1.51	1.55	3.05	2.35	1.68	1.64	2.3	1.68	2.25
4	1.47	1.73	1.34	1.51	1.55	2.5	2.2	1.68	1.64	1.95	1.86	2.25
5	1.47	1.64	1.34	1.55	3.05	2.3	1.95	1.68	1.65	1.90	1.73	2.2
6	1.47	1.59	1.55	1.55	1.77	2.2	1.81	1.64	2.85	1.95	1.68	2.2
7	1.55	1.55	1.64	1.55	1.59	2.15	1.81	1.64	1.77	2.1	1.93	2.2
8	1.47	1.51	1.64	1.55	1.55	2.05	1.81	1.64	1.68	1.81	2.75	2.75
9	1.47	1.55	1.64	1.55	1.55	1.95	1.81	1.64	1.68	1.81	1.90	2.3
10	1.47	2.1	1.64	1.82	1.55	1.81	1.81	1.64	2.5	2.0	1.94	2.25
11	1.47	2.05	1.59	1.55	1.51	1.73	2.1	1.64	2.8	2.95	1.82	2.3
12	1.62	1.81	1.59	1.82	2.65	1.73	1.81	1.64	1.68	2.45	1.55	2.2
13	1.64	1.73	1.59	1.59	2.65	2.0	1.81	2.4	1.55	2.65	1.55	2.2
14	1.47	1.64	1.59	1.55	2.1	2.5	1.81	1.64	1.43	2.25	1.47	2.15
15	2.2	1.64	1.59	1.55	1.59	2.05	1.81	1.64	1.64	2.15	1.47	2.1
16	1.77	1.59	1.55	1.55	2.25	2.45	1.77	1.84	1.73	2.15	1.56	2.05
17	1.55	1.64	1.55	1.51	2.45	2.1	1.77	2.2	1.73	2.4	1.64	1.99
18	1.47	1.77	1.55	1.51	2.3	1.90	1.77	3.1	1.73	2.85	2.8	1.99
19	1.47	1.81	1.55	1.47	2.05	1.95	1.73	2.1	1.73	3.9	1.55	1.95
20	1.47	1.99	1.55	1.47	1.64	2.15	1.73	1.95	2.95	2.15	1.86	1.90
21	1.47	1.77	1.55	1.43	1.55	1.81	1.73	2.7	4.1	2.6	1.68	1.90
22	1.47	1.77	1.55	1.43	1.55	1.77	1.73	2.85	2.6	2.95	1.51	1.81
23	1.47	1.73	1.51	1.43	1.55	1.77	1.73	1.81	2.65	2.8	1.64	2.1
24	1.47	1.68	1.51	1.47	1.55	1.77	1.73	1.43	3.35	2.15	2.1	1.99
25	1.47	1.73	1.51	1.47	1.55	1.77	1.68	1.26	2.95	2.0	2.3	2.1
26	3.0	1.55	1.51	1.47	2.05	1.81	1.68	1.14	2.4	2.9	2.75	2.15
27	2.35	1.51	1.51	1.47	2.65	2.25	1.68	1.47	2.2	4.9	2.6	1.99
28	1.81	1.43	1.51	1.51	2.5	2.6	1.68	1.73	2.45	3.85	2.4	1.99
29	1.88	1.39	1.51	1.51	2.65	2.5	1.86	-	4.0	1.99	2.35	1.90
30	1.99	1.39	1.51	1.51	3.3	2.8	1.95	-	3.05	2.05	2.35	1.81
31	1.99	1.39	-	1.55	-	2.35	1.73	-	2.5	-	2.3	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	3.0	1.47	1.67	2.58	51.7	159
August	2.15	1.39	1.69	2.61	52.5	161
September	1.64	1.34	1.52	2.35	45.7	140
October	1.82	1.43	1.53	2.37	47.4	146
November	3.3	1.51	1.98	3.06	59.4	182
December	3.1	1.73	2.19	3.39	67.9	208
Calendar year 1949	3.9	1.34	1.86	2.88	680	2,090
January	3.05	1.68	1.87	2.89	58.0	178
February	3.1	1.14	1.83	2.83	51.2	157
March	4.1	1.43	2.26	3.50	70.0	215
April	4.9	1.81	2.52	3.90	75.5	232
May	2.8	1.47	1.95	3.02	60.5	186
June	2.75	1.81	2.12	3.28	63.5	195
Fiscal year 1949-50	4.9	1.14	1.93	2.99	703	2,160

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Koolau ditch near Keanae

Location.--Lat 20°49'55", long. 156°10'30", on right bank on west side of Keanae Valley, 2.8 miles southwest of Keanae Post Office, and 5.1 miles southeast of Kailua.

Records available.--January 1910 to December 1912, November 1917 to June 1950.

Gage.--Water-stage recorder. Jan. 1, 1910, to Dec. 31, 1912, staff gage at same site and datum. East Maui Irrigation Co. has obtained gage readings in this vicinity since 1904.

Average discharge.--32 years (1918-50), 66.8 mgd (103 cfs).

Extremes.--Maximum capacity of ditch during year, limited to 136 mgd (210 cfs) by downstream conditions, was reached several times; minimum, 16.8 mgd (26.0 cfs) Oct. 6.
1910-12, 1917-50: Maximum discharge, 175 mgd (271 cfs) Jan. 4, 1922 (gage height, 6.36 ft); no flow at times.

Remarks.--Records excellent below 100 mgd and good above. Flow regulated by gates and spillways. Ditch diverts water at altitude 1,200 ft from nearly all streams from the Makapipi west to the Alo for power and irrigation in central Maui. No diversions above station except from several spillways.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.5	128	36	18.0	49	120	64	31.5	49	133	90	54
2	84	91	32	18.0	33	125	125	41	40	108	72	51
3	50	60	30	18.0	47	119	111	30	36	77	77	51
4	26.5	54	30	18.0	27	74	71	25	34	60	117	49
5	31.5	49	30	18.0	132	80	56	23.5	35	56	108	45
6	60	51	28	19.0	103	77	49	23.5	112	73	92	47
7	64	43	26.5	40	75	60	43	27	46	88	73	43
8	37.5	54	25.0	29	72	54	40	66	34	52	132	112
9	36	64	25	39.5	60	47	60	31.5	30	66	127	101
10	30	129	31.5	69	56	43	73	25	76	67	115	95
11	63	120	26.5	31.5	62	40	110	23.5	119	132	79	102
12	70	74	28.5	91	118	39.5	129	47	78	127	58	60
13	97	56	46	86	128	102	66	104	66	132	86	49
14	75	54	31	52	103	98	47	60	49	113	56	45
15	120	74	39	38	72	54	38	46	44	99	63	43
16	105	64	30	41	135	107	36	69	38	118	86	38
17	74	65	26.5	28	130	60	32	69	36	129	108	38
18	69	92	25	40	128	60	30	128	34	117	127	36
19	47	112	23.5	44	98	64	28	111	32	122	91	38
20	38	126	26.5	34	65	73	26.5	91	104	123	127	40
21	43	95	22	26.5	51	52	26.5	118	120	71	127	47
22	34	107	38	26.5	45	43	25	122	106	92	102	42
23	32	78	25.5	25	38	38	63	133	104	119	98	74
24	43	93	22	23.5	36	36	41	90	105	120	127	77
25	74	93	25	23.5	34	34	26.5	73	123	92	127	97
26	128	58	22	22	112	50	22	60	96	102	127	114
27	122	54	25	20.5	125	100	23.5	49	77	109	125	70
28	71	49	23.5	22	114	124	22	94	105	109	93	58
29	78	45	20.5	20.5	110	119	57	-	125	95	73	57
30	112	40	19.2	19.2	120	133	96	-	131	95	60	48
31	113	38	-	19.2	-	96	38.5	-	135	-	56	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	128	23.5	66.2	102	2,050	6,290
August	129	38	74.5	115	2,310	7,090
September	46	19.2	28.0	43.3	839	2,580
October	91	18.0	32.9	50.9	1,020	3,130
November	135	27	82.6	128	2,480	7,600
December	133	34	74.9	116	2,320	7,120
Calendar year 1949	153	18.0	56.4	87.3	20,560	63,110
January	129	22	54.0	83.6	1,680	5,140
February	133	23.5	64.7	100	1,810	5,560
March	135	30	74.8	116	2,320	7,120
April	133	52	99.9	155	3,000	9,190
May	132	56	96.7	150	3,000	9,200
June	114	36	60.7	93.9	1,820	5,590
Fiscal year 1949-50	135	18.0	67.5	104	24,650	75,610

Haipuaena Stream near Huelo

Location.--Lat 20°51'05", long. 156°11'30", on left bank 200 ft upstream from Spreckels ditch, 2.8 miles west of Keanae, 3.3 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Drainage area.--1.1 sq mi.

Records available.--October 1913 to June 1950. December 1910 to September 1913, at site 600 ft downstream; records not equivalent owing to inflow from Spreckels ditch.

Gage.--Water-stage recorder. Datum of gage is 1,512.22 ft above mean sea level (East Maui Irrigation Co. benchmark).

Average discharge.--34 years (1916-50), 10.2 mgd (15.8 cfs).

Extremes.--Maximum discharge during year, 3,350 mgd (5,180 cfs) Apr. 27 (gage height, 6.38 ft), from rating curve extended above 40 mgd by logarithmic plotting; minimum, 0.10 mgd (0.16 cfs) Dec. 25.

1913-50: Maximum discharge, 6,100 mgd (9,440 cfs) Aug. 12, 1940 (gage height, 6.91 ft), from rating curve extended above 150 mgd; minimum, slightly less than 0.1 mgd (about 0.2 cfs) on several days during January, February, May, and June, 1945.

Remarks.--Records fair. Haipuaena diversion ditch diverts water above station. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.25	10.3	0.29	0.16	4.0	35	1.60	1.63	1.12	15.8	15.9	2.45
2	4.9	4.5	.23	.15	1.43	30.5	27	2.05	.50	5.2	10.4	2.7
3	1.14	2.35	.21	.14	1.39	30.5	5.0	1.00	.34	2.95	7.9	2.2
4	.26	1.61	.21	.13	.30	8.5	1.62	.29	.24	2.0	12.7	1.61
5	.54	1.26	.20	1.43	48	3.85	.85	.25	.19	2.0	9.5	1.09
6	3.05	1.17	.21	1.34	4.7	2.35	.45	.23	23	7.6	8.5	1.21
7	3.6	.67	.18	4.5	2.7	1.56	.28	.25	1.13	5.7	29.5	.96
8	1.02	1.16	.16	.82	2.45	1.20	.24	.24	.36	2.45	43	21.5
9	1.12	2.35	.17	1.28	1.75	.81	.18	.22	.23	2.75	15.9	4.8
10	.51	11.8	.30	5.7	1.57	.53	.13	.20	32.5	23.5	21	3.65
11	4.8	7.5	.21	1.09	3.55	.38	8.4	.27	23	44	16.9	4.6
12	6.1	2.95	.18	6.5	44	.46	7.7	1.65	3.85	17.1	7.0	2.15
13	6.3	1.94	2.75	4.8	18.7	10.8	1.07	21	2.25	20	7.2	1.39
14	3.75	1.46	.47	2.15	6.4	6.6	.29	1.71	1.16	5.9	4.5	1.05
15	18.3	2.55	1.42	.87	3.25	1.05	.19	1.34	.60	3.45	3.5	.89
16	5.6	2.2	.42	.95	11.9	6.1	.18	4.1	.36	5.8	8.1	.73
17	2.9	2.4	.19	.38	13.3	1.22	.17	38	.29	19.5	11.2	.85
18	2.65	6.4	.18	.54	10.2	1.02	.16	76	.23	31	62	.59
19	1.49	6.0	.16	80	5.2	.93	.16	6.1	.18	171	8.1	.62
20	.76	8.6	.16	.36	2.3	1.20	.14	5.0	88	28	15.9	.57
21	.84	4.0	.15	.22	1.50	.27	.14	21.5	140	6.9	10.9	1.38
22	.74	5.7	1.74	.23	.92	.22	.13	56	9.4	28.5	5.5	.76
23	.46	3.05	.32	.20	.56	.14	.17	9.4	8.5	139	11.8	3.7
24	.66	4.0	.19	.21	.36	.12	.16	4.1	53	105	22.5	3.85
25	3.5	5.2	.40	.19	.26	.11	.14	2.35	22.5	21	13.4	4.7
26	58	2.0	.21	.16	11.0	.57	.14	1.51	4.0	23.5	16.4	6.0
27	18.6	1.50	.21	.15	22.5	8.5	.13	.96	5.4	265	11.3	2.7
28	2.25	1.09	.24	.16	11.2	8.4	.13	3.3	7.6	244	4.8	1.88
29	7.9	.73	.19	.14	19.6	9.2	3.3	-	128	18.9	3.35	1.55
30	7.9	.46	.18	.12	50	14.9	6.6	-	37	18.7	2.5	.90
31	5.4	.36	-	.12	-	3.95	.90	-	15.7	-	1.90	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	58	0.25	5.65	8.74	175	538
August	11.8	.36	3.46	5.35	107	329
September	2.75	.15	.404	.625	12.1	37
October	6.5	.12	1.16	1.79	36.0	110
November	50	.26	10.2	15.8	305	936
December	35	.11	6.16	9.53	191	586
Calendar year 1949	94	.11	4.45	6.89	1,620	4,980
January	27	.13	2.19	3.39	67.8	208
February	76	.20	9.31	14.4	261	800
March	140	.18	19.7	30.5	611	1,870
April	265	2.0	42.9	66.4	1,290	3,950
May	62	1.90	13.6	21.0	423	1,300
June	21.5	.57	2.77	4.29	83.0	255
Fiscal year 1949-50	265	.11	9.75	15.1	3,560	10,920

Peak discharge (base, 750 mgd).--Mar. 21 (2 a.m.) 870 mgd (1,350 cfs), 4.80 ft; Apr. 27 (2:30 a.m.) 3,350 mgd (5,180 cfs), 6.38 ft.

Kula diversion from Haipuaena Stream, near Olinda

Location.--Lat 20°48'15", long. 156°13'30", on left bank 3.7 miles east of Olinda and 5.2 miles south of Kailua.

Records available.--July 1945 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,300 ft (from topographic map).

Extremes.--1945-50: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; minimum daily, 0.02 mgd (0.03 cfs) for several days in 1945-47, 1949-50.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.10	0.73	0.07	0.03	0.02	0.96	0.27	0.05	0.40	1.41	1.20	0.43
2	.38	.82	.05	.02	.05	.88	1.04	.04	.22	.90	.98	.60
3	.28	.55	.05	.02	.14	.83	.78	.04	.15	.56	.69	.49
4	.14	.33	.04	.02	.20	.60	.46	.03	.12	.38	1.08	.36
5	.21	.24	.03	.02	.59	.49	.28	.02	.11	.33	.58	.22
6	.36	.18	.03	.02	.38	.36	.20	.02	1.36	.71	.42	.20
7	.41	.15	.03	.21	.79	.25	.14	.02	.52	1.21	.51	.17
8	.27	.26	.02	.21	.59	.20	.15	.16	.25	.78	1.20	.93
9	.28	.58	.02	.13	.33	.15	.14	.17	.17	.42	.73	.75
10	.20	.72	.02	.59	.22	.12	.14	.09	.60	.69	.79	.40
11	.66	.80	.02	.42	.22	.29	.41	.04	1.19	.84	1.25	.58
12	.60	.44	.06	.83	.67	.48	.40	.04	.66	.60	.78	.59
13	.74	.38	.47	.94	.33	.41	.39	.82	.54	1.01	.58	.31
14	.45	.35	.24	.58	.24	.83	.33	.40	.36	1.06	.40	.22
15	1.2	.41	.20	.28	.74	.40	.22	.28	.22	.98	.30	.18
16	.50	.37	.14	.30	1.22	.78	.15	.15	.15	1.10	.43	.15
17	.30	.40	.10	.24	1.08	.44	.13	.36	.12	1.04	.76	.14
18	.21	.68	.08	.20	1.14	.28	.10	.09	.09	1.32	1.23	.13
19	.20	.64	.05	.28	.91	.43	.08	.06	.07	1.30	.85	.12
20	.18	.74	.04	.27	.53	.49	.05	.34	.78	1.06	.95	.13
21	.18	.54	.04	.18	.35	.25	.04	.96	.60	.72	1.22	.41
22	.16	.43	.16	.13	.22	.15	.03	.28	.77	.94	1.00	.31
23	.14	.42	.14	.10	.17	.11	.03	.79	.81	1.09	1.05	.98
24	.17	.45	.08	.08	.14	.09	.04	.99	1.29	.69	1.31	1.09
25	.30	.63	.06	.05	.10	.07	.04	.58	.96	1.04	1.09	1.03
26	1.4	.31	.05	.04	.16	.06	.03	.36	.58	1.43	1.16	1.06
27	1.1	.21	.05	.03	1.18	.06	.02	.24	.47	.90	1.02	.74
28	.35	.15	.04	.03	.85	.29	.02	.65	1.16	.24	.60	.40
29	.88	.13	.04	.02	1.28	.45	.05	-	.92	.78	.49	.38
30	.72	.10	.03	.02	1.56	.78	.20	-	.31	1.45	.31	.25
31	.60	.08	-	.02	-	.54	.10	-	1.15	-	.22	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.4	0.10	0.441	0.682	13.7	42
August	.82	.08	.426	.659	13.2	41
September	.47	.02	.082	.127	2.45	7.5
October	.94	.02	.204	.316	6.31	19
November	1.56	.02	.547	.846	16.4	50
December	.96	.06	.404	.625	12.5	38
Calendar year 1949	1.56	.02	.347	.537	127	388
January	1.04	.02	.208	.322	6.46	20
February	.99	.02	.288	.446	8.07	25
March	1.36	.07	.552	.854	17.1	52
April	1.45	.24	.899	1.39	27.0	83
May	1.31	.22	.812	1.26	25.2	77
June	1.09	.12	.458	.709	13.8	42
Fiscal year 1949-50	1.56	.02	.444	.687	162	496

Note.--No gage-height record July 2-17, July 19 to Aug. 1, Aug. 14-21; discharge estimated on basis of recorded range in stage and records for nearby streams.

Haipuaena diversion ditch at Kolea Gulch, near Keanae

Location.--Lat 20°50'50", long. 156°11'40", on right bank 15 ft downstream from end of tunnel in Kolea Gulch, 3.1 miles southwest of Keanae, and 3.7 miles southeast of Kailua.

Records available.--March 1938 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,800 ft (from topographic map).

Average discharge.--12 years, 1.97 mgd (3.05 cfs).

Extremes.--1938-50: Maximum daily discharge, 10.9 mgd (16.9 cfs) Mar. 29, 1948; minimum daily, 0.19 mgd (0.29 cfs) Jan. 30, 31, 1947.

Remarks.--Records good except those for period of shifting control, which are fair. Ditch diverts water from Haipuaena Stream from East Maui Irrigation Co.'s hydroelectric plant about 1 mile downstream.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.31	3.6	1.83	0.96	1.89	5.8	2.3	1.56	2.1	4.0	5.2	2.3
2	2.75	2.95	1.76	.90	2.1	5.6	5.2	1.93	1.96	2.95	4.4	2.4
3	2.05	2.55	1.56	.85	2.2	5.5	2.95	1.90	1.83	2.6	4.0	2.25
4	1.62	2.3	1.56	.85	1.74	3.35	2.4	1.31	1.76	2.4	4.8	2.05
5	1.76	2.25	1.42	1.07	6.3	2.8	2.2	1.13	1.69	2.3	4.1	1.83
6	2.4	2.25	1.56	1.41	2.95	2.55	2.05	1.02	4.5	3.0	4.1	1.90
7	2.55	2.1	1.31	2.5	2.6	2.4	1.90	1.13	2.1	2.95	4.7	1.76
8	2.05	2.2	1.19	1.90	2.4	2.25	1.83	1.19	1.90	2.5	7.5	4.9
9	2.05	2.4	1.13	2.05	2.3	2.1	1.76	1.07	1.83	2.5	5.1	2.95
10	1.83	3.5	1.56	2.65	2.25	2.1	1.76	.90	4.1	3.45	5.6	2.6
11	2.5	3.15	1.25	2.05	2.6	2.05	3.1	.85	4.4	6.0	5.0	2.7
12	2.85	2.6	1.39	2.75	5.4	2.05	3.15	1.48	2.7	4.0	3.65	2.2
13	2.95	2.5	2.4	2.7	4.6	3.2	2.1	4.0	2.4	4.4	3.55	1.96
14	2.55	2.3	1.96	2.25	3.15	3.05	1.76	2.2	2.1	2.95	3.1	1.83
15	4.2	2.5	2.2	2.05	2.75	2.25	1.56	2.05	1.96	2.7	2.8	1.69
16	2.85	2.5	1.83	2.05	3.75	2.9	1.49	2.45	1.90	2.95	3.4	1.62
17	2.5	2.5	1.56	1.83	3.8	2.25	1.36	3.9	1.83	4.3	3.85	1.69
18	2.4	3.0	1.36	1.90	3.55	2.2	1.31	6.0	1.76	4.3	8.0	1.56
19	2.25	3.1	1.19	2.05	2.95	2.1	1.25	2.95	1.62	9.3	3.55	1.49
20	2.05	3.4	1.19	1.83	2.55	2.25	1.13	2.8	6.7	4.8	4.7	1.56
21	2.1	2.8	1.13	1.62	2.4	1.96	1.13	4.5	8.4	3.15	3.9	1.90
22	2.05	3.0	2.25	1.56	2.25	1.83	1.07	5.9	3.35	4.7	3.1	1.69
23	1.90	2.6	1.90	1.36	2.1	1.76	1.25	3.25	3.15	8.4	4.1	2.55
24	2.05	2.7	1.42	1.25	2.05	1.62	1.13	2.7	7.6	7.8	5.5	2.55
25	2.75	2.85	1.62	1.19	1.96	1.49	.96	2.4	4.5	4.2	4.5	2.7
26	6.7	2.5	1.25	1.07	3.4	1.83	.90	2.2	2.7	4.4	4.7	2.95
27	4.1	2.3	1.36	1.02	4.4	2.95	.85	2.05	2.8	10.4	3.85	2.25
28	2.48	2.2	1.25	1.02	3.55	3.1	.85	2.55	3.15	10.1	2.95	2.05
29	3.15	2.05	1.07	.90	4.7	3.25	1.83	-	8.5	5.7	2.6	1.96
30	3.3	1.96	1.02	.85	7.1	3.9	2.7	-	6.0	5.7	2.4	1.69
31	3.1	1.90	-	.80	-	2.8	1.76	-	4.1	-	2.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.7	1.31	2.62	4.05	81.2	249
August	3.6	1.90	2.60	4.02	80.5	247
September	2.4	1.02	1.52	2.35	45.5	140
October	2.75	.80	1.59	2.46	49.2	151
November	7.1	1.74	3.19	4.94	95.7	294
December	5.8	1.49	2.75	4.25	85.2	262
Calendar year 1949	7.1	.75	2.22	3.43	810	2,490
January	5.2	.85	1.84	2.85	57.0	175
February	6.0	.85	2.41	3.73	67.4	207
March	8.5	1.62	3.40	5.26	105	323
April	10.4	2.3	4.63	7.16	139	426
May	8.0	2.2	4.22	6.53	131	402
June	4.9	1.49	2.18	3.37	65.5	201
Fiscal year 1949-50	10.4	.80	2.75	4.25	1,000	3,080

Note.--Shifting-control method used Apr. 28 to June 30.

Spreckels ditch at Haipuaena weir, near Huelo

Location.--Lat 20°51'20", long. 156°11'25", on left bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.5 miles west of Keanae, 3.5 miles southeast of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1950 in reports of Geological Survey. May 1919 to April 1922 in files of East Maui Irrigation Co.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,470.96 ft above mean sea level (East Maui Irrigation Co. benchmark). Apr. 29, 1922, to Feb. 19, 1930, water-stage recorder at same site at different datum. Feb. 20, 1930, to Oct. 25, 1935, at site 100 ft upstream at different datum.

Average discharge.--27 years (1922-29, 1930-50), 13.5 mgd (20.9 cfs).

Extremes.--1922-50: Maximum daily discharge, 77 mgd (119 cfs) Nov. 5, 1946; no flow at times.

Remarks.--Records excellent. Regulated by gates and spillways. Spreckels ditch diverts water from all streams between the Nuaailua and the Kailua, above Koolau ditch east of the Puohokamoa and below Koolau ditch west of the Puohokamoa. About 4 mgd is diverted from Spreckels ditch to East Maui Irrigation Co.'s hydroelectric plant at Kolea Gulch. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 770: 1932-33.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.28	18.4	0.86	0.14	5.8	41	7.2	4.1	5.3	32	0.12	6.0
2	10.7	11.2	.43	.14	4.6	42	39.5	6.0	3.05	16.9	.10	6.4
3	5.1	7.5	.23	.14	5.2	46	14.5	5.1	2.1	10.9	10.5	5.9
4	.54	6.2	.19	.14	1.51	20.5	7.6	.94	1.50	7.8	25	5.3
5	2.65	5.3	.16	2.55	43	12.7	4.5	.33	1.50	8.7	21	4.5
6	8.2	5.1	.31	2.05	13.7	9.6	2.6	.23	28.5	15.3	18.0	4.7
7	9.8	2.6	.16	7.4	9.3	6.8	1.70	.70	6.1	17.2	20	4.3
8	4.3	5.3	.16	2.55	10.0	5.3	1.20	2.15	3.05	9.8	44	26
9	4.9	8.4	.16	3.5	8.3	3.9	.80	.49	1.90	12.2	24	9.2
10	2.35	21	1.07	7.8	6.8	2.75	.47	.16	27.5	15.1	29	8.1
11	10.8	15.0	.21	3.0	12.0	2.1	13.6	.36	28.5	43	25	9.7
12	13.0	8.7	.66	13.5	33.5	2.9	14.3	4.5	12.8	27.5	12.9	6.2
13	13.3	7.1	5.7	13.0	29.5	17.8	2.25	25.5	9.6	31	13.1	5.1
14	9.7	5.9	2.25	7.4	15.9	17.2	.55	7.8	6.0	13.3	9.8	4.7
15	25.5	8.2	4.5	4.2	10.7	5.1	.23	5.4	3.7	10.6	8.5	4.5
16	12.6	6.9	1.35	4.5	23.5	15.9	.23	11.8	2.6	12.8	15.0	4.1
17	8.6	7.8	.19	1.16	26	6.1	.16	20.5	2.0	26	18.5	4.5
18	8.2	12.1	.16	3.25	24	5.7	.16	43	1.40	23.5	48	3.7
19	5.4	12.0	.15	3.8	15.2	5.6	.16	18.0	1.04	57	12.8	3.9
20	2.9	15.5	.15	1.61	9.3	7.4	.16	16.1	39	37.5	23	3.45
21	3.7	10.1	.14	.63	6.6	2.4	.16	33	51	18.9	16.6	5.4
22	2.65	12.1	5.2	.42	4.1	1.10	.16	42	13.8	28.5	9.4	4.0
23	1.65	8.5	1.33	.23	2.4	.56	.16	21.5	12.3	51	17.9	8.4
24	3.15	9.8	.16	.23	1.70	.33	.15	13.0	41	53	29.5	8.7
25	8.2	10.9	1.33	.23	1.07	.26	.15	10.1	24.5	27	19.2	9.6
26	40	6.4	.19	.16	24.5	3.95	.15	7.1	7.1	32	23	11.6
27	20.5	5.7	.31	.16	34.5	19.0	.14	4.7	7.5	9.9	18.2	7.2
28	7.1	4.5	.25	.16	25	21	.14	12.4	11.6	.59	9.3	7.9
29	11.8	3.05	.15	.16	30.5	21.5	6.5	-	50	.06	7.3	8.5
30	16.2	1.80	.14	.15	50	29	14.2	-	44	.08	6.2	5.7
31	12.3	1.10	-	.15	-	13.2	3.65	-	29	-	5.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	40	0.28	9.23	14.3	286	878
August	21	1.10	8.52	13.2	264	811
September	5.7	.14	.942	1.46	28.2	87
October	13.5	.14	2.73	4.22	84.5	259
November	50	1.07	16.3	25.2	488	1,500
December	46	.26	12.5	19.3	389	1,190
Calendar year 1949	50	.14	7.00	10.8	2,560	7,840
January	39.5	.14	4.43	6.85	137	422
February	43	.16	11.3	17.5	317	973
March	51	1.04	15.4	23.8	479	1,470
April	57	.06	21.6	33.4	649	1,990
May	48	.10	17.4	26.9	540	1,660
June	26	3.45	6.91	10.7	207	636
Fiscal year 1949-50	57	.06	10.6	16.4	3,870	11,880

Koolau ditch at Haipuaena, near Huelo

Location.--Lat 20°51'15", long. 156°11'15", on right bank 1,000 ft upstream from intake at Puohokamoa Stream, 3.5 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Records available.--April 1932 to June 1950.

Gage.--Water-stage recorder and Parshall flume. Prior to Mar. 21, 1933, water-stage recorder at same site at datum 1.94 ft lower. Mar. 21, 1933, to Mar. 20, 1935, water-stage recorder at same site at datum 0.25 ft lower than present datum.

Average discharge.--18 years, 80.1 mgd (124 cfs).

Extremes.--1932-50: Maximum daily discharge, 193 mgd (299 cfs) Jan. 17, 1946; no flow Feb. 14-28, Mar. 7-18, 1933, Feb. 26 to Mar. 22, 1935.

Remarks.--Records excellent. Flow regulated by floodgates. Water used for domestic supply and irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	28	159	41	20.5	64	181	67	38.5	52	176	113	67
2	106	100	37	20.5	42	182	177	51	44	117	94	67
3	56	67	35.5	19.4	53	180	118	34	41	80	97	63
4	32.5	59	35.5	19.4	29.5	92	76	29.5	37	63	149	59
5	37.5	55	34	22	168	80	59	28	37.5	59	137	52
6	71	55	34	23	105	80	52	25	151	94	120	55
7	78	46	31	55	82	67	48	29.5	52	100	99	48
8	43	55	29.5	34.5	76	59	44	67	39	55	183	139
9	44	70	29.5	47	63	52	61	35.5	34	70	169	118
10	35.5	166	34.5	89	60	48	75	28	105	81	169	110
11	80	143	32.5	37	70	46	126	26.5	158	172	125	119
12	92	82	28	109	157	46	140	51	87	150	85	67
13	118	63	58	94	183	117	67	139	72	162	112	80
14	84	59	35.5	55	111	109	52	63	55	125	76	52
15	155	83	45	42	76	57	42	52	48	105	76	48
16	121	69	39	46	161	122	39	79	42	137	108	44
17	83	73	31	34	166	63	35.5	86	41	169	140	44
18	76	107	31	43	153	63	34	183	37	153	176	41
19	52	125	26.5	50	105	65	32.5	124	35.5	190	113	42
20	44	162	31	41	67	77	31	100	154	144	162	44
21	48	103	25	31	55	55	28	157	190	89	162	52
22	41	124	46	32.5	48	46	28	183	142	120	119	46
23	39	89	32.5	29.5	42	42	63	162	131	190	119	86
24	50	94	28	28	39	39	44	96	162	190	162	86
25	86	118	32.5	26.5	37	37	29.5	76	176	148	159	110
26	183	67	26.5	25	144	54	23.5	63	106	162	168	133
27	153	59	29.5	23.5	166	130	25	52	90	125	157	77
28	76	55	27	23.5	145	144	25	94	122	113	108	66
29	90	50	23.5	22	148	149	65	-	183	113	85	62
30	130	46	22	20.5	190	169	120	-	181	119	72	50
31	128	42	-	19.4	-	98	43	-	176	-	63	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	183	28	79.4	123	2,460	7,550
August	166	42	85.3	132	2,640	8,120
September	58	22	33.0	51.1	992	3,040
October	109	19.4	38.2	59.1	1,180	3,630
November	190	29.5	100	155	3,010	9,220
December	182	37	88.7	137	2,750	8,440
Calendar year 1949	190	19.4	68.5	106	24,990	76,670
January	177	23.5	60.3	93.3	1,870	5,740
February	183	25	76.9	119	2,150	6,610
March	190	34	96.2	149	2,980	9,150
April	190	55	126	195	3,770	11,570
May	183	63	125	193	3,880	11,900
June	139	41	70.9	110	2,130	6,530
Fiscal year 1949-50	190	19.4	81.7	126	29,810	91,500

Puohokamoa Stream near Huelo

Location.--Lat 20°51'20", long. 156°11'25", on right bank 650 ft upstream from Spreckels ditch inflow and trail crossing, 3.2 miles southeast of Kailua, and 4.4 miles southeast of Huelo.
Drainage area.--2.6 sq mi.
Records available.--June 1913 to June 1950. December 1910 to May 1913 at site 700 ft downstream; records not equivalent due to inflow of Spreckels ditch.
Gage.--Water-stage recorder and masonry control. Datum of gage is 1,322.04 ft above mean sea level (East Maui Irrigation Co. benchmark). Prior to May 31, 1934, water-stage recorder at site 130 ft downstream at different datum.
Average discharge.--33 years (1917-50), 21.5 mgd (33.3 cfs).
Extremes.--Maximum discharge during year, 1,430 mgd (2,210 cfs) Apr. 27 (gage height, 7.38 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum, 1.24 mgd (1.92 cfs))ft. Oct. 4, 5.
1913-50: Maximum discharge, 1,600 mgd (2,480 cfs) Aug. 12, 1940 (gage height, 7.81 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum, 0.1 mgd (0.2 cfs) Nov. 17, 1929, site and datum then in use.
Remarks.--Records good. Kula pipe line diverts small amount of water above station, at altitude 4,300 ft, for domestic supply.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.70	1.4	28
.7	1.60	1.8	63
.8	3.0	2.2	115
.9	5.0	2.5	165
1.0	7.8	3.0	252
1.2	15.8	3.5	340

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.45	28.5	3.8	1.42	8.5	79	7.0	5.9	5.3	37	46	10.4
2	16.4	14.9	3.4	1.42	5.8	73	63	5.9	4.0	14.5	32	11.4
3	5.8	10.0	3.0	1.33	5.0	78	15.2	4.4	3.6	10.0	26	10.2
4	3.0	7.8	2.85	1.33	3.0	26	7.8	2.6	3.2	7.5	37.5	8.1
5	3.8	6.7	2.85	4.8	88	14.9	5.8	2.15	3.0	7.0	29	6.7
6	10.2	6.7	3.0	5.8	12.7	11.4	4.8	1.88	38.5	20.5	26.5	7.0
7	12.9	5.3	2.6	12.3	7.8	9.2	4.4	2.0	5.7	15.8	56	6.2
8	5.0	6.4	2.3	4.6	8.2	7.8	4.0	2.0	3.6	7.8	119	69
9	5.0	9.2	2.15	5.7	7.0	6.1	3.8	1.74	3.0	8.9	49	19.6
10	3.6	32.5	3.2	13.8	6.4	5.3	3.4	1.51	73	38	61	15.5
11	14.5	22.5	2.45	5.0	9.6	5.0	20.5	1.88	44	89	48	17.8
12	17.0	10.7	2.3	14.8	74	5.3	17.6	4.8	12.7	40	24.5	9.8
13	18.1	8.2	8.7	13.2	37	34.5	5.3	40	8.9	49	25	7.6
14	11.4	7.0	4.0	7.8	16.8	19.1	4.0	5.6	6.1	15.8	16.9	6.4
15	43	9.6	6.8	4.8	11.2	6.4	3.4	4.8	4.4	10.7	14.6	5.6
16	16.8	8.9	4.0	5.0	27	19.0	3.2	10.8	3.8	13.6	26	5.2
17	10.0	9.2	2.7	3.6	34	7.0	2.85	72	3.6	43	34.5	5.4
18	10.3	18.1	2.45	4.0	26	6.1	2.6	106	3.2	52	141	4.6
19	7.0	18.4	2.0	4.2	15.4	5.8	2.3	15.8	3.0	214	28	4.6
20	5.0	24	2.0	3.4	9.2	5.6	2.15	13.6	144	63	51	4.8
21	5.0	13.6	1.88	2.7	7.2	4.2	2.0	47	204	19.8	33.5	6.8
22	4.6	18.1	5.9	2.7	5.8	3.8	2.0	84	26.5	62	19.0	4.7
23	4.2	11.0	3.2	2.3	4.6	3.4	2.15	24	25	253	32.5	13.7
24	4.4	13.2	2.15	2.15	4.2	3.0	2.0	13.2	104	184	65	13.3
25	11.8	17.4	3.0	2.0	4.0	2.85	1.88	9.2	49	54	44	16.5
26	117	8.2	2.0	1.88	30.5	4.6	1.74	7.0	12.8	58	48	21
27	39	7.2	2.15	1.60	54	25	1.60	5.6	15.1	303	36	10.6
28	10.3	6.1	2.0	1.74	28.5	23.5	1.60	11.0	20.5	229	18.0	7.8
29	20	5.3	1.60	1.51	41	25	8.6	-	179	51	13.8	6.7
30	24	4.6	1.51	1.42	102	37.5	15.1	-	70	51	11.6	5.2
31	18.4	4.4	-	1.42	-	12.3	4.0	-	36	-	9.5	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	117	2.45	15.5	24.0	480	1,470
August	32.5	4.4	12.1	18.7	374	1,150
September	8.7	1.51	3.06	4.73	91.9	282
October	14.8	1.33	4.51	6.98	140	429
November	102	3.0	23.1	35.7	694	2,130
December	79	2.85	18.4	28.5	570	1,750
Calendar year 1949	151	1.33	12.2	18.9	4,470	13,720
January	63	1.60	7.28	11.3	226	693
February	106	1.51	18.1	28.0	506	1,550
March	204	3.0	36.1	55.9	1,120	3,430
April	303	7.0	67.4	104	2,020	6,200
May	141	9.5	39.4	61.0	1,220	3,750
June	69	4.6	11.4	17.6	342	1,050
Fiscal year 1949-50	303	1.33	21.3	33.0	7,780	23,880

Peak discharge (base, 750 mgd).--Mar. 21 (2 a.m.) 880 mgd (1,360 cfs), 5.72 ft; Apr. 23 (6:30 a.m.) 1,090 mgd (1,690 cfs), 6.35 ft; Apr. 27 (3 a.m.) 1,430 mgd (2,210 cfs), 7.38 ft.

Manuel Luis ditch at Puohokamoa Gulch, near Huelo

Location.--Lat 20°51'50", long. 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.1 miles west of Keanae, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Records available.--December 1917 to June 1950.

Gage.--Water-stage recorder and sharp-crested weir.

Average discharge.--31 years (1918-24, 1925-50), 5.89 mgd (9.11 cfs).

Extremes.--1917-50: Maximum daily discharge, 68 mgd (105 cfs) for one or more days in 1938, 1941, 1942, 1947, 1948, and 1950; no flow at times.

Remarks.--Records excellent. Ditch is extension of Center ditch and picks up water at altitude of 500 ft from streams between the Kolea and the Waiakamoi. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.68	6.2	1.08	0.25	1.87	30	3.85	5.1	1.23	11.2	26.5	1.40
2	2.55	3.3	.79	.25	1.95	26.5	21.5	3.8	1.00	3.7	18.1	1.36
3	1.77	2.35	.68	.25	1.78	23	5.6	1.74	.85	2.55	6.5	1.03
4	.79	1.99	.62	.25	.89	6.6	4.0	.74	.79	1.99	1.86	.85
5	1.17	1.80	.51	2.05	29.5	4.9	3.2	.62	.74	1.80	2.45	.74
6	2.35	1.70	.62	1.06	2.95	3.65	2.65	.56	10.9	32	4.0	.74
7	2.8	1.23	.39	3.6	1.95	2.9	2.35	.56	.74	2.35	8.8	.68
8	1.77	1.84	.39	1.79	2.65	2.55	2.15	.56	.62	1.43	29.5	20
9	1.88	3.3	.34	1.86	2.25	2.25	1.89	.45	.56	2.1	4.4	3.05
10	1.31	12.0	.86	3.2	2.25	2.1	1.61	.39	23	12.6	7.4	3.3
11	4.4	5.4	.50	1.57	2.8	1.99	3.2	1.11	13.8	33	7.9	5.5
12	4.0	3.0	.43	2.85	21	2.0	3.45	.75	1.46	11.0	2.55	.93
13	5.0	2.55	1.76	2.5	4.7	12.2	1.89	12.9	1.63	9.1	4.9	.74
14	2.75	2.2	.99	1.64	5.1	7.4	1.38	1.00	1.15	4.5	2.25	.62
15	11.0	2.8	1.63	1.41	2.65	2.35	1.08	.74	.85	2.75	1.98	.62
16	4.2	2.45	.91	1.46	4.2	10.0	1.00	.98	.74	2.75	6.0	.56
17	3.05	2.7	.51	1.00	7.9	3.0	.68	13.6	.74	14.6	8.0	.56
18	2.65	4.4	.39	1.12	5.5	3.0	.51	28.2	.68	20.5	51	.56
19	1.89	3.95	.25	1.25	3.6	3.1	.45	3.85	.68	68	10.3	.51
20	1.53	4.8	.25	1.15	2.25	3.45	.39	3.3	37	23.5	21.5	.55
21	1.61	4.0	.22	.79	1.89	2.15	.39	11.8	49	2.9	21.5	.86
22	1.38	4.1	2.65	.74	1.80	1.89	.34	19.6	4.4	15.4	4.1	.56
23	1.23	3.2	.97	.45	1.61	1.61	.56	8.9	2.95	37.5	13.0	1.74
24	1.46	3.2	.39	.39	1.46	1.46	.39	4.0	34	41	23	1.36
25	3.2	3.2	.92	.34	1.28	1.31	.28	2.65	12.7	4.3	16.5	3.4
26	37.5	2.1	.39	.28	12.3	2.6	.28	1.99	2.15	6.1	25	6.2
27	11.4	2.1	.45	.28	16.9	9.9	.28	1.61	2.55	52	19.9	1.13
28	2.25	1.70	.48	.28	11.6	9.3	.28	1.98	2.7	57	2.8	.74
29	6.8	1.38	.28	.28	8.8	8.0	3.3	-	53	28.5	1.70	.68
30	5.1	1.23	.25	.28	27	17.6	5.8	-	25	30.5	1.38	.51
31	3.95	1.15	-	.25	-	5.6	1.97	-	6.0	-	1.23	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	37.5	0.68	4.30	6.65	133	409
August	12.0	1.15	3.14	4.86	97.3	299
September	2.65	.22	.697	1.08	20.9	64
October	3.6	.25	1.12	1.73	34.8	107
November	29.5	.89	6.41	9.92	192	590
December	30	1.31	6.91	10.7	214	658
Calendar year 1949	47	.22	3.78	5.85	1,380	4,230
January	21.5	.28	2.47	3.82	76.7	235
February	28.2	.39	4.77	7.38	133	410
March	53	.56	9.47	14.7	294	901
April	68	1.43	17.9	27.7	537	1,650
May	51	1.23	11.5	17.8	356	1,090
June	20	.51	2.05	3.17	61.5	189
Fiscal year 1949-50	68	.22	5.89	9.11	2,150	6,600

Waiakamoi Stream above Wailoa ditch, near Huelo

Location.--Lat 20°51'45", long. 156°11'55", on left bank 500 ft upstream from intake of Wailoa ditch, 0.2 mile upstream from Spreckels ditch trail, 2.5 miles southeast of Kailua, and 3.8 miles southeast of Huelo.
Drainage area.--4.4 sq mi.
Records available.--January 1922 to June 1950.
Gage.--Water-stage recorder. Datum of gage is 1,293.59 ft above mean sea level.
Average discharge.--28 years, 16.5 mgd (25.5 cfs).
Extremes.--Maximum discharge during year, 1,630 mgd (2,520 cfs) Apr. 27 (gage height, 7.07 ft), from rating curve extended above 370 mgd on basis of area, mean-depth studies; minimum, 0.44 mgd (0.68 cfs) Oct. 3, 4.
1922-50: Maximum discharge, 7,040 mgd (10,900 cfs) Jan. 26, 1948 (gage height, 12.76 ft), from rating curve extended above 370 mgd on basis of area, mean-depth studies; minimum 0.16 mgd (0.25 cfs) Feb. 11, 1945.
Remarks.--Records good except those for period of no gage-height record, which are fair. Haleakala Ranch and Kula pipe lines divert small quantities of water above station. Water used for irrigation in central Maui.
Revisions (fiscal years).--W 615: 1922-24. W 740: 1922-31(M). W 1155: 1948(M).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.29	2.1	27
.7	.48	2.5	52
.9	1.00	3.0	102
1.1	1.70	3.5	175
1.3	3.2	4.0	274
1.5	6.3	4.5	400
1.8	14.4		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.84	13.7	3.2	0.55	3.2	74	4.7	3.55	4.7	35	38	5.6
2	9.0	9.0	3.0	.51	2.8	54	50	2.8	3.6	12.7	24.5	6.5
3	4.4	5.6	2.6	.46	3.35	67	12.0	2.25	2.95	7.2	16.9	5.8
4	2.25	4.4	2.4	.46	1.85	19.2	5.2	1.36	1.95	5.6	30	4.9
5	2.35	3.7	2.4	1.44	81	8.5	4.0	1.53	1.70	5.4	18.5	4.1
6	3.9	3.6	2.2	1.80	10.3	6.0	3.45	1.62	34	13.9	15.4	4.3
7	8.4	2.85	1.9	6.3	6.9	4.9	3.05	1.09	5.3	13.1	42	4.0
8	3.6	3.3	1.6	2.4	6.0	4.0	2.85	.95	3.6	6.3	91	45
9	3.7	4.4	1.4	2.75	4.5	4.0	2.55	.81	2.95	7.0	32.5	12.9
10	2.55	16.2	1.9	9.6	4.1	2.95	2.25	.70	34.5	29	34	8.5
11	5.9	13	1.7	3.95	5.6	2.65	47	1.13	46	80	35.5	9.5
12	12.2	9	1.6	11.4	71	3.0	41	2.25	8.3	21.5	17.0	6.0
13	11.3	5.5	3.5	11.1	38.5	11.2	5.8	31	6.1	41	14.8	4.5
14	7.1	4.6	2.2	6.1	15.8	17.8	3.05	4.9	4.5	11.8	9.6	3.7
15	55	5.5	3.1	3.2	9.3	4.9	2.55	4.8	3.85	8.5	7.9	2.75
16	10.7	5	2.2	2.95	27.5	10.9	2.25	5.4	3.3	13.7	14.7	2.75
17	6.0	6	1.7	2.25	29.5	5.1	1.68	39.5	2.9	44	22.5	2.95
18	8.2	11	1.5	2.2	20.5	4.4	1.29	116	2.35	30	105	3.6
19	4.8	13	1.0	2.25	12.8	4.4	1.16	10.4	2.45	204	19.2	3.2
20	2.65	15	.7	1.78	6.3	4.1	1.00	7.9	130	50	29.5	2.4
21	2.75	10	.6	1.29	4.9	3.05	1.59	35.5	217	14.1	22.5	4.5
22	2.95	12	3.0	1.12	3.8	1.90	1.66	96	20	33.5	14.2	3.85
23	2.4	7.5	2.2	.95	3.6	1.66	1.85	16.6	16.9	178	19.3	13.0
24	3.6	9	1.16	1.37	3.45	2.25	1.76	9.8	82	146	51	13.2
25	7.7	12	1.31	.94	2.95	2.25	.80	5.8	51	34.5	33	14.6
26	103	7	.87	.73	13.0	3.1	.62	4.3	8.9	39	34	16.2
27	42	6	.85	1.00	36	11.7	.58	3.45	10.0	237	22	9.8
28	6.3	5	.81	.92	18.0	13.2	.55	6.9	20	355	10.9	5.6
29	15.5	4.5	.60	.65	38.5	11.4	5.2	-	183	49	8.1	4.9
30	20	4.2	.55	.58	104	22	10.0	-	75	51	6.5	3.85
31	10.8	3.7	-	.58	-	8.3	3.4	-	37	-	5.6	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	103	1.84	11.7	18.1	363	1,110
August	16.2	2.85	7.59	11.7	235	722
September	3.5	.55	1.79	2.77	53.8	165
October	11.4	.46	2.70	4.18	83.6	256
November	104	1.85	19.6	30.3	589	1,810
December	74	1.66	12.7	19.6	394	1,210
Calendar year 1949	112	.46	8.61	13.3	3,150	9,640
January	50	.55	7.25	11.2	225	690
February	116	.70	14.9	23.1	418	1,280
March	217	1.70	33.1	51.2	1,030	3,150
April	355	5.4	59.2	91.6	1,780	5,450
May	105	5.6	27.3	42.2	846	2,600
June	45	2.4	7.75	12.0	232	713
Fiscal year 1949-50	355	.46	17.1	26.5	6,250	19,160

Peak discharge (base, 900 mgd).--Apr. 27 (3 a.m.) 1,630 mgd (2,520 cfs), 7.07 ft.
Note.--No gage-height record Aug. 11 to Sept. 22; discharge estimated on basis of records for nearby stations.

Alo Stream near Huelo

Location.--Lat 20°51'50", long. 156°11'45", on right bank just upstream from Spreckels ditch inflow, trail crossing, and Wailoa ditch intake, 2.5 miles southeast of Kailua and 3.8 miles southeast of Huelo.
Drainage area.--0.2 sq mi.
Records available.--December 1910 to June 1950.
Gage.--Water-stage recorder. Datum of gage is 1,248.38 ft above mean sea level. Prior to June 18, 1914, staff gage at site 300 ft downstream at different datum.
Average discharge.--39 years (1911-50), 4.90 mgd (7.58 cfs).
Extremes.--Maximum discharge during year, 820 mgd (1,270 cfs) Apr. 27 (gage height, 5.09 ft), from rating curve extended above 130 mgd; minimum, 0.38 mgd (0.59 cfs) Oct. 4, 5.
1910-50: Maximum discharge, 1,600 mgd (2,480 cfs) Nov. 18, 1930 (gage height, 6.90 ft), from rating curve extended above 130 mgd; minimum, 0.2 mgd (0.3 cfs) Nov. 22, 23, 1932.
Remarks.--Records good except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 27				Apr. 28 to June 30	
0.5	0.35	1.2	6.7	0.6	0.70
.6	.62	1.3	9.6	.7	1.07
.7	.97	1.4	13.5	.8	1.58
.8	1.45	1.5	18.5	.9	2.3
.9	2.1	1.6	24.5	1.1	4.6
1.0	3.1	1.9	46	1.3	9.7
1.1	4.6	2.3	88	1.5	18.5
				1.9	46

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.89	6.9	0.90	0.43	7.4	12.7	2.6	6.7	1.16	9.7	11.2	1.38
2	3.2	2.85	.83	.43	2.8	16.0	21.5	3.5	.97	2.9	6.4	1.22
3	1.63	1.78	.76	.40	1.89	15.2	2.95	1.41	.94	2.1	6.5	1.07
4	.72	1.58	.72	.40	1.07	4.8	1.97	.90	.83	1.64	a8.3	1.03
5	1.93	1.35	.72	6.2	11.9	2.8	1.58	.80	.85	1.91	a8.5	.88
6	3.35	1.43	.69	2.4	1.87	2.2	1.31	.76	5.7	2.65	a6.5	.92
7	2.55	1.07	.59	4.8	1.35	1.78	1.16	.80	.94	2.4	a7.5	.89
8	1.97	2.05	.57	1.73	3.2	1.52	1.07	.72	.80	1.61	a15	6.2
9	1.53	4.1	.57	1.36	2.6	1.31	.94	.62	.76	2.3	a6	1.98
10	1.24	15.6	1.04	3.5	2.2	1.11	.86	.59	26	9.5	a11	3.6
11	7.5	5.6	.66	1.24	3.05	1.02	4.2	1.10	6.3	18.7	a6.6	6.0
12	3.9	2.55	.57	3.15	19.4	1.71	2.15	2.45	2.3	17.5	3.9	1.43
13	4.9	2.2	.84	1.40	5.0	14.1	.94	9.3	2.7	11.7	8.1	1.07
14	3.15	1.84	.88	1.21	3.0	3.4	.83	1.16	1.48	5.2	4.5	.96
15	10.0	3.7	1.92	1.81	7.2	1.35	.80	.94	1.07	2.75	3.55	.92
16	4.4	2.8	.73	1.81	3.45	9.5	.76	2.35	.90	3.3	10.2	.85
17	3.3	2.65	.57	.97	7.4	1.95	.69	16.5	.94	13.8	9.5	.88
18	2.6	6.0	.54	1.19	7.1	1.71	.66	18.1	.83	31.5	39	.81
19	1.58	4.0	.48	1.24	2.95	1.60	.62	5.4	.78	53	5.9	.95
20	1.31	5.4	.48	1.09	1.97	1.40	.59	4.3	24	17.3	9.3	1.17
21	1.35	3.7	.46	.83	1.64	1.02	.57	9.5	34	5.4	8.5	1.50
22	1.11	5.0	2.6	.90	1.35	.90	.54	10.2	5.3	21	4.1	.83
23	1.11	2.95	.72	.76	1.16	.83	.59	10.4	4.6	41	9.7	1.37
24	1.21	3.45	.54	.76	1.02	.80	.54	3.05	21.5	41	5.8	1.07
25	2.05	3.1	1.41	.72	1.11	.76	.48	2.2	6.7	11.3	4.4	2.75
26	18.9	1.84	.62	.62	19.8	2.2	.48	1.78	2.35	24.5	9.3	5.4
27	7.1	1.84	.80	.59	21.5	15.8	.46	1.35	2.7	84	10.6	1.49
28	1.78	1.55	.67	.59	10.6	10.3	.43	2.75	2.9	33	3.2	1.43
29	4.1	1.26	.48	.54	5.8	12.6	6.0	-	36.5	6.2	2.5	1.03
30	6.1	1.07	.46	.51	10.8	14.4	9.4	-	13.1	6.1	2.0	.88
31	3.25	.97	-	.51	-	3.25	1.93	-	5.6	-	1.65	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	18.9	0.72	3.54	5.48	110	337
August	15.6	.97	3.30	5.11	102	314
September	2.6	.46	.794	1.23	23.8	73
October	6.2	.40	1.42	2.20	44.1	135
November	21.5	1.02	5.72	8.85	172	527
December	16.0	.76	5.10	7.89	158	485
Calendar year 1949	36	.38	3.01	4.66	1,100	3,370
January	21.5	.43	2.25	3.48	69.6	214
February	18.1	.59	4.27	6.61	120	367
March	36.5	.76	6.95	10.8	216	661
April	84	1.61	16.2	25.1	485	1,490
May	39	1.65	8.04	12.4	249	765
June	6.2	.81	1.73	2.68	52.0	159
Fiscal year 1949-50	84	.40	4.93	7.63	1,800	5,530

Peak discharge (base, 250 mgd).--Apr. 27 (3 a.m.) 820 mgd (1,270 cfs), 5.09 ft; May 18 (4 a.m.) 272 mgd (421 cfs), 3.33 ft.
a No gage-height record; discharge estimated on basis of records for Kaalea and Oopuola Streams near Huelo.

Kaaiea Stream near Huelo

Location.--Lat 20°52'05", long. 156°12'15", on left bank 700 ft upstream from Hamakua ditch trail crossing, 2 miles southeast of Kailua, 3.2 miles southeast of Huelo, and 3.5 miles west of Keanae.
Drainage area.--0.5 sq mi.
Records available.--December 1921 to June 1950.
Gage.--Water-stage recorder and concrete weir. Prior to Aug. 1, 1934, water-stage recorder at site 40 ft downstream at different datum.
Average discharge.--28 years (1922-50), 4.67 mgd (7.23 cfs).
Extremes.--Maximum discharge during year, 645 mgd (998 cfs) Apr. 27 (gage height, 4.57 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.46 mgd (0.71 cfs) Oct. 4, 5.
1921-50: Maximum discharge, 2,300 mgd (3,560 cfs) Nov. 18, 1930 (gage height, 7.93 ft, site and datum then in use), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.22 mgd (0.34 cfs) June 1, 1945.
Remarks.--Records good except those for periods of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	0.9	11.7
.3	.63	1.0	15.3
.4	1.34	1.2	24.5
.5	2.45	1.4	36
.6	4.0	1.6	49
.7	6.1	2.0	79
.8	8.6		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.80	6.4	0.95	0.54	6.1	14.1	2.35	4.3	1.3	9.1	10.3	1.34
2	3.8	2.8	.90	.50	3.1	15.2	17.6	2.95	1.1	2.9	6.5	1.25
3	1.54	1.95	.85	.50	2.05	13.5	3.35	1.6	1.0	2.05	5.2	1.17
4	.74	1.73	.80	.50	1.22	5.1	2.05	1.1	.92	1.63	9.0	1.09
5	1.76	1.53	.79	1.32	12.9	4.9	1.63	.90	.92	1.63	9.3	.94
6	3.45	1.63	.78	3.25	2.35	2.2	1.34	.84	5	2.7	6.9	1.01
7	2.95	1.25	.68	4.9	1.63	1.73	1.25	.85	1.0	2.5	8.3	.94
8	1.68	1.84	.65	1.70	2.85	1.53	1.17	.76	.87	1.60	15.9	7.7
9	1.66	3.4	.65	1.63	2.55	1.34	1.01	.68	.80	2.3	6.5	2.3
10	1.09	13.4	1.1	3.6	2.45	1.25	.94	.65	21	7.8	11.7	3.55
11	5.6	6.5	.72	1.53	3.2	1.17	5.1	1.0	8.0	18.9	7.6	5.8
12	4.4	3.0	.63	3.65	16.2	1.31	3.6	2.3	2.45	16.5	3.7	1.63
13	4.7	2.2	.88	1.78	5.9	12.5	1.25	8.5	2.7	13.0	6.9	1.25
14	3.05	1.95	.95	1.53	3.45	4.8	1.09	1.3	1.63	4.7	3.95	1.09
15	9.7	3.75	2.2	1.73	5.4	1.63	.94	1.1	1.25	2.75	3.2	1.01
16	4.3	2.85	1.02	1.96	4.2	7.6	.87	2.3	1.01	3.05	9.0	.94
17	3.2	2.9	.74	1.25	7.4	2.05	.80	15	1.01	13.1	8.1	1.01
18	2.55	5.8	.68	1.25	7.0	1.73	.74	17	.94	19.9	42	.94
19	1.53	4.1	.63	1.34	3.25	1.63	.68	6	.80	48	6.0	1.01
20	1.25	6.0	.58	1.25	2.2	1.63	.63	5	23	18.3	8.2	1.26
21	1.25	4.1	.54	.94	1.73	1.25	.63	9	33.5	5.2	7.0	1.66
22	1.09	5	2.6	1.01	1.43	1.01	.58	10	5.6	17.9	3.6	1.01
23	1.01	3.2	1.01	.87	1.25	.94	.63	10	4.9	39.5	8.0	1.53
24	1.09	3.5	.68	.80	1.17	.87	.58	3.3	21	41	6.8	1.34
25	1.72	3.2	1.57	.80	1.06	.80	.54	2.3	8.5	11.7	4.8	2.5
26	18.4	2.0	.74	.68	15.8	1.88	.54	1.9	2.45	19.8	8.8	5.5
27	7.0	2.0	.87	.63	19.6	14.3	.50	1.7	2.2	78	9.9	1.90
28	1.84	1.7	.80	.63	10.9	9.9	.50	2.6	2.95	31.5	3.5	1.73
29	3.95	1.3	.63	.58	6.0	12.8	5.4	-	33	6.4	2.45	1.34
30	5.1	1.1	.58	.58	10.7	13.6	8.6	-	13.3	6.7	1.84	1.09
31	3.45	1.0	-	.58	-	3.6	1.99	-	5.9	-	1.53	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	18.4	0.74	3.41	5.28	106	324
August	13.4	1.0	3.33	5.15	103	316
September	2.6	.54	.907	1.40	27.2	83
October	4.9	.50	1.41	2.18	43.8	134
November	19.6	1.06	5.50	8.51	165	506
December	15.2	.80	5.09	7.88	158	484
Calendar year 1949	35.5	.39	3.02	4.67	1,100	3,380
January	17.6	.50	2.22	3.43	68.9	211
February	17	.65	4.10	6.34	115	353
March	33.5	.80	6.77	10.5	210	644
April	78	1.60	15.0	23.2	450	1,380
May	42	1.53	7.95	12.3	246	756
June	7.7	.94	1.89	2.92	56.8	174
Fiscal year 1949-50	78	.50	4.79	7.41	1,750	5,360

Peak discharge (base, 250 mgd).--Apr. 27 (3 a.m.) 645 mgd (998 cfs), 4.57 ft; May 18 (5 a.m.) 340 mgd (526 cfs), 3.68 ft.
Note.--No gage-height record Aug. 21 to Sept. 14, Feb. 3 to Mar. 7; discharge estimated on basis of records for Alo and Oopuola Streams near Huelo.

Oopuola Stream near Huelo

Location.--Lat 20°52'15", long. 156°12'30", on left bank between Kaaiea and Naililihaele Streams, 100 ft upstream from Wailoa ditch intake, 300 ft upstream from ditch trail, 1.8 miles southeast of Kailua, 3 miles southeast of Huelo, and 3.8 miles west of Keanae.
Drainage area.--0.2 sq mi.
Records available.--August 1930 to June 1950. December 1910 to June 1915 at site half a mile downstream; records not equivalent.
Gage.--Water-stage recorder and concrete control.
Average discharge.--19 years (1931-50), 1.77 mgd (2.74 cfs).
Extremes.--Maximum discharge during year, 335 mgd (518 cfs) Apr. 27 (gage height, 5.37 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.14 mgd (0.22 cfs) Oct. 3-5.
1930-50: Maximum discharge, 340 mgd (526 cfs) Jan. 22, 1946 (gage height, 5.54 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.04 mgd (0.06 cfs) Oct. 29, 30, 1943, June 1, 1945.
Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.6	0.05	2.3	8.2
1.7	.23	2.4	11.2
1.8	.65	2.5	14.7
1.9	1.32	2.6	18.8
2.0	2.35	2.8	30
2.1	3.75	3.1	54
2.2	5.7		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.36	1.91	0.32	0.18	1.68	3.35	0.94	3.5	0.45	4.2	3.85	0.55
2	.92	1.10	.28	.16	1.41	5.3	8.7	2.05	.36	1.10	2.05	.50
3	.69	.60	.28	.14	.99	4.4	1.25	.81	.32	.75	2.05	.45
4	.25	.55	.28	.14	.36	1.68	.81	.50	.28	.60	2.8	.45
5	.95	.45	.28	.51	3.8	.94	.70	.40	.28	.70	3.95	.36
6	1.26	.50	.25	.68	.70	.70	.55	.32	2.4	.75	2.05	.40
7	1.11	.40	.23	1.94	.40	.60	.50	.32	.36	1.11	1.91	.32
8	.68	.75	.21	.77	1.08	.55	.45	.28	.28	.96	4.6	1.81
9	.69	1.70	.21	.67	1.12	.45	.40	.25	.25	1.30	1.51	.90
10	.40	6.3	.49	1.32	.87	.40	.36	.23	7.7	4.0	2.4	2.35
11	2.7	2.4	.28	.55	1.10	.40	1.98	.81	2.15	7.4	1.85	2.55
12	1.71	1.02	.23	1.19	8.2	.59	1.43	.72	.87	5.1	1.25	.65
13	2.1	.81	.28	.50	1.70	4.0	.55	2.8	1.60	5.1	3.35	.45
14	.94	.70	.23	.40	1.02	1.89	.40	.50	.70	2.3	1.63	.40
15	4.7	1.27	.60	.65	2.25	.60	.36	.40	.50	1.18	1.37	.40
16	2.05	.88	.32	.70	1.36	4.3	.32	.45	.40	1.32	5.4	.36
17	1.29	1.10	.21	.32	2.45	1.08	.28	4.9	.40	7.5	4.0	.32
18	1.37	2.75	.19	.28	2.45	.94	.28	7.1	.36	12.6	24	.32
19	.60	1.61	.19	.32	.94	.65	.25	2.55	.32	24.5	2.15	.36
20	.50	2.4	.19	.32	.65	.55	.25	1.82	6.4	7.2	3.2	.76
21	.50	1.41	.18	.23	.55	.45	.23	3.55	14.3	1.70	3.05	.75
22	.40	1.98	1.38	.28	.45	.40	.23	3.85	2.05	4.3	1.25	.40
23	.40	1.10	.32	.23	.40	.36	.25	5.1	1.45	13.7	3.2	.70
24	.55	1.18	.21	.23	.36	.32	.23	1.32	5.9	15.7	2.3	.60
25	1.11	1.30	.53	.23	.32	.32	.21	.81	2.35	3.5	1.41	1.42
26	7.4	.65	.23	.21	6.3	.97	.19	.65	.87	8.0	3.4	1.92
27	2.8	.65	.41	.19	9.7	6.2	.19	.55	1.03	49	5.4	.60
28	.70	.60	.32	.19	4.4	5.3	.19	.65	1.13	13.4	1.18	.55
29	1.26	.45	.19	.18	2.45	3.95	4.3	-	12.5	2.15	.87	.40
30	2.1	.40	.18	.18	2.7	6.7	4.7	-	4.8	1.80	.70	.32
31	1.37	.36	-	.19	-	1.51	.94	-	2.35	-	.60	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.4	0.25	1.41	2.18	43.9	135
August	6.3	.36	1.27	1.96	39.3	121
September	1.38	.18	.317	.490	9.50	29
October	1.94	.14	.454	.702	14.1	43
November	9.7	.32	2.07	3.20	62.2	191
December	6.7	.32	1.93	2.99	59.8	184
Calendar year 1949	12.5	.14	1.20	1.86	436	1,340
January	8.7	.19	1.05	1.62	32.4	99
February	7.1	.23	1.69	2.61	47.2	145
March	14.3	.25	2.42	3.74	75.1	231
April	49	.60	6.76	10.5	203	623
May	24	.60	3.18	4.92	98.7	303
June	2.55	.32	.744	1.15	22.3	68
Fiscal year 1949-50	49	.14	1.94	3.00	708	2,170

Peak discharge (base, 130 mgd).--Apr. 19 (12:30 a.m.) 181 mgd (280 cfs), 3.98 ft; Apr. 27 (3 a.m.) 335 mgd (518 cfs), 5.37 ft; May 18 (4:30 a.m.) 112 mgd (266 cfs), 3.95 ft.

Nailiilihaele Stream near Huelo

Location.--Lat 20°52'30", long. 156°13'05", on left bank 200 ft upstream from Wailoa ditch intake, 700 ft upstream from New Hamakua ditch trail, 1.5 miles south of Kailua, and 2.5 miles southeast of Huelo.
Drainage area.--2.8 sq mi.
Records available.--December 1910 to December 1911, October 1913 to June 1918, August 1919 to June 1950. July to December 1912 at site 700 ft downstream; records not equivalent due to diversion.
Gage.--Water-stage recorder and masonry control. Dec. 9, 1910, to Dec. 31, 1911, staff gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 1, 1922, at present site at datum 0.50 ft higher.
Average discharge.--29 years (1920-24, 1925-50), 24.5 mgd (37.9 cfs).
Extremes.--Maximum discharge during year, 8,100 mgd (12,500 cfs) Apr. 27 (gage height, 10.36 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 2.1 mgd (3.25 cfs) Oct. 4, 5.
1910-18, 1919-50: Maximum discharge, that of Apr. 27, 1950; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.
Remarks.--Records poor prior to Apr. 28, fair thereafter. Water used for irrigation in central Maui.
Revisions (fiscal years).--W 755: 1932. W 795: 1934.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.8	1.35	2.4	19.0	3.3	120
1.9	2.9	2.5	24	3.6	181
2.0	5.0	2.6	31	3.9	260
2.1	7.7	2.7	39.5	4.2	355
2.2	10.8	2.8	50	5.0	710
2.3	14.6	3.0	73		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.6	25	7.2	2.6	9.4	75	10	12.8	8.9	40	73	11.2
2	14.3	15.5	6.6	2.6	9.5	70	60	12.9	7.7	18.6	46	10.8
3	8.7	11.6	6.1	2.45	6.9	74	25	8.1	6.9	14.2	35	9.9
4	5.0	10.5	5.8	2.3	4.2	42	11	6.1	6.4	12.3	63	9.2
5	7.2	9.6	5.5	2.7	80	22	8.0	5.0	6.5	11.9	56	8.3
6	13.0	9.6	5.3	8.1	20	15	6.8	4.6	25	16.5	45	8.6
7	13.6	8.3	4.8	12.9	13	13	5.8	4.6	7.7	16.3	72	7.7
8	7.9	9.9	4.4	6.5	11	11	5.4	4.4	6.4	10.6	156	40
9	8.2	13.4	4.2	7.1	10	9.5	4.8	3.95	6.1	14.3	48	17.1
10	6.1	38	6.2	11.5	9.0	8.5	4.6	3.55	55	28	77	17.4
11	15.8	24	4.6	6.6	13	7.5	64	4.6	29.5	100	59	21.5
12	17.0	14.6	4.2	12.7	80	8.0	61	7.0	12.3	46	24.5	11.2
13	17.9	12.3	6.7	8.8	54	26	35	25.5	12.8	58	38	9.6
14	13.2	10.5	6.0	7.4	30	27	15	7.4	8.9	22	22	8.6
15	33	14.6	10.2	6.6	16	10	9.0	6.1	7.4	16.8	18.8	8.0
16	19.2	12.4	6.2	6.9	30	22	7.2	12.1	6.9	17.2	46	7.4
17	15.0	14.2	4.6	4.8	34	10	6.9	97	6.6	63	49	7.4
18	14.5	21.5	4.2	5.0	22	8.0	6.1	130	6.1	100	247	6.9
19	10.5	18.8	3.75	5.3	15	7.2	5.6	21	5.5	329	33.5	7.2
20	8.9	24	3.55	4.6	12	8.0	5.1	17.7	149	98	64	8.1
21	8.9	16.8	3.1	3.95	10	6.8	4.8	38.5	243	29.5	37.5	9.6
22	8.0	22	8.6	3.95	8.8	6.0	4.5	52	24.5	126	21.5	7.1
23	7.4	15.5	4.8	3.55	8.0	5.4	4.4	30.5	24	326	37	10.6
24	7.7	18.1	3.55	3.75	7.2	5.0	4.4	15.9	71	308	54	10.5
25	10.8	19.5	5.6	3.75	6.8	4.8	3.95	12.3	36.5	69	37	14.7
26	91	12.7	3.75	3.55	23	7.0	3.55	10.2	15.5	95	49	20.5
27	29	11.6	4.2	3.3	42	24	3.55	8.9	14.5	698	46	11.2
28	11.6	10.5	3.55	3.3	21	23	3.3	13.9	18.8	334	20.5	9.9
29	18.8	9.6	2.9	2.9	35	23	23.5	-	206	54	16.8	8.6
30	22	8.3	2.75	2.75	90	29	26.5	-	46	60	13.8	7.2
31	15.4	7.7	-	2.75	-	15	9.1	-	34.5	-	11.9	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	91	4.6	15.6	24.1	484	1,490
August	38	7.7	15.2	23.5	471	1,440
September	10.2	2.75	5.10	7.89	153	469
October	12.9	2.3	5.32	8.23	165	506
November	90	4.2	24.4	37.8	731	2,240
December	75	4.8	20.1	31.1	623	1,910
Calendar year 1949	233	2.3	14.0	21.7	5,100	15,650
January	64	3.3	14.4	22.3	448	1,370
February	130	3.55	20.6	31.9	577	1,770
March	243	5.5	36.0	55.7	1,120	3,420
April	698	10.6	104	161	3,130	9,610
May	247	11.9	52.2	80.8	1,620	4,960
June	40	6.9	11.5	17.8	346	1,060
Fiscal year 1949-50	698	2.3	27.0	41.8	9,870	30,240

Peak discharge (base, 1,250 mgd).--Mar. 21 (2:30 a.m.) 1,650 mgd (2,550 cfs), 6.30 ft; Apr. 23 (5:30 a.m.) 1,650 mgd (2,550 cfs), 6.26 ft; Apr. 27 (3 a.m.) 8,100 mgd (12,500 cfs), 10.36 ft; May 18 (5 a.m.) 1,740 mgd (2,690 cfs), 6.38 ft.
Note.--No gage-height record Nov. 5-25, Nov. 29 to Jan. 23, Apr. 11-13; discharge estimated on basis of records for nearby streams.

Kailua Stream near Huelo

Location.--Lat 20°52'35", long. 156°13'25", on left bank just upstream from Wailoa ditch intake, 1.2 miles southwest of Kailua, and 2.5 miles south of Huelo.
Drainage area.--3.0 sq mi.
Records available.--December 1910 to December 1911, June 1913 to June 1918, July 1919 to June 1950. July 1912 to May 1913 at site 1 mile downstream; records not equivalent.
Gage.--Water-stage recorder. Datum of gage is 1,252.99 ft above mean sea level. Prior to Dec. 31, 1911, staff gage at site 400 ft downstream at different datum. June 17 to Sept. 30, 1913, staff gage at present site and datum.
Average discharge.--31 years (1919-50), 19.2 mgd (29.7 cfs).
Extremes.--Maximum discharge during year, 2,720 mgd (4,210 cfs) Apr. 27 (gage height, 8.10 ft), from rating curve extended above 650 mgd by logarithmic plotting; minimum, 1.00 mgd (1.55 cfs) Oct. 2-6.
1910-11, 1913-18, 1919-50: Maximum discharge, 4,920 mgd (7,610 cfs) Dec. 17, 1946 (gage height, 9.27 ft), from rating curve extended above 650 mgd by logarithmic plotting; minimum, 0.07 mgd (0.11 cfs) June 27, 1921.
Remarks.--Records good. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.7	1.0	2.3	13.0	3.4	85
1.8	2.1	2.4	16.4	3.8	134
1.9	3.6	2.5	20	4.2	196
2.0	5.4	2.6	24.5	4.6	274
2.1	7.6	2.8	34	5.0	370
2.2	10.1	3.0	48	5.2	425

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.88	15.1	3.45	1.22	3.2	88	6.3	5.3	5.6	45	57	7.2
2	8.7	9.1	3.15	1.11	4.7	76	61	4.5	4.3	15.9	36.5	6.9
3	4.7	6.5	2.85	1.00	3.8	84	15.4	3.45	3.8	10.1	24.5	6.3
4	2.55	5.4	2.85	1.00	2.55	25.5	7.6	2.85	3.45	8.4	44	5.4
5	2.55	4.9	2.7	1.11	81	13.0	6.1	2.55	3.45	7.4	28	4.9
6	5.9	4.5	2.55	2.65	12.3	9.4	4.9	2.25	39	10.5	25	5.0
7	8.7	3.95	2.4	6.6	6.5	7.8	4.5	2.25	6.1	12.3	64	4.7
8	3.8	4.1	2.1	2.85	5.8	6.9	4.1	2.1	4.3	7.1	131	55
9	3.45	4.9	1.99	3.7	5.0	5.8	3.8	1.88	3.6	8.4	40	17.7
10	2.7	17.9	2.55	9.0	4.9	5.2	3.6	1.77	33.5	24.5	51	11.7
11	7.0	14.6	1.99	4.3	5.8	4.7	64	1.99	45	96	43	15.3
12	12.8	7.6	1.88	10.3	73	4.9	61	2.6	9.4	36.5	19.8	7.6
13	12.8	5.4	3.95	10.3	35	20.5	9.3	31.5	7.6	59	21	6.1
14	7.5	4.7	3.3	6.9	19.5	22	6.1	4.9	5.4	15.2	13.3	5.2
15	45	5.4	5.1	3.95	12.8	6.1	5.0	4.5	4.3	12.1	11.3	4.7
16	14.7	5.0	3.6	3.45	27.5	12.3	4.3	7.7	3.8	15.8	20.5	4.5
17	7.8	6.5	2.55	2.85	31	6.1	3.6	58	3.6	73	30	4.3
18	9.1	11.3	2.1	2.55	22.5	5.2	3.45	147	3.3	51	120	3.95
19	6.4	12.1	1.88	3.15	13.7	5.4	3.15	14.0	3.15	255	23	3.8
20	4.5	17.6	1.77	2.7	8.1	5.0	2.85	10.4	168	72	44	4.0
21	4.1	9.4	1.66	2.25	6.1	4.3	2.7	42	278	22	24.5	5.2
22	3.95	12.8	3.0	2.1	5.0	3.8	2.55	112	29.5	55	14.0	3.95
23	3.45	7.8	2.25	1.88	4.5	3.6	2.7	21	21.5	287	19.1	9.2
24	3.45	9.2	1.77	1.88	4.1	3.3	2.4	11.0	109	169	55	9.8
25	4.9	13.9	2.1	1.77	3.8	3.15	2.1	7.8	64	51	35.5	12.5
26	120	6.7	1.66	1.55	21.5	3.8	2.1	6.1	13.4	56	39.5	17.3
27	40	5.8	1.77	1.55	49	18.8	1.88	5.0	9.6	418	28	10.0
28	8.4	5.0	1.55	1.55	21.5	19.6	1.77	9.7	22.5	409	13.7	6.3
29	14.0	4.3	1.33	1.44	38.5	19.1	13.0	-	207	59	10.7	5.0
30	24	3.95	1.22	1.33	112	26	15.1	-	80	64	8.8	4.3
31	14.3	3.6	-	1.33	-	9.8	4.6	-	44	-	7.6	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	120	1.88	13.3	20.6	413	1,270
August	17.9	3.6	8.03	12.4	249	764
September	5.1	1.22	2.43	3.76	73.0	224
October	10.3	1.00	3.20	4.95	99.3	305
November	112	2.55	21.5	33.3	645	1,980
December	88	3.15	17.1	26.5	529	1,620
Calendar year 1949	144	1.00	10.5	16.2	3,830	11,730
January	64	1.77	10.7	16.6	331	1,020
February	147	1.77	18.8	29.1	526	1,610
March	278	3.15	40.0	61.9	1,240	3,800
April	418	7.1	80.8	125	2,430	7,440
May	131	7.6	35.6	55.1	1,100	3,390
June	55	3.8	8.93	13.8	268	822
Fiscal year 1949-50	418	1.00	21.6	33.4	7,900	24,240

Peak discharge (base, 1,300 mgd).--Mar. 21 (2 a.m.) 1,660 mgd (2,570 cfs), 7.08 ft; Apr. 27 (3 a.m.) 2,720 mgd (4,210 cfs), 8.10 ft.

Hoolawaliilii Stream near Huelo

Location.--Lat 20°53'15", long. 156°14'35", on right bank just upstream from Wailoa ditch intake, 2 miles west of Kailua, and 2 miles southwest of Huelo.

Records available.--April 1911 to June 1950.

Gage.--Water-stage recorder and concrete control. Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--38 years (1911-15, 1916-50), 4.84 mgd (7.49 cfs).

Extremes.--Maximum discharge during year, 465 mgd (719 cfs) Apr. 27 (gage height, 5.09 ft), from rating curve extended above 90 mgd by broad-crested weir formula; minimum, 0.94 mgd (1.45 cfs) Oct. 30, 31.
1911-50: Maximum discharge, 787 mgd (1,220 cfs) Feb. 7, 1939 (gage height, 5.42 ft), from rating curve extended above 220 mgd by broad-crested weir formula; minimum, 0.2 mgd (0.3 cfs) June 8, 1926.

Remarks.--Records good. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 755: 1931-32.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.3	0.75	1.9	11.7
1.4	1.50	2.0	15.2
1.5	2.7	2.2	24
1.6	4.2	2.5	40
1.7	6.2	2.9	70
1.8	8.7		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.31	3.6	2.2	1.08	1.41	8.1	3.75	5.4	2.7	8.5	10.2	2.85
2	1.62	3.15	2.1	1.08	1.62	12.0	11.4	4.2	2.6	5.2	6.7	2.7
3	1.50	2.7	2.1	1.08	1.40	10.2	4.4	3.15	2.45	4.4	6.2	2.6
4	1.31	2.6	1.98	1.08	1.23	6.4	3.75	2.7	2.35	3.9	8.1	2.45
5	1.62	2.45	1.98	1.08	3.8	5.0	3.3	2.6	2.4	3.75	9.6	2.2
6	1.86	2.45	1.98	1.44	1.86	4.2	3.0	2.45	4.2	3.45	6.7	2.1
7	1.86	2.35	1.86	1.83	1.50	3.75	2.85	2.35	2.35	3.15	6.6	2.1
8	1.62	2.35	1.74	1.40	1.74	3.45	2.6	2.2	2.2	2.9	9.9	3.15
9	1.62	2.6	1.62	1.40	1.74	3.15	2.45	2.1	2.1	3.55	5.8	2.35
10	1.50	6.0	1.86	1.74	1.74	2.85	2.2	1.98	6.2	6.3	7.5	3.35
11	2.2	4.3	1.62	1.50	1.98	2.7	9.4	2.35	4.1	12.1	7.0	4.4
12	2.5	3.15	1.62	1.98	11.6	2.7	7.1	2.1	2.7	10.6	5.0	2.6
13	2.9	3.0	1.62	1.74	4.0	5.9	3.45	3.65	3.15	11.7	6.0	2.1
14	2.35	2.7	1.62	1.50	3.15	4.6	3.0	2.2	2.6	6.2	4.6	2.1
15	5.9	3.0	1.87	1.62	2.7	2.85	2.7	2.1	2.35	5.6	4.2	1.98
16	3.3	2.85	1.50	1.62	2.7	5.5	2.6	2.1	2.2	5.0	6.7	1.86
17	3.0	2.85	1.50	1.50	3.5	3.0	2.45	6.3	2.2	22.5	5.9	1.86
18	2.85	3.75	1.40	1.40	3.75	2.85	2.35	12.8	2.1	21.5	28	1.74
19	2.35	3.6	1.40	1.40	3.0	2.7	2.35	4.8	2.1	42	7.0	1.74
20	2.2	4.2	1.40	1.31	2.6	2.45	2.2	4.6	9.2	18.3	7.4	1.95
21	2.2	3.45	1.31	1.15	2.35	2.35	2.1	5.7	26	8.7	6.2	1.98
22	2.1	3.9	1.74	1.15	2.2	2.2	1.98	7.8	6.0	13.4	4.8	1.74
23	1.98	3.45	1.40	1.08	2.1	2.1	2.1	7.2	5.0	30	5.3	1.74
24	1.98	3.45	1.31	1.08	2.1	1.98	1.86	4.6	11.7	37.5	5.2	1.74
25	2.1	3.75	1.40	1.08	1.98	1.98	1.74	4.0	7.8	11.7	4.6	1.98
26	7.9	3.0	1.23	1.08	7.2	2.2	1.74	3.6	4.8	15.6	5.7	2.7
27	5.4	2.85	1.40	1.01	13.8	6.4	1.74	3.15	4.5	65	7.5	1.98
28	2.85	2.7	1.31	1.01	7.6	6.7	1.62	3.15	4.4	30.5	4.4	1.86
29	3.25	2.6	1.23	1.01	6.6	7.1	8.5	-	20	10.2	3.9	1.74
30	3.6	2.45	1.15	.94	6.7	8.2	7.7	-	9.8	8.4	3.45	1.62
31	3.45	2.35	-	.94	-	4.4	3.45	-	7.0	-	3.15	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	7.9	1.31	2.65	4.10	82.2	252
August	6.0	2.35	3.15	4.87	97.6	300
September	2.2	1.15	1.62	2.51	48.4	149
October	1.98	.94	1.30	2.01	40.3	124
November	13.8	1.23	3.66	5.66	110	338
December	12.0	1.98	4.51	6.98	140	430
Calendar year 1949	14.8	.94	2.77	4.29	1,010	3,110
January	11.4	1.62	3.61	5.59	112	343
February	12.8	1.98	3.98	6.16	111	342
March	26	2.1	5.46	8.45	169	519
April	65	2.9	14.4	22.3	432	1,320
May	28	3.15	6.88	10.6	213	655
June	4.4	1.62	2.24	3.47	67.3	206
Fiscal year 1949-50	65	.94	4.45	6.89	1,620	4,980

Peak discharge (base, 150 mgd).--Apr. 27 (3 a.m.) 465 mgd (719 cfs), 5.09 ft; May 18 (7 a.m.) 165 mgd (255 cfs), 3.73 ft.

Hoolawanui Stream near Huelo

Location.--Lat 20°53'15", long. 156°14'55", on right bank 250 ft (revised) upstream from intake of Wailoa ditch, 2 miles west of Kailua, and 2 miles southwest of Huelo.
Records available.--December 1910 to June 1950.
Gage.--Water-stage recorder and concrete control. Datum of gage is 1,219.42 ft above mean sea level (East Maui Irrigation Co. benchmark). Prior to June 20, 1914, staff gage at site 180 ft downstream at different datum. June 20, 1914, to Oct. 24, 1933, water-stage recorder at site 80 ft downstream at datum 4.43 ft lower.
Average discharge.--38 years (1911-15, 1916-50), 7.97 mgd (12.3 cfs).
Extremes.--Maximum discharge during year, 3,240 mgd (5,010 cfs) Apr. 27 (gage height, 5.94 ft), from rating curve extended above 100 mgd by logarithmic plotting; minimum, 0.70 mgd (1.08 cfs) Oct. 29-31.
1910-50: Maximum discharge, that of Apr. 27, 1950; minimum, 0.15 mgd (0.23 cfs) Oct. 25, 1917.
Remarks.--Records good except those for periods of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.46	0.9	13.3	1.8	95
.4	1.12	1.0	18.1	2.0	131
.5	2.25	1.1	24	2.2	175
.6	3.95	1.2	30.5	2.5	260
.7	6.3	1.4	47		
.8	9.3	1.6	67		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.05	5.4	2.4	0.84	1.93	24	7.0	5.1	3.95	17.5	27	5.0
2	1.89	3.95	2.25	.84	1.72	25	22	4.1	3.4	10.5	19.3	4.6
3	1.29	3.2	2.1	.84	1.39	22	8.0	3.05	3.05	8.3	15.1	4.2
4	.98	3.05	1.97	.77	.91	15	5.5	2.7	2.9	6.8	19.8	3.95
5	1.28	2.9	1.84	.77	10.6	10	4.5	2.55	2.65	6.0	18.1	3.6
6	1.67	2.9	1.84	1.42	2.35	8.0	4.1	2.4	10.2	5.5	15.1	3.4
7	1.90	2.55	1.61	2.2	1.50	6.0	3.8	2.4	3.05	5.5	24	3.05
8	1.29	2.7	1.61	1.20	1.61	5.0	3.5	2.25	2.7	4.7	46	12.1
9	1.29	3.05	1.50	1.12	1.61	4.8	3.3	1.97	2.55	5.5	17.6	5.6
10	1.05	7.8	2.05	1.76	1.61	4.5	3.1	1.84	11.7	9.4	22	6.5
11	2.0	5.4	1.50	1.12	1.98	4.3	17	1.97	8.1	24	18.6	7.4
12	3.0	3.6	1.50	1.99	20.5	4.3	10	2.35	4.2	23	12.1	3.95
13	3.45	3.2	1.61	1.50	6.5	12	5.0	7.4	4.2	20.5	13.0	3.4
14	2.25	3.05	1.50	1.29	4.7	8.0	4.4	2.55	3.2	9.4	9.0	3.05
15	9.8	3.6	2.15	1.20	3.45	4.5	3.8	2.1	2.9	9.4	7.8	2.9
16	4.3	3.15	1.50	1.20	4.4	10	3.6	3.5	2.55	8.2	11.4	2.7
17	3.3	3.6	1.29	1.05	6.4	5.5	3.4	14.0	2.55	51	12.0	2.55
18	3.05	4.8	1.20	.98	6.4	4.6	3.2	39	2.4	34.5	53	2.4
19	2.25	4.5	1.12	.91	4.4	4.1	3.05	6.6	2.25	115	12.5	2.4
20	1.97	5.6	1.12	.91	3.2	3.8	2.9	5.8	35	39	17.2	2.65
21	1.97	3.95	1.12	.84	2.9	3.4	2.7	11.0	79	17.5	12.1	2.95
22	1.84	5.4	1.61	.84	2.7	3.2	2.55	22.5	14.2	37	9.0	2.25
23	1.72	3.95	1.12	.84	2.55	3.1	2.9	11.0	10.6	101	10.1	2.7
24	1.72	4.8	1.05	.84	2.25	3.0	2.4	7.1	34.5	87	12.6	2.4
25	1.97	5.3	1.20	.77	2.25	2.9	2.1	6.0	23.5	28	10.2	3.25
26	21	3.6	1.05	.77	10.2	3.4	1.97	5.0	9.9	33.5	13.2	5.1
27	8.7	3.4	1.12	.77	21	12	1.97	4.6	8.8	246	12.9	2.9
28	3.6	3.05	1.05	.77	9.7	12	1.72	5.3	7.9	115	8.0	2.4
29	4.8	2.9	.91	.70	9.5	13	11.0	-	58	30	6.8	2.1
30	5.7	2.7	.91	.70	15.4	14	9.4	-	22	25	5.8	1.97
31	5.0	2.55	-	.70	-	9.0	4.0	-	15.7	-	5.3	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	21	0.98	3.45	5.34	107	329
August	7.8	2.55	3.86	5.97	120	367
September	2.4	.91	1.49	2.31	44.8	137
October	2.2	.70	1.05	1.62	32.4	100
November	21	.91	5.52	8.54	166	508
December	25	2.9	8.53	13.2	264	811
Calendar year 1949	35	.70	4.09	6.31	1,490	4,560
January	22	1.72	5.29	8.18	164	503
February	39	1.84	6.65	10.3	186	571
March	58	2.25	12.8	19.8	398	1,220
April	246	4.7	37.8	58.5	1,130	3,480
May	53	5.3	16.0	24.8	497	1,520
June	12.1	1.97	3.78	5.85	113	348
Fiscal year 1949-50	246	.70	8.84	13.7	3,220	9,890

Peak discharge (base, 300 mgd).--Mar. 21 (3 a.m.) 480 mgd (743 cfs), 3.12 ft; Apr. 17 (3:30 a.m.) 420 mgd (650 cfs), 2.95 ft; Apr. 23 (5:30 a.m.) 530 mgd (820 cfs), 3.18 ft; Apr. 27 (3 a.m.) 3,240 mgd (5,010 cfs), 5.94 ft; May 8 (3:30 a.m.) 480 mgd (743 cfs), 3.12 ft; May 18 (6 a.m.) 380 mgd (588 cfs), 2.87 ft.
Note.--No gage-height record Dec. 3 to Jan. 16; discharge estimated on basis of records for Hoolawaliili and Honopou Streams near Huelo.

Honopou Stream near Huelo

Location.--Lat 20°53'20", long. 156°15'05", on left bank, just upstream from Wailoa ditch intake, 2.2 miles southwest of Huelo and 2.2 miles west of Kailua.
Drainage area.--1.0 sq mi.
Records available.--December 1910 to June 1950.
Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,250 ft (from topographic map). Prior to June 19, 1914, staff gage at same site and datum.
Average discharge.--37 years (1911-14, 1916-50), 3.13 mgd (4.84 cfs).
Extremes.--Maximum discharge during year, 556 mgd (860 cfs) Apr. 27 (gage height, 5.14 ft), from rating curve extended above 70 mgd by logarithmic plotting; minimum, 0.35 mgd (0.54 cfs) Oct. 2-5, 25-31.
1910-50: Maximum discharge, 1,220 mgd (1,890 cfs) Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by logarithmic plotting; minimum, 0.01 mgd (0.02 cfs) several days in 1933 and 1934.
Remarks.--Records good except those for period of no gage-height record, which are fair. No diversions above station. Water used for irrigation in central Maui.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.10	1.2	11.5
.5	.60	1.4	16.5
.6	1.37	1.6	22
.7	2.4	1.8	28.5
.8	3.7	2.0	37
.9	5.3	2.5	70
1.0	7.2		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.55	2.05	0.98	0.40	0.87	6.3	2.1	4.2	1.79	7.5	11.6	2.4
2	.83	1.58	.91	.35	.91	9.6	8.3	2.15	1.68	4.8	8.5	2.3
3	.60	1.37	.91	.35	.60	8.6	2.65	1.58	1.58	4.0	7.3	a2.2
4	.50	1.29	.91	.35	.45	5.8	2.3	1.37	1.47	3.45	8.7	a2.1
5	.73	1.29	.83	.35	3.1	4.5	2.1	1.37	1.37	3.35	9.7	a1.9
6	.91	1.22	.83	.66	.83	3.6	1.89	1.29	3.5	2.8	7.0	a1.8
7	.91	1.14	.75	1.21	.55	3.05	1.89	1.29	1.37	2.55	7.1	a1.7
8	.68	1.22	.75	.68	.68	2.8	1.79	1.22	1.29	2.25	9.9	a2.7
9	.68	1.38	.68	.60	.75	2.3	1.68	1.14	1.22	2.75	6.5	a2.1
10	.55	4.3	.98	.89	.75	2.1	1.47	1.06	3.1	5.1	8.0	a2.6
11	1.14	2.3	.68	.55	.96	1.89	11.6	1.22	2.2	9.2	7.0	a3.3
12	1.24	1.47	.68	1.06	10.1	2.0	7.1	1.29	1.47	10.3	5.4	a2.1
13	1.71	1.29	.75	.75	2.2	4.9	2.65	2.7	1.82	9.6	6.4	1.58
14	.98	1.22	.68	.60	1.58	3.3	2.3	1.14	1.37	4.9	4.6	1.47
15	4.4	1.47	1.08	.55	1.29	1.89	2.1	1.06	1.29	4.6	4.0	1.47
16	1.58	1.22	.75	.60	1.29	3.55	1.89	1.22	1.22	4.4	7.1	1.37
17	1.37	1.29	.60	.50	1.96	1.89	1.79	5.3	1.14	22.5	5.4	1.37
18	1.22	2.0	.55	.45	2.1	1.79	1.68	11.5	1.14	18.5	20.5	1.37
19	.98	1.55	.55	.45	1.29	1.68	1.58	3.35	1.06	42	5.6	1.37
20	.91	2.25	.55	.40	1.14	1.58	1.37	3.0	7.4	19.0	6.9	1.53
21	.91	1.47	.50	.40	1.06	1.47	1.37	4.8	25	10.0	5.3	1.66
22	.83	2.0	.83	.40	.98	1.37	1.29	5.7	5.2	15.0	4.5	1.22
23	.91	1.29	.55	.40	.98	1.29	1.37	4.9	3.7	33	4.8	1.37
24	.91	1.67	.50	.40	.91	1.22	1.14	2.95	11.0	39.5	4.3	1.29
25	1.06	1.85	.55	.35	.91	1.14	1.06	2.65	7.1	14.1	3.9	1.58
26	6.2	1.22	.50	.35	6.2	1.29	.98	2.3	4.4	17.4	5.1	2.3
27	3.15	1.22	.55	.35	9.7	5.3	.98	2.1	4.2	57	6.0	1.29
28	1.47	1.14	.50	.35	5.0	4.6	.98	2.2	3.6	33.5	3.35	1.22
29	2.1	1.14	.45	.35	5.2	5.6	9.4	-	19.2	13.7	3.1	1.14
30	2.2	1.06	.40	.35	4.6	5.1	5.9	-	8.5	11.0	2.85	1.14
31	1.85	.98	-	.35	-	2.3	2.15	-	6.2	-	2.6	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	6.2	0.50	1.42	2.20	44.1	135
August	4.3	.98	1.55	2.40	47.9	147
September	1.08	.40	.691	1.07	20.7	64
October	1.21	.35	.510	.789	15.8	48
November	10.1	.45	2.30	3.56	68.9	212
December	9.6	1.14	3.35	5.18	104	319
Calendar year 1949	13.5	.35	1.73	2.68	634	1,940
January	11.6	.98	2.80	4.33	86.8	267
February	11.5	1.06	2.72	4.21	76.0	233
March	25	1.06	4.41	6.82	137	419
April	57	2.25	14.3	22.1	428	1,310
May	20.5	2.6	6.55	10.1	203	623
June	3.3	1.14	1.76	2.72	52.9	162
Fiscal year 1949-50	57	.35	3.52	5.45	1,290	3,940

Peak discharge (base, 100 mgd).--Apr. 19 (12 p.m.) 128 mgd (198 cfs), 3.03 ft; Apr. 24 (4 a.m.) 110 mgd (170 cfs), 2.92 ft; Apr. 27 (3 a.m.) 556 mgd (860 cfs), 5.14 ft; May 18 (6:30 a.m.) 162 mgd (251 cfs), 3.28 ft.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for Hoolawanui and Hoolawaliilii streams near Huelo.

Wailoa ditch at Honopou, near Huelo

Location.--Lat 20°53'20", long. 156°15'05", on left bank 100 ft downstream from intake at Honopou Stream, 0.5 mile west of Lupi, 2.2 miles southwest of Huelo, and 2.2 miles west of Kailua.

Records available.--November 1922 to June 1950.

Gage.--Water-stage recorder.

Average discharge.--27 years (1923-50), 113 mgd (175 cfs).

Extremes.--1922-50: Maximum daily discharge, 186 mgd (288 cfs) June 25, 30, 1941; no flow Jan. 24-27, 1923.

Remarks.--Records excellent below 150 mgd and good above. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from the Alo west to the Halehaku at altitude of about 1,200 ft. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	50	172	69	35	84	176	125	60	100	176	153	120
2	130	162	66	33.5	92	151	125	62	82	172	150	122
3	93	124	59	32	97	110	143	58	76	154	143	116
4	56	108	59	32	53	82	129	54	69	132	156	108
5	68	101	56	46	164	128	114	51	65	126	158	93
6	114	99	56	59	159	136	97	51	169	129	156	97
7	122	82	53	114	130	132	90	54	98	156	150	86
8	75	101	47	70	128	116	82	83	72	113	156	145
9	84	128	47	81	115	101	84	58	66	141	159	153
10	63	176	62	120	111	90	100	47	122	114	159	147
11	115	172	50	76	129	86	102	54	171	176	156	154
12	135	148	50	135	165	86	88	73	155	176	156	127
13	153	120	99	149	172	142	78	148	142	172	156	104
14	128	108	64	106	164	138	58	105	101	164	143	93
15	172	142	93	79	138	108	52	93	82	160	124	82
16	165	116	63	82	172	143	61	107	76	164	127	79
17	146	136	50	59	172	120	62	115	72	124	127	82
18	142	140	47	67	172	115	59	129	66	97	134	76
19	104	172	44	79	164	102	55	92	63	97	127	78
20	82	172	47	64	132	119	52	145	154	93	131	76
21	84	168	41	53	108	94	50	152	176	93	127	104
22	76	172	92	53	90	79	50	135	170	104	127	76
23	70	156	56	47	79	72	65	139	165	120	124	134
24	82	164	44	47	76	72	80	144	171	151	127	137
25	129	164	55	44	69	66	49	139	176	159	127	145
26	176	124	44	41	160	95	27.5	119	164	159	127	153
27	172	116	47	38	176	124	44	101	149	154	127	131
28	136	101	47	41	172	148	44	141	162	156	124	114
29	127	90	38	36.5	172	152	60	-	175	156	124	107
30	172	79	36.5	35	176	156	58	-	176	156	124	90
31	168	72	-	33.5	-	143	62	-	176	-	124	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	176	50	116	179	3,590	11,010
August	176	72	132	204	4,080	12,540
September	99	36.5	56.0	86.6	1,680	5,160
October	149	32	64.1	99.2	1,990	6,100
November	176	53	133	206	3,990	12,250
December	176	66	116	179	3,580	10,990
Calendar year 1949	180	32	97.9	151	35,710	109,600
January	143	27.5	75.0	116	2,330	7,140
February	152	47	96.8	150	2,710	8,310
March	176	63	125	193	3,860	11,850
April	176	93	141	218	4,240	13,020
May	159	124	139	215	4,300	13,210
June	154	76	111	172	3,330	10,220
Fiscal year 1949-50	176	27.5	109	169	39,680	121,800

New Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'30", long. 156°15'10", on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, 2.1 miles southwest of Huelo, and 2.3 miles west of Kailua.

Records available.--January 1918 to June 1950.

Gage.--Water-stage recorder. Prior to May 15, 1921, water-stage recorder at site 300 ft upstream at different datum.

Average discharge.--32 years, 27.7 mgd (42.9 cfs).

Extremes.--1918-50: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; no flow at times.

Remarks.--Records good. Ditch diverts water from streams between the Waiakamoi and the Halehaku above Center and Lowrie ditches. Flow regulated by gates and spillways. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.66	70	0.71	0.39	15.2	71	10.2	0.21	2.55	90	77	4.2
2	34	32.5	.66	.36	4.9	58	33	.21	2.0	69	66	2.95
3	8.5	2.7	.66	.32	1.52	23.5	49	.19	1.85	14.1	56	2.5
4	.85	2.25	.66	.28	.76	1.18	16.2	.19	1.78	3.65	82	1.85
5	.83	1.31	.66	4.4	66	45	4.1	1.22	1.65	3.35	82	1.65
6	3.5	1.25	.62	2.15	29	29	2.65	3.65	69	16.1	78	1.52
7	33	1.13	.58	18.5	6.2	5.1	2.55	1.72	2.25	50	49	1.76
8	3.45	1.08	.55	1.42	4.3	2.75	2.4	1.69	1.52	3.45	86	58
9	2.0	1.94	.51	1.18	2.75	2.5	6.4	1.38	1.45	14.3	82	62
10	.66	83	.66	27	2.7	2.0	11.6	1.25	34.5	18.8	84	35.5
11	10.8	76	.51	1.54	5.0	1.85	1.17	2.8	85	94	81	72
12	43	14.8	.39	36.5	55	1.85	.36	6.8	16.7	82	63	5.7
13	50	2.0	.55	15.2	78	42	.21	59	7.7	94	75	1.52
14	21.5	1.78	.43	11.2	52	56	.19	2.55	1.52	81	41	2.3
15	70	9.3	.47	1.08	4.4	2.7	.19	1.71	1.81	41	50	4.5
16	64	4.1	.43	1.18	68	51	.19	21	1.08	79	70	2.45
17	14.0	11.4	.36	.76	77	3.45	.19	24	1.13	75	86	1.02
18	7.9	30.5	.32	.71	73	2.85	.19	39.5	1.08	64	85	.97
19	2.0	52	.28	.71	46	4.6	.19	21.5	1.02	68	82	.92
20	1.25	84	.28	.71	1.76	13.1	.19	50	63	66	82	1.03
21	1.18	27	.26	.66	1.18	1.85	.21	62	93	63	82	4.0
22	1.08	50	.58	.66	.61	1.65	.21	25	84	90	80	1.34
23	1.02	14.7	.36	.62	.12	1.52	1.33	8.4	72	96	73	11.9
24	1.08	18.0	.26	.58	1.62	1.38	.28	20	74	98	82	10.7
25	4.6	49	.28	.55	.62	1.31	.28	12.0	90	96	84	36.5
26	83	2.4	.26	.47	35	1.77	.28	6.3	47	93	86	65
27	79	2.15	.26	.39	76	47	.28	2.65	13.2	60	86	23
28	5.6	2.0	.29	.39	59	74	.28	28	65	68	80	1.18
29	13.6	1.85	.93	.28	47	26.5	.36	-	85	69	51	1.39
30	66	1.51	.58	.24	66	30	.21	-	90	72	21	.76
31	54	.76	-	.21	-	50	.21	-	90	-	7.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	89	0.66	22.2	34.3	688	2,110
August	84	.76	21.0	32.5	652	2,000
September	.93	.26	.478	.740	14.4	44
October	36.5	.21	4.21	6.51	131	401
November	78	.12	29.4	45.5	881	2,700
December	74	1.18	21.2	32.8	656	2,010
Calendar year 1949	96	.05	14.6	22.6	5,340	16,380
January	49	.19	4.68	7.24	145	445
February	62	.19	14.5	22.4	405	1,240
March	93	1.02	35.5	54.9	1,100	3,380
April	98	3.35	61.1	94.5	1,830	5,620
May	86	7.2	70.6	109	2,190	6,720
June	72	.76	14.0	21.7	420	1,290
Fiscal year 1949-50	98	.12	25.0	38.7	9,110	27,960

Old Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'30", long. 156°15'05", on right bank 400 ft downstream from Honopou Stream and Wailoa ditch trail crossing in Honopou Gulch, 2.0 miles southwest of Huelo, 2.3 miles west of Kailua, and 5.0 miles east of Haiku.

Records available.--January 1918 to June 1922, November 1936 to June 1950.

Gage.--Water-stage recorder and modified Parshall flume.

Average discharge.--17 years (1918-22, 1937-50), 2.66 mgd (4.12 cfs).

Extremes.--1918-22, 1936-50: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow for short periods.

Remarks.--Records good. Wailoa and New Hamakua ditches divert most of flow above this station. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.02	1.50	0.02	0	0.03	3.15	0.10	0.06	0.04	14.4	8.7	0.10
2	.04	.15	.02	0	.05	1.87	16.7	.06	.03	3.0	5.8	.05
3	.04	.04	.02	0	.02	.50	3.4	.05	.03	.12	3.7	.03
4	.02	.03	.02	0	.01	.59	.06	.05	.03	.05	7.8	.03
5	.03	.02	.02	0	1.54	.36	.04	.05	.03	.04	8.5	.03
6	.02	.02	.02	0	.10	.13	.04	.04	2.7	.04	4.4	.03
7	.07	.02	.01	.04	.02	.05	.03	.04	.05	.19	4.0	.03
8	.03	.02	.01	.02	.02	.04	.03	.03	.03	.05	12.5	7.6
9	.02	.03	.01	.01	.02	.04	1.36	.02	.02	.10	5.6	1.61
10	.02	3.2	.02	.04	.02	.03	2.9	.02	5.3	2.5	7.9	2.1
11	.02	2.35	.01	.03	.02	.03	11.7	.04	5.2	12.9	7.3	5.4
12	1.02	.07	.02	.11	3.55	.03	9.8	.03	.06	5.5	2.1	.06
13	.53	.04	.01	.06	.28	.10	.10	1.20	.05	15.2	5.0	.04
14	.05	.03	.01	.03	.13	.13	.10	.05	.03	7.0	.56	.03
15	5.5	.02	.01	.02	.04	.05	.10	.03	.02	.68	.13	.04
16	1.10	.02	.01	.02	.11	.11	.09	.21	.02	2.1	6.6	.03
17	.05	.02	.01	.02	.31	.06	.09	1.04	.02	16.8	12.8	.03
18	.04	.78	.01	.02	.26	.05	.07	5.5	.02	15.8	17.1	.02
19	.02	.38	.01	.01	.13	.04	.07	.13	.02	20	11.2	.03
20	.02	2.1	.01	.01	.03	.05	.06	.51	10.1	18.4	12.7	.03
21	.02	.09	.01	.01	.02	.02	.06	4.7	19.4	15.8	11.2	.03
22	.02	.38	.02	.01	.01	.02	.05	.46	7.9	15.1	9.0	.02
23	.02	.06	.01	.01	.01	.02	.05	.46	4.0	21	4.4	.03
24	.02	.04	.01	.01	.01	.02	.05	.43	13.2	21	11.2	.03
25	.02	.22	.01	.01	.01	.02	.05	.30	13.6	18.4	12.8	.18
26	8.5	.04	.01	.01	.72	.02	.05	.23	1.11	18.4	15.9	2.4
27	5.0	.03	.01	.01	3.6	.05	.05	.16	.38	18.1	15.9	.09
28	.06	.02	0	.01	.91	1.13	.05	.19	2.15	17.1	10.4	.03
29	.30	.02	0	.01	.44	11.7	.12	-	16.1	12.0	.95	.02
30	2.05	.02	0	.01	1.26	10.6	.07	-	16.7	10.4	.07	.02
31	1.14	.02	-	.01	-	1.86	.06	-	13.5	-	.40	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.5	0.02	0.833	1.29	25.8	79
August	3.2	.02	.380	.588	11.8	36
September	.02	0	.012	.019	.36	1.1
October	.11	0	.018	.028	.55	1.7
November	3.6	.01	.456	.706	13.7	42
December	11.7	.02	1.06	1.64	32.9	101
Calendar year 1949	13.7	0	.631	.976	230	707
January	16.7	.03	1.53	2.37	47.5	146
February	5.5	.02	.575	.890	16.1	49
March	19.4	.02	4.25	6.58	132	405
April	21	.04	10.1	15.6	302	927
May	17.1	.07	7.63	11.8	237	726
June	7.6	.02	.672	1.04	20.2	62
Fiscal year 1949-50	21	0	2.30	3.56	840	2,580

Lowrie ditch at Honopou Gulch, near Huelo

Location.--Lat 20°54'55", long. 156°15'05", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.5 miles northwest of Kailua.

Records available.--January 1910 to March 1927, February 1930 to June 1950. Published as "at Opana weir" 1910-27.

Gage.--Water-stage recorder and concrete control. Datum of gage is 598.0 ft above mean sea level. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 miles downstream at different datum.

Average discharge.--36 years (1910-26, 1930-50), 29.8 mgd (46.1 cfs).

Extremes.--1910-27, 1930-50: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Lowrie ditch diverts water from all streams between the Kailua and the Halehaku. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.0	28	8.8	2.9	10.9	30	23	2.3	13.6	47	8.0	14.6
2	11.4	22	7.6	2.75	16.5	3.6	39	2.3	12.0	41	5.3	14.6
3	7.3	11.1	7.3	2.6	6.1	3.2	41	5.1	11.6	28	3.75	13.3
4	4.8	9.8	7.1	2.6	4.5	2.6	25.5	9.6	10.8	24	5.7	12.3
5	6.9	16.5	6.7	2.6	24.5	2.15	21.5	9.9	10.0	24.5	4.7	17.0
6	8.1	15.4	6.7	5.0	28	2.15	18.3	22	34.5	41	3.35	15.8
7	16.8	7.8	6.0	11.8	15.8	6.0	17.0	16.5	13.0	33	3.6	15.3
8	7.3	8.0	5.7	6.0	10.5	28	15.6	12.4	17.0	14.3	8.8	34
9	7.6	9.8	5.3	5.3	6.5	15.4	14.6	10.4	15.8	18.2	12.3	29
10	5.8	38.5	7.3	13.2	7.1	12.7	37	7.2	27	24.5	13.8	16.7
11	8.5	34.5	6.1	8.0	6.2	8.6	30.5	9.3	44	47	30	42
12	27	17.6	5.5	9.9	25	9.0	17.6	7.6	14.7	40	18.8	15.3
13	24.5	17.6	6.9	11.0	38.5	14.2	3.05	32	14.8	47	35.5	17.3
14	17.6	16.0	5.7	6.0	28	31	2.9	11.8	12.6	44	20	20.5
15	36	9.8	6.9	5.0	13.5	21.5	2.8	15.8	9.8	32.5	a23	18.8
16	30.5	9.8	6.1	6.0	31	37	2.65	20.5	9.0	32.5	a30	13.3
17	19.2	11.0	5.0	4.5	37	21.5	2.55	11.4	9.0	34.5	a38	9.3
18	29.5	17.0	4.5	4.2	35	26.5	2.4	34.5	8.6	35.5	a47	8.1
19	9.4	24	4.0	4.3	35.5	28	2.3	26	8.6	43	a47	7.8
20	7.4	41	4.2	4.5	18.2	20.5	2.3	30	35	22.5	47	7.8
21	7.6	23.5	3.9	3.9	11.8	14.3	2.3	57	47	17.0	47	9.9
22	6.9	34	8.6	3.9	8.6	11.8	2.4	18.4	44	13.1	41	7.8
23	6.9	27	6.1	3.45	6.4	10.8	12.0	7.8	36	19.9	27	9.0
24	7.3	14.1	4.6	3.2	5.8	10.0	6.5	1.10	38	19.4	47	9.6
25	8.6	24	5.0	3.05	5.0	9.6	6.0	10.5	47	14.0	47	17.1
26	37.5	11.3	4.5	2.75	9.8	13.6	5.5	8.6	26	14.6	47	30
27	39	10.9	4.0	2.6	41	25	5.5	5.7	17	22	47	18.6
28	24.5	10.0	4.3	2.75	34.5	43	5.5	10.0	34	17.2	27.5	7.8
29	25.5	9.6	3.6	2.6	32.5	40	23.5	-	42	12.0	18.3	6.9
30	33	8.6	3.2	2.5	38.5	45	3.6	-	47	8.5	15.8	6.0
31	22	8.6	-	2.4	-	40	2.4	-	45	-	14.8	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	39	4.8	16.4	25.4	509	1,560
August	41	7.8	17.6	27.2	547	1,680
September	8.8	3.2	5.71	8.83	171	525
October	13.2	2.4	4.88	7.55	151	464
November	41	4.5	19.7	30.5	592	1,820
December	45	2.15	18.9	29.2	587	1,800
Calendar year 1949	47	.44	12.3	19.0	4,490	13,780
January	41	2.3	12.8	19.8	397	1,220
February	57	1.10	14.8	22.9	416	1,280
March	47	8.6	24.3	37.6	754	2,320
April	47	8.5	27.7	42.9	832	2,550
May	47	3.35	25.3	39.1	785	2,410
June	12	6.0	15.5	24.0	466	1,430
Fiscal year 1949-50	57	1.10	17.0	26.3	6,210	19,060

a No gage-height record; discharge estimated on basis of records for nearby ditches.

Haiku ditch at Honopou Gulch, near Kailua

Location.--Lat 20°55'05", long. 156°14'55", on right bank of ditch and west side of Honopou Gulch, 160 ft below new Government Road, 2.5 miles northwest of Kailua, and 5 miles east of Haiku.

Records available.--January 1910 to December 1928, February 1930 to June 1950. Published as "at Peahi weir" January 1910 to October 1914, as "at Manawai Gulch" October 1914 to December 1928, and as "at Kapalalaea Gulch" February 1930 to January 1940.

Gage.--Water-stage recorder and concrete control. Datum of gage is 421.54 ft above mean sea level. Jan. 1, 1910, to Oct. 6, 1914, water-stage recorder at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, water-stage recorder at site 2.9 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, water-stage recorder at site 0.9 mile downstream at different datum.

Average discharge.--38 years (1910-28, 1930-50), 22.5 mgd (34.8 cfs).

Extremes.--1910-28, 1930-50: Maximum daily discharge, 135 mgd (209 cfs) Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

Remarks.--Records good. Haiku ditch diverts water from all streams between the Kailua Stream and the Maliko Gulch. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.24	14.9	0.48	0.20	0.90	28	1.05	0.75	2.4	65	59	3.0
2	.52	3.25	.40	.20	1.35	.12	10.8	.75	1.78	17.7	43	2.7
3	.32	.70	.37	.20	.24	.08	31.5	.75	1.50	4.1	23.5	2.45
4	.20	.58	.37	.20	.25	.08	4.3	.65	1.15	3.1	58	2.25
5	.31	.75	.34	.20	31.5	.06	3.6	.62	1.10	2.9	59	2.2
6	.42	.70	.34	.20	10.3	14	3.0	2.65	31	5.7	53	2.2
7	.67	.44	.30	.41	.58	9.0	3.0	2.1	1.75	11.2	24	1.85
8	.37	.48	.30	.22	.30	5.6	2.7	1.36	1.43	2.1	62	33
9	.26	.52	.30	.20	.26	3.0	2.35	1.22	1.36	2.35	56	7.2
10	.20	32.5	.44	.60	.26	2.0	4.3	1.00	19.1	9.6	59	1.78
11	.36	25.5	.30	.55	.30	1.50	1.64	1.15	43	63	49	19.4
12	6.9	1.05	.34	.32	32	1.57	.90	1.00	2.05	22	21.5	1.62
13	1.66	.85	.44	.84	51	3.7	.80	29.5	1.71	64	31.5	1.15
14	.88	.75	.28	.22	22.5	8.8	.80	1.66	1.43	28	9.4	1.05
15	35	.62	.34	.20	.90	2.35	.80	1.29	.85	5.5	11.6	1.05
16	4.0	.61	.28	.28	24.5	30.5	.75	3.4	.65	8.4	19.3	.90
17	1.08	.62	.22	.20	35.5	4.8	.70	4.7	.70	68	38	.95
18	3.4	3.35	.22	.18	14.6	4.1	.70	13.3	.62	65	56	.80
19	.68	2.85	.20	.18	20	2.8	.70	1.85	.51	69	51	.70
20	.40	13.9	.22	.18	1.15	2.6	.70	3.15	32	69	51	.75
21	.40	1.83	.20	.18	.62	2.1	.70	5.0	69	65	51	.70
22	.28	3.9	.44	.18	.37	1.78	.65	1.68	42	60	36.5	.65
23	.34	1.83	.24	.18	.30	1.50	2.05	1.05	13.7	69	14.8	.65
24	.40	1.05	.20	.10	.37	1.36	1.00	1.00	42	69	59	.62
25	.44	1.69	.20	.07	.30	1.29	.90	2.2	46	62	59	1.06
26	51	.85	.20	.06	5.3	1.98	.90	4.9	4.6	65	59	4.7
27	38	.75	.20	.06	62	19.6	.90	3.0	2.1	69	59	11.8
28	2.45	.70	.20	.06	48	52	.80	4.6	17.0	69	19.4	.70
29	2.3	.65	.20	.08	31.5	12.5	.90	-	51	59	5.3	.54
30	14.8	.54	.20	.08	54	1.15	.85	-	65	57	4.2	.48
31	1.44	.51	-	.06	-	1.10	.75	-	65	-	3.6	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	51	0.20	5.47	8.46	170	521
August	32.5	.44	3.85	5.96	119	366
September	.48	.20	.292	.452	8.76	27
October	.84	.06	.222	.343	6.89	21
November	62	.24	15.0	23.2	451	1,380
December	52	.06	7.13	11.0	221	678
Calendar year 1949	71	.06	5.08	7.86	1,850	5,680
January	31.5	.65	2.76	4.27	85.5	262
February	29.5	.62	3.44	5.32	96.3	295
March	69	.51	18.2	28.2	563	1,730
April	69	2.1	41.0	63.4	1,230	3,770
May	62	3.6	38.9	60.2	1,210	3,700
June	33	.48	3.63	5.62	109	334
Fiscal year 1949-50	69	.06	11.7	18.1	4,270	13,080

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements on the island of Maui at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Maui during fiscal year July 1949 to June 1950

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Jan. 20	Haipuaena flume.	Waiakamoi Reservoir.	Near Olinda.....	0.123	0.080

Waiakea Stream at middle flume house, near Mountain View

Location.--Lat 19°38'25", long. 155°10'35", on left bank, at middle flume house, 800 ft upstream from Olaa Sugar Co.'s main flume and 7.5 miles northwest of Mountain View.

Records available.--September 1930 to June 1950.

Gage.--Water-stage recorder and combined Parshall flume and concrete weir control. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--19 years (1931-50), 7.24 mgd (11.2 cfs).

Extremes.--Maximum discharge during year, 86 mgd (133 cfs) Apr. 28 (gage height, 3.76 ft), from rating curve extended above 40 mgd on basis of weir formulae; minimum, 0.18 mgd (0.28 cfs) July 1, 2.
1930-50: Maximum discharge, 166 mgd (257 cfs) Mar. 14, 1942 (gage height, 4.43 ft), from rating curve extended above 40 mgd on basis of weir formulae; no flow at times.

Remarks.--Records good. Large part of flow comes from three tunnels. Water is used for fluming sugarcane.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.11	1.5	9.2
.2	.34	2.0	15.3
.3	.66	2.5	25
.5	1.53	3.0	39.5
1.0	4.8	3.5	66

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.20	6.9	6.5	2.6	3.95	28.5	13.2	1.96	9.7	14.6	42	9.2
2	1.66	6.5	6.0	2.45	3.75	29.5	17.9	1.80	9.2	12.5	36	8.7
3	1.32	6.0	5.4	2.3	3.7	29.5	16.1	1.64	8.7	11.3	31	7.8
4	1.02	6.0	5.2	2.2	3.3	28.5	16.1	1.48	8.3	10.8	26	7.8
5	.93	5.6	4.9	2.05	3.7	26	15.3	1.30	7.8	9.7	22.5	6.9
6	1.47	5.5	4.7	1.96	3.75	22.5	14.6	1.20	7.4	9.2	18.7	6.5
7	1.51	5.2	4.3	7.9	3.7	20 5	14.2	12.5	6.9	10.2	17.6	6.0
8	1.30	5.0	4.0	4.9	3.8	19.6	13.2	8.9	6.5	9.2	20	7.9
9	1.15	4.8	3.8	4.4	4.7	16.9	12.5	6.5	6.0	9.2	17.8	6.9
10	1.02	5.3	3.7	4.1	5.4	16.1	11.9	4.9	5.5	8.7	16.1	6.9
11	3.55	5.6	4.3	3.95	4.9	13.2	11.3	4.2	7.4	10.2	14.6	7.4
12	4.1	6.0	3.95	5.8	4.9	11.9	10.2	3.75	5.6	10.6	13.8	7.4
13	3.95	5.6	4.3	7.8	4.4	16.8	9.7	3.4	5.4	12.3	11.9	6.9
14	3.2	5.3	4.6	7.4	4.2	20	8.7	3.2	4.9	13.2	11.3	6.5
15	3.1	5.2	5.3	6.9	3.95	20	7.8	2.95	4.4	11.9	10.2	6.0
16	3.05	5.0	5.1	6.5	3.7	22.5	7.4	2.8	4.2	12.4	10.2	5.6
17	2.95	4.9	4.7	6.5	3.45	21.5	6.5	2.6	3.9	12.5	10.3	5.4
18	2.75	5.1	4.6	6.0	3.3	21.5	6.0	3.95	3.7	12.5	23	5.1
19	2.55	5.4	4.2	6.7	3.1	20.5	5.5	3.1	3.4	22.5	17.8	5.0
20	2.45	6.5	4.3	8.6	2.95	18.7	5.0	4.3	3.75	19.6	16.9	4.7
21	2.5	6.0	3.95	7.4	2.85	16.9	4.6	4.7	6.8	18.7	17.8	4.7
22	2.55	7.4	3.9	7.4	2.65	14.6	4.2	10.1	6.2	22	16.9	4.6
23	2.45	8.7	4.2	6.9	2.5	12.5	3.9	14.6	9.6	26	16.1	4.5
24	2.5	8.7	3.7	6.5	2.3	11.3	3.6	11.3	16.9	27	16.9	5.0
25	2.3	8.3	3.55	6.0	2.2	10.2	3.3	11.9	16.6	31.5	15.3	5.2
26	7.8	8.3	3.4	5.6	6.4	9.7	3.0	11.3	16.9	36.5	14.6	5.1
27	8.5	8.3	3.25	5.3	14.7	10.1	2.8	10.8	18.7	36	13.2	4.8
28	7.8	7.8	3.05	5.1	16.5	13.1	2.6	10.8	18.7	42	11.9	4.6
29	7.3	7.4	2.95	4.6	16.2	11.3	2.5	-	19.8	46	11.3	4.3
30	6.9	6.9	2.8	4.4	26	14.8	2.45	-	18.7	44	10.8	4.0
31	6.9	6.9	-	4.1	-	13.8	2.15	-	16.9	-	9.7	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.5	0.20	3.25	5.03	101	309
August	8.7	4.8	6.33	9.79	196	602
September	6.5	2.8	4.29	6.64	129	395
October	8.6	1.96	5.30	8.20	164	504
November	26	2.2	5.70	8.82	171	524
December	29.5	9.7	18.1	28.0	562	1,730
Calendar year 1949	44	.20	7.80	12.1	2,850	8,740
January	17.9	2.15	8.33	12.9	258	792
February	14.6	1.20	5.78	8.94	162	497
March	19.8	3.4	9.30	14.4	288	885
April	46	8.7	19.1	29.6	573	1,760
May	42	9.7	17.5	27.1	542	1,660
June	9.2	4.0	6.05	9.36	181	557
Fiscal year 1949-50	46	.20	9.12	14.1	3,330	10,220

Peak discharge (base, 50 mgd).--Feb. 7 (9 p.m.) 56 mgd (87 cfs), 3.35 ft; Apr. 19 (10:30 a.m.) 56 mgd (87 cfs), 3.37 ft; Apr. 28 (4 p.m.) 86 mgd (133 cfs), 3.76 ft.

Wailuku River above Hilo Boarding School ditch intake, near Hilo

Location.--Lat 19°42'55", long. 155°09'10", on left bank 1,000 ft upstream from intake of Hilo Boarding School ditch, 0.8 mile west of reservoir 1, and 4 miles west of Hilo.
Drainage area.--125 sq mi.
Records available.--July 1928 to June 1950.
Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).
Average discharge.--19 years (1929-40, 1941-47, 1948-50), 175 mgd (271 cfs).
Extremes.--Maximum discharge during year, 9,780 mgd (15,100 cfs) Nov. 27 (gage height, 17.88 ft), from rating curve extended above 3,400 mgd by logarithmic plotting; minimum, 4.7 mgd (7.3 cfs) Oct. 6.
1928-50: Maximum discharge, 41,000 mgd (63,400 cfs) Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 3,400 mgd by logarithmic plotting; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.
Remarks.--Records good except those for periods of no gage-height record, which are poor. Hilo Water Works diverts about 1 mgd above station for domestic supply, and water passing station is used for power by Hilo Electric Light Co.
Revisions (fiscal years).--W 865: 1929-36(M). W 965: 1941.

Rat'ng tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Nov. 26				Nov. 27 to June 30			
1.6	4.5	4.0	130	1.6	4.1	4.0	124
1.8	8.5	5.0	245	1.7	5.8	5.0	234
2.1	17.5	6.0	400	1.8	7.6	6.0	382
2.5	33.5	7.0	610	2.0	12.3	7.0	570
3.0	59	8.0	870	2.2	18.0	9.0	1,140
				2.5	29	10.0	1,520
				3.0	54	12.0	2,690

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.3	43	43	9.8	25.5	2,230	234	9.6	118	86	400	40
2	41	43	31.5	7.6	20.5	570	767	7.6	72	72	250	37.5
3	62	33.5	25.5	6.7	18.7	462	382	7.4	54	54	170	31
4	48	33.5	24.5	6.3	15.8	746	210	6.0	42	45	130	27
5	23.5	38	22	5.8	50	350	144	5.5	37.5	40	100	24.5
6	34	33.5	23.5	5.8	50	210	100	5.3	46	49	90	21.5
7	27.5	31.5	17.9	759	43	154	399	533	33	136	400	19.4
8	19.9	25.5	14.4	137	33.5	218	272	209	25	86	667	178
9	17.5	29.5	13.4	78	63	124	163	65	22.5	300	339	100
10	14.0	59	13.7	59	87	155	108	35.5	49	210	251	98
11	46	71	35	59	43	108	79	25	90	150	164	114
12	106	80	29.5	126	38	100	60	20.5	35.5	600	134	94
13	59	48	52	537	29.5	529	48	18.0	27	320	124	79
14	43	38	82	150	25	1,250	40	18.0	23	180	93	54
15	41	38	99	85	22	700	33	15.5	19.7	120	79	42
16	50	48	56	65	19.1	1,500	29	14.4	17.1	90	93	40
17	66	38	43	50	17.2	800	25	14.9	17.7	80	134	33
18	38	43	43	43	17.5	500	23	131	17.1	70	1,240	35.5
19	36	48	31.5	57	17.9	290	20.5	51	13.6	1,000	432	31
20	27.5	87	29.5	188	14.4	186	18.7	158	12.3	400	277	29
21	31.5	59	25	146	13.4	134	16.8	168	682	220	374	54
22	36	115	24.5	71	11.9	100	16.1	834	134	1,800	210	48
23	33.5	262	38	53	10.2	76	13.6	915	540	600	174	42
24	27.5	178	23.5	43	9.0	57	28	408	1,200	1,400	198	57
25	24.5	99	19.5	48	8.3	48	23	338	1,470	900	164	54
26	221	68	16.8	33.5	730	97	13.6	174	386	1,100	144	54
27	545	53	14.4	29.5	2,440	138	11.8	108	222	700	108	42.5
28	99	59	25	50	438	319	11.0	203	144	1,500	93	42.5
29	71	43	15.0	29.5	327	320	16.7	-	161	2,500	72	31
30	68	38	11.3	29.5	2,630	573	15.5	-	268	600	60	27
31	46	48	-	17.5	-	418	12.8	-	116	-	48	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	545	8.3	64.9	100	2,010	6,170
August	262	25.5	62.3	96.4	1,930	5,930
September	99	11.3	31.4	48.6	943	2,890
October	759	5.8	96.3	149	2,990	9,160
November	2,630	8.3	242	374	7,270	22,310
December	2,230	48	434	671	13,460	41,310
Calendar year 1949	2,840	2.4	166	257	60,540	185,800
January	767	11.0	108	167	3,330	10,230
February	915	5.3	161	249	4,500	13,800
March	1,470	12.3	197	305	6,100	18,700
April	2,500	40	514	795	15,410	47,290
May	1,240	48	233	361	7,210	22,130
June	178	19.4	52.7	81.5	1,580	4,850
Fiscal year 1949-50	2,630	5.3	183	283	66,730	204,800

Peak discharge (base, 5,600 mgd).--Dec. 1 (2 a.m.) 6,980 mgd (10,800 cfs), 16.10 ft; Nov. 27 (4:30 a.m.) 9,780 mgd (15,100 cfs), 17.88 ft.
Note.--No gage-height record Dec. 15-18, Apr. 9 to May 7; discharge estimated on basis of weather records and records for Waiakea Stream at middle flume house, near Mountain View.

Waillikahi Stream near Waimanu

Location.--Lat 20°07'40", long. 155°39'55", on right bank 30 ft upstream from Waimanu trail bridge, 1.7 miles upstream from confluence with Waimanu Stream, 1.9 miles southeast from head of Awini ditch, and 2.2 miles southwest of Waimanu.
Drainage area.--0.4 sq mi.
Records available.--March 1939 to June 1950. Prior to July 1941 published as Waimanu-lllll Stream near Waimanu.
Gage.--Water-stage recorder. Altitude of gage is 2,740 ft (by barometer).
Average discharge.--11 years, 6.49 mgd (10.0 cfs).
Extremes.--Maximum discharge during year, 219 mgd (339 cfs) Apr. 19 (gage height, 3.76 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 0.59 mgd (0.91 cfs) Jan. 28, 29.
1939-50: Maximum discharge, 544 mgd (842 cfs) Dec. 20, 1946 (gage height, 5.17 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Mar. 17, 18, 1944.
Remarks.--Records good.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 19				Apr. 20 to June 30	
0.4	0.37	1.2	7.9	0.5	0.68
.5	.81	1.4	11.5	.6	1.28
.6	1.42	1.6	16.5	.7	2.15
.7	2.15	1.8	23.5	.8	3.05
.8	3.05	2.0	32	1.0	5.1
.9	4.0	2.5	61	1.4	11.5
1.0	5.1	2.8	88	1.8	23.5
				2.3	48

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	4.6	3.8	0.72	3.55	21	3.95	1.64	1.36	13.1	12.5	1.40
2	21.5	3.35	1.87	.81	6.5	16.8	25	1.30	1.05	4.4	4.3	3.1
3	7.0	1.80	1.36	.77	6.1	11.3	5.9	.87	.93	2.35	3.3	2.05
4	3.2	2.55	1.24	.72	2.25	28.5	2.15	.72	.77	1.94	2.65	1.45
5	15.3	14.6	1.64	.68	14.2	4.2	1.57	.68	.68	1.80	2.15	1.03
6	19.3	9.0	1.64	4.7	13.0	3.15	1.30	.68	20	3.75	1.86	.91
7	17.8	3.3	1.24	17.9	3.95	2.6	1.18	.68	2.35	15.8	3.0	.80
8	6.0	5.3	.99	6.0	5.5	1.94	1.12	.68	1.24	3.95	5.9	1.40
9	5.1	5.0	.87	3.4	25	1.64	1.48	.63	.87	10.0	3.4	1.69
10	8.7	20.5	3.35	2.75	8.9	1.50	3.45	.68	14.2	8.8	4.6	5.3
11	23	8.4	7.5	3.7	3.6	2.85	10.4	4.3	19.2	19.2	2.75	5.0
12	14.6	4.1	1.80	1.94	22	2.95	3.4	2.75	4.4	40	4.7	2.05
13	18.6	2.5	3.35	15.3	14.5	6.1	1.50	2.4	3.65	14.6	2.6	1.37
14	4.5	3.3	5.2	2.85	8.3	5.8	1.18	3.7	2.15	6.6	3.3	.91
15	8.0	9.3	1.80	5.0	4.8	2.0	.99	3.35	1.42	3.3	7.2	1.03
16	14.2	4.4	1.36	3.95	7.0	1.50	.87	5.8	2.75	3.5	3.5	1.09
17	9.7	4.5	7.5	1.87	5.4	1.30	.93	11.0	5.0	7.9	7.8	.80
18	2.6	10.7	5.0	1.80	11.2	1.88	.99	9.7	1.80	8.7	29.5	.93
19	2.0	5.8	1.72	8.9	4.5	2.15	.81	4.0	2.75	81	4.2	2.4
20	1.57	8.8	4.2	7.6	2.5	1.30	.72	4.7	20.5	27	10.4	3.05
21	1.36	5.1	3.65	2.0	2.6	1.24	.68	2.15	34.5	8.2	10.5	2.65
22	1.50	7.0	5.3	6.4	1.72	1.12	.68	1.64	19.9	26.5	3.05	1.97
23	2.45	4.7	2.15	2.5	1.96	.93	.68	1.87	37.5	12.4	6.4	8.7
24	4.0	5.5	1.42	2.65	1.72	.87	.68	1.82	55	30.5	5.8	8.7
25	3.6	2.5	2.55	2.7	3.95	1.32	.63	6.3	21.5	28.5	3.95	9.2
26	18.0	1.94	2.0	1.42	31	2.5	.63	1.57	3.4	49	4.7	9.3
27	5.5	2.15	2.95	3.4	29.5	4.6	.63	1.12	8.1	11.1	2.05	14.6
28	5.7	3.45	1.57	3.35	10.8	6.3	.59	1.30	7.0	37.5	1.61	4.5
29	6.0	1.80	1.12	1.36	12.5	9.4	4.3	-	50	39.5	1.45	1.95
30	4.3	1.72	.87	1.05	68	20	7.1	-	19.3	37	1.16	1.23
31	7.0	5.7	-	.87	-	6.0	2.35	-	11.5	-	1.09	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	23	1.36	8.55	13.2	265	814
August	20.5	1.72	5.59	8.65	173	532
September	7.5	.87	2.70	4.18	81.0	249
October	17.9	.68	3.84	5.94	119	365
November	68	1.72	11.2	17.3	336	1,030
December	28.5	.87	5.64	8.73	175	536
Calendar year 1949	68	.50	5.18	8.01	1,890	5,800
January	25	.59	2.83	4.38	87.8	270
February	11.0	.63	2.79	4.32	78.0	239
March	55	.68	12.1	18.7	375	1,150
April	81	1.80	18.6	28.8	558	1,710
May	29.5	1.09	5.21	8.06	161	495
June	14.6	.80	3.35	5.18	101	309
Fiscal year 1949-50	81	.59	6.88	10.6	2,510	7,700

Peak discharge (base, 150 mgd).--Nov. 30 (6:30 p.m.) 163 mgd (252 cfs), 3.40 ft; Apr. 12 (5 p.m.) 178 mgd (275 cfs), 3.48 ft; Apr. 19 (6 a.m.) 219 mgd (339 cfs), 3.76 ft; Apr. 22 (5 p.m.) 210 mgd (325 cfs), 3.72 ft; Apr. 24 (6:30 p.m.) 156 mgd (241 cfs), 3.34 ft.

Punalulu Stream near Waimanu

Location.--Lat 20°08'50", long. 155°39'40", on right bank 200 ft upstream from Waimanu trail, 1.0 mile southeast from head of Awini ditch, 1.5 miles upstream from mouth, and 1.5 miles west of Waimanu.

Drainage area.--1.4 sq mi.

Records available.--March 1939 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 1,870 ft (by barometer).

Average discharge.--11 years, 4.22 mgd (6.53 cfs).

Extremes.--Maximum discharge during year, 160 mgd (248 cfs) Nov. 30 (gage height, 4.09 ft), from rating curve extended above 8 mgd by test on model of station site; minimum, 0.18 mgd (0.28 cfs) Feb. 10.
1939-50: Maximum discharge, 980 mgd (1,520 cfs) June 30, 1941 (gage height, 4.90 ft), from rating curve extended above 8 mgd by test on model of station site (pool conditions then existing); minimum, 0.06 mgd (0.09 cfs) Oct. 14, 25, 26, 1945.

Remarks.--Records good.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.13	0.7	2.85
.3	.30	1.0	6.3
.4	.64	1.5	15.0
.5	1.22	2.0	28
.6	1.92	2.5	46

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.96	2.7	2.65	0.48	5.7	16.5	2.35	0.90	0.56	10.0	7.4	0.74
2	13.0	2.35	1.08	.48	6.0	10.7	14.9	.75	.44	3.45	2.9	1.59
3	4.7	1.22	.74	.44	4.1	8.4	4.7	.38	.41	1.71	1.99	1.20
4	1.38	1.43	.64	.41	1.43	17.9	1.64	.30	.32	1.29	1.64	.79
5	7.3	7.8	.79	.41	8.6	3.55	1.15	.25	.27	1.02	1.36	.64
6	11.2	7.7	.84	2.35	7.7	2.25	.90	.21	13.7	1.91	1.08	.56
7	12.6	2.3	.60	14.1	2.55	1.71	.79	.23	1.40	10.6	1.39	.48
8	4.2	2.95	.52	4.4	3.25	1.29	.74	.23	.64	2.65	3.35	.60
9	3.55	2.95	.44	1.97	14.9	1.02	.79	.20	.44	6.8	1.71	.79
10	6.3	12.9	2.0	1.64	6.7	.84	2.15	.21	9.6	5.2	1.80	2.8
11	14.7	6.1	5.2	2.4	2.4	1.55	4.9	3.15	15.6	12.8	1.46	3.2
12	8.9	2.9	1.08	.96	14.1	1.80	3.05	1.70	3.0	23.5	3.2	1.10
13	12.1	1.64	1.80	8.8	10.2	3.7	.96	.94	2.35	9.9	1.43	.64
14	3.45	1.78	4.0	1.91	6.7	3.95	.69	1.57	1.22	5.5	1.42	.44
15	5.2	5.4	1.08	3.65	3.7	1.15	.56	2.0	.74	2.7	3.95	.44
16	9.9	3.00	.74	3.25	5.1	.79	.48	3.1	1.43	1.99	2.05	.56
17	7.2	2.45	4.6	1.22	4.3	.64	.52	5.8	3.8	5.5	4.1	.38
18	2.1	6.3	3.85	.90	7.6	1.04	.60	8.2	1.03	6.5	21	.35
19	1.57	3.45	1.02	4.0	3.35	1.35	.44	2.85	.88	42	2.8	.89
20	1.22	5.9	3.0	6.4	1.85	.64	.38	3.0	7.2	14.5	6.0	1.20
21	.96	3.0	2.1	1.41	1.92	.56	.35	1.30	18.9	4.9	6.6	1.48
22	.96	4.8	3.75	4.2	1.15	.44	.35	.84	9.7	15.5	1.78	.64
23	1.43	2.8	1.36	1.64	1.08	.38	.35	.96	21	6.6	4.5	4.8
24	2.3	4.2	.79	1.32	1.02	.38	.32	.82	29	15.1	3.6	4.8
25	1.82	1.64	1.14	1.72	1.09	.52	.30	4.4	14.7	18.2	2.3	5.6
26	10.7	1.22	1.02	.74	18.2	1.22	.32	.79	2.9	32	2.7	5.8
27	4.0	1.08	1.98	1.83	20	3.4	.35	.52	4.0	8.2	1.29	9.5
28	3.7	1.78	.97	2.55	8.4	3.85	.32	.52	6.1	19.2	1.02	3.25
29	3.8	1.02	.64	.74	7.1	5.5	.93	-	29.5	18.9	.90	1.26
30	2.85	.96	.52	.52	36	14.2	5.1	-	13.6	17.8	.74	.79
31	3.85	3.1	-	.44	-	4.9	1.22	-	7.5	-	.69	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	14.7	0.96	5.45	8.43	169	518
August	12.9	.96	3.51	5.43	109	334
September	5.2	.44	1.70	2.63	50.9	156
October	14.1	.41	2.49	3.85	77.3	237
November	36	1.02	7.21	11.2	216	663
December	17.9	.38	3.75	5.80	116	356
Calendar year 1949	36	.14	3.46	5.35	1,260	3,870
January	14.9	.30	1.70	2.63	52.6	161
February	8.2	.20	1.65	2.55	46.1	142
March	29.5	.27	7.16	11.1	222	681
April	42	1.02	10.9	16.9	326	1,000
May	21	.69	3.17	4.90	98.2	301
June	9.5	.35	1.91	2.96	57.3	176
Fiscal year 1949-50	42	.20	4.22	6.53	1,540	4,720

Peak discharge (base, 100 mgd).--Nov. 30 (7 p.m.) 160 mgd (248 cfs), 4.09 ft; Apr. 12 (5:30 p.m.) 123 mgd (190 cfs), 3.61 ft; Apr. 19 (5:30 a.m.) 142 mgd (220 cfs), 3.76 ft; Apr. 22 (5 p.m.) 155 mgd (240 cfs), about 4.0 ft; Apr. 26 (3:30 p.m.) 123 mgd (190 cfs), 3.58 ft.

Waiaalala Stream near Waimanu

Location.--Lat 20°09'05", long. 155°39'55", on right bank 0.7 mile east from head of Awini ditch, 1.3 miles upstream from mouth, and 1.8 miles west of Waimanu.

Drainage area.--0.2 sq mi.

Records available.--March 1939 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 1,880 ft (by barometer).

Average discharge.--11 years, 0.709 mgd (1.10 cfs).

Extremes.--Maximum discharge during year, 18.1 mgd (28.0 cfs) Nov. 27 (gage height, 1.43 ft), from rating curve extended above 2.0 mgd by test on model of station site; minimum, 0.19 mgd (0.29 cfs) Feb. 26 to Mar. 1.
1939-50: Maximum discharge, 67 mgd (104 cfs) Feb. 22, 1940 (gage height, 3.83 ft), from rating curve extended above 2.0 mgd by test on model of station site; minimum, 0.10 mgd (0.16 cfs) Mar. 15, 1944.

Remarks.--Records fair except those above 2 mgd, which are poor.

Rating tables, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 26				Apr. 27 to June 30	
0.2	0.15	0.6	2.4	0.2	0.18
.3	.38	.7	3.5	.3	.43
.4	.77	.8	4.8	.4	.78
.5	1.44	.9	6.4	.5	1.44
				.6	2.4
				.7	3.5

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.23	0.32	0.29	0.23	1.63	2.55	0.41	0.27	0.19	1.58	1.00	0.40
2	.96	.29	.29	.23	.96	1.12	1.62	.25	.21	.77	.82	.46
3	.35	.27	.29	.21	.44	1.38	.50	.23	.21	.62	.73	.43
4	.25	.27	.29	.21	.41	2.05	.44	.23	.23	.54	.69	.40
5	.42	.36	.27	.21	.69	.88	.38	.23	.23	.50	.65	.40
6	.77	.68	.27	.74	.57	.67	.38	.21	1.20	.50	.61	.37
7	.80	.32	.27	3.1	.38	.62	.38	.23	.27	.92	.58	.37
8	.35	.29	.27	.44	.52	.54	.35	.21	.25	.50	.55	.40
9	.36	.29	.27	.35	1.53	.54	.35	.21	.25	1.17	.55	.34
10	.58	.59	.35	.32	.66	.50	.35	.21	.66	1.03	.52	.40
11	1.34	.41	.35	.29	.52	.47	.50	.51	1.28	1.50	.55	.40
12	.65	.32	.25	.29	1.79	.47	.40	.25	.41	2.05	.55	.34
13	.94	.32	.27	.63	.94	.51	.32	.21	.35	1.51	.52	.34
14	.44	.29	.25	.29	.72	.50	.29	.21	.29	1.14	.52	.32
15	.41	.53	.25	.68	.59	.44	.29	.21	.27	.72	.49	.32
16	.88	.38	.25	.52	.54	.41	.29	.23	.35	.67	.46	.29
17	.84	.29	.42	.32	.54	.38	.35	.70	.44	1.56	.52	.29
18	.41	.39	.35	.29	.69	.44	.29	.72	.27	1.64	2.3	.29
19	.38	.32	.25	.39	.50	.38	.27	.29	.27	4.0	.55	.32
20	.35	.35	.29	.78	.47	.38	.27	.25	.31	1.91	.90	.32
21	.35	.35	.27	.35	.44	.38	.27	.23	1.76	1.00	.84	.29
22	.35	.52	.32	.41	.38	.35	.27	.23	.51	1.06	.55	.29
23	.32	.35	.25	.32	.38	.35	.25	.21	1.74	1.18	.52	.32
24	.32	.38	.25	.29	.38	.35	.25	.23	2.15	1.82	.52	.34
25	.32	.32	.25	.27	.35	.35	.25	.27	2.05	2.75	.46	.34
26	.54	.32	.25	.27	3.1	.35	.25	.19	.77	5.2	.46	.40
27	.38	.32	.25	.33	4.1	.48	.25	.19	.62	3.1	.43	.60
28	.43	.32	.23	.35	1.41	.44	.23	.19	.80	2.6	.43	.40
29	.38	.32	.23	.27	1.20	.60	.27	-	4.1	1.40	.43	.29
30	.32	.29	.23	.25	3.1	1.81	.27	-	2.45	1.36	.43	.29
31	.35	.32	-	.25	-	.62	.25	-	1.00	-	.40	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	1.34	0.23	0.509	0.788	15.8	48
August	.68	.27	.358	.554	11.1	34
September	.42	.23	.277	.429	8.32	26
October	3.1	.21	.448	.693	13.9	43
November	4.1	.35	.998	1.54	29.9	92
December	2.55	.35	.687	1.06	21.3	65
Calendar year 1949	5.5	.19	.528	.817	193	592
January	1.62	.23	.363	.562	11.2	34
February	.72	.19	.271	.419	7.60	23
March	4.1	.19	.835	1.29	25.9	79
April	5.2	.50	1.54	2.38	46.3	142
May	2.3	.40	.630	.975	19.5	60
June	.60	.29	.359	.555	10.8	33
Fiscal year 1949-50	5.2	.19	.607	.939	222	679

Peak discharge (base, 20 mgd).--No peak above base.

Paopao Stream near Waimanu

Location.--Lat 20°09'05", long. 155°40'05", on left bank, 150 ft upstream from Waimanu trail, 0.6 mile east of intake to Awini ditch, 1.4 miles above mouth, and 1.9 miles west of Waimanu.

Drainage area.--0.6 sq mi.

Records available.--February 1939 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 1,910 ft (by barometer).

Average discharge.--11 years, 2.15 mgd (3.33 cfs).

Extremes.--Maximum discharge during year, 190 mgd (294 cfs) Nov. 30 (gage height, 3.95 ft), from rating curve extended above 8 mgd by test on model of station site; minimum, 0.16 mgd (0.25 cfs) Feb. 9, 10.
1939-50: Maximum discharge, 462 mgd (715 cfs) Dec. 20, 1946 (gage height, 5.55 ft), from rating curve extended above 8 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) July 27, 28, 1945.

Remarks.--Records good.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.16	0.8	4.9
.3	.43	1.0	8.6
.4	.88	1.2	13.1
.5	1.52	1.4	18.4
.6	2.35	1.7	28.5
.7	3.5		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.37	0.71	0.88	0.22	9.5	13.1	0.78	0.63	0.22	5.8	2.7	0.37
2	7.4	.64	.40	.22	3.45	5.0	8.6	.50	.20	1.51	1.37	.76
3	1.18	.37	.34	.20	1.45	6.5	1.72	.25	.20	.93	1.10	.55
4	.34	.34	.34	.20	.63	11.7	.73	.20	.18	.73	.93	.51
5	2.7	3.5	.34	.20	3.75	1.76	.51	.20	.18	.59	.83	.34
6	5.4	3.5	.31	2.35	3.15	1.30	.47	.20	7.1	.84	.73	.31
7	5.1	.63	.28	10.7	.83	.98	.43	.18	.48	5.2	.68	.28
8	1.44	.72	.25	1.33	2.15	.83	.37	.18	.28	1.06	.88	.31
9	1.30	.83	.25	.63	9.8	.73	.40	.16	.22	3.8	.68	.28
10	2.9	5.5	.96	.51	2.5	.63	.51	.18	5.2	3.2	.55	.69
11	8.4	2.1	1.73	.72	1.12	.93	2.45	1.96	9.7	7.5	.55	1.18
12	3.4	.73	.34	.40	9.8	.88	1.07	.70	1.25	13.0	1.57	.43
13	6.2	.51	.85	4.3	4.6	1.48	.40	.28	.89	5.4	.63	.28
14	1.16	.51	1.11	.55	2.9	1.70	.34	.70	.47	3.2	.55	.25
15	1.24	2.6	.37	2.1	1.36	.51	.34	.77	.37	1.55	1.13	.25
16	4.9	1.19	.28	1.48	1.81	.43	.34	1.27	.98	1.16	.69	.28
17	4.1	.73	2.3	.51	1.52	.40	.37	2.15	1.89	3.65	1.58	.25
18	.78	3.1	1.09	.40	3.6	.61	.40	2.85	.51	4.7	13.6	.22
19	.59	.93	.34	1.65	1.23	.68	.34	1.18	.31	27	1.06	.25
20	.51	1.70	1.14	3.4	.88	.37	.31	1.03	2.25	6.9	3.1	.34
21	.43	1.00	.63	.73	.94	.40	.31	.43	10.1	2.2	3.1	.37
22	.43	2.05	1.24	2.75	.59	.34	.31	.34	3.3	6.7	.78	.31
23	.43	1.29	.43	.63	.55	.31	.28	.34	10.9	3.45	2.5	1.64
24	.59	1.36	.31	.43	.51	.28	.28	.62	15.6	8.2	1.31	1.55
25	.43	.59	.37	.47	.51	.34	.28	2.05	9.4	11.7	.73	1.40
26	4.2	.51	.34	.34	14.8	.47	.28	.31	1.30	27	.98	1.72
27	1.32	.43	.64	1.24	15.7	1.93	.28	.22	1.48	8.2	.55	4.5
28	1.93	.51	.34	1.06	4.8	1.35	.25	.22	3.0	10.9	.47	1.14
29	1.08	.43	.25	.37	4.9	3.05	.84	-	21	7.5	.43	.43
30	.74	.43	.22	.28	23	9.2	2.7	-	8.8	7.8	.37	.31
31	.99	.90	-	.28	-	2.1	.59	-	3.05	-	.37	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	8.4	0.34	2.32	3.59	72.0	221
August	5.5	.34	1.30	2.01	40.3	124
September	2.3	.22	.622	.962	18.7	57
October	10.7	.20	1.31	2.03	40.6	125
November	23	.51	4.41	6.82	132	406
December	13.1	.28	2.27	3.51	70.3	216
Calendar year 1949	23	.12	1.72	2.66	626	1,920
January	8.6	.25	.880	1.36	27.3	84
February	2.85	.16	.718	1.11	20.1	62
March	21	.18	3.90	6.03	121	371
April	27	.59	6.38	9.87	191	587
May	13.6	.37	1.50	2.32	46.5	143
June	4.5	.22	.717	1.11	21.5	66
Fiscal year 1949-50	27	.16	2.20	3.40	801	2,460

Peak discharge (base, 90 mgd).--Nov. 30 (6:30 p.m.) 190 mgd (294 cfs), 3.95 ft; Apr. 19 (5:30 a.m.) 105 mgd (162 cfs), 3.10 ft; Apr. 22 (6 p.m.) 112 mgd (173 cfs), 3.18 ft; Apr. 26 (4:30 p.m.) 128 mgd (198 cfs), 3.37 ft.

Kukui Stream near Waimanu

Location.--Lat 20°09'10", long. 155°40'10", on left bank 300 ft upstream from Waimanu trail crossing, 0.4 mile east from head of Awini ditch, and 2.1 miles west of Waimanu.

Drainage area.--0.4 sq mi.

Records available.--February 1939 to June 1950.

Gage.--Water-stage recorder. Altitude of gage is 1,940 ft (by barometer).

Average discharge.--11 years, 1.28 mgd (1.98 cfs).

Extremes.--Maximum discharge during year, 50 mgd (77 cfs) about Apr. 19 (gage height, 3.07 ft), from rating curve extended above 5 mgd by test on model of station site; minimum daily, 0.21 mgd (0.32 cfs) Oct. 4.
1939-50: Maximum discharge, 116 mgd (179 cfs) Oct. 23, 1941 (gage height, 3.97 ft), from rating curve extended above 5 mgd by test on model of staton site; minimum, 0.13 mgd (0.20 cfs) Oct. 25, 1945.

Remarks.--Records fair except those for perbds of no gage-height record, which are poor. No diversions.

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.35	0.61	0.61	0.24	4.7	7.0	0.60	0.41	0.28	3.2	1.7	0.50
2	3.35	.57	.43	.26	1.9	3.2	4.0	.37	.24	1.4	1.30	.54
3	.80	.46	.40	.24	.90	3.8	1.0	.29	.24	.98	1.0	.50
4	.40	.43	.40	.21	.66	6.2	.66	.27	.22	.80	.90	.45
5	1.27	1.27	.40	.24	1.7	1.4	.53	.25	.22	.72	.80	.43
6	2.6	1.98	.38	1.44	1.6	1.0	.50	.25	3.3	1.0	.75	.42
7	2.5	.64	.35	7.0	.80	.84	.47	.25	.55	2.3	.70	.42
8	.91	.61	.32	.90	1.2	.77	.45	.24	.40	.80	.76	.43
9	.88	.64	.32	.62	2.7	.72	.47	.22	.32	2.1	.70	.40
10	1.61	2.3	.67	.51	1.4	.70	.56	.25	2.5	2.0	.65	.52
11	4.5	1.18	.84	.58	.82	.90	1.0	1.1	4.5	3.7	.65	.60
12	1.97	.68	.35	.48	5.0	.84	.66	.57	1.1	6.0	.90	.50
13	3.15	.57	.40	2.1	2.2	1.0	.46	.36	.80	3.5	.67	.42
14	.97	.53	.57	.58	1.5	1.0	.39	.62	.60	2.3	.63	.36
15	.92	1.45	.38	1.44	.90	.65	.38	.67	.52	1.2	.80	.34
16	2.65	.87	.32	1.20	1.0	.60	.38	.90	.90	.92	.66	.33
17	2.3	.64	.93	.62	.94	.55	.40	1.3	1.2	2.6	1.4	.29
18	.83	1.51	.75	.51	1.7	.57	.43	1.5	.54	3.2	7.0	.27
19	.72	.76	.38	1.2	1.1	.60	.38	.66	.45	15	.82	.34
20	.61	1.06	.64	1.9	.84	.52	.36	.62	1.2	4.0	1.7	.36
21	.57	.83	.43	.64	.85	.52	.36	.45	4.5	1.7	1.7	.40
22	.57	1.32	.66	1.0	.72	.48	.36	.41	1.7	2.8	.70	.35
23	.53	.87	.38	.58	.68	.45	.33	.39	4.9	2.2	1.2	.85
24	.57	.93	.32	.50	.67	.45	.33	.51	6.0	4.5	.90	.74
25	.50	.64	.35	.64	.66	.48	.33	1.3	4.5	8.0	.65	.70
26	1.76	.57	.35	.46	9.0	.56	.33	.50	1.1	15	.70	.80
27	.88	.53	.38	.62	10	1.0	.33	.35	1.2	6.0	.60	1.5
28	1.14	.53	.32	.64	3.0	.90	.32	.27	2.1	7.0	.57	.66
29	.79	.50	.29	.48	3.1	1.4	.40	-	9.0	5.4	.54	.50
30	.64	.50	.26	.43	12	4.7	1.0	-	4.5	5.4	.52	.40
31	.79	.61	-	.39	-	1.4	.39	-	1.8	-	.50	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	4.5	0.35	1.36	2.10	42.0	129
August	2.3	.43	.858	1.33	26.6	82
September	.93	.26	.453	.701	13.6	42
October	7.0	.21	.924	1.43	28.6	88
November	12	.66	2.47	3.82	74.2	228
December	7.0	.45	1.46	2.26	45.2	139
Calendar year 1949	12	.21	1.11	1.72	405	1,240
January	4.0	.32	.599	.927	18.6	57
February	1.5	.22	.546	.845	15.3	47
March	9.0	.22	1.98	3.06	61.4	188
April	15	.72	3.86	5.97	116	355
May	7.0	.50	1.07	1.66	33.1	101
June	1.5	.27	.511	.791	15.3	47
Fiscal year 1949-50	15	.21	1.34	2.07	490	1,500

Note.--No gage-height record Oct. 19 to Feb. 23, Feb. 25 to June 30; discharge estimated on basis of records for Paopao and Waiaalala Streams near Waimanu.

Waikoloa Stream near Kamuela

Location.--Lat 20°03'15", long. 155°39'55", on left bank 350 ft downstream from Parker Ranch boundary and 2.1 miles north of Kamuela.

Drainage area.--1.0 sq mi.

Records available.--May 1947 to June 1950.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,500 ft (from topographic map).

Extremes.--Maximum discharge during year, 162 mgd (251 cfs) Apr. 19 (gage height, 3.76 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 1.46 mgd (2.26 cfs) Mar. 5, 6.
1947-50: Maximum discharge, 545 mgd (843 cfs) Jan. 11, 1949 (gage height, 5.47 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 1.39 mgd (2.15 cfs) Dec. 15, 16, 1947.

Remarks.--Records fair except those above 10 mgd, which are poor.

Revisions (fiscal years).--W 1155: 1948(M).

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.2	0.88	1.9	10.4
1.3	1.52	2.1	16.2
1.4	2.4	2.3	24
1.5	3.4	2.6	40
1.6	4.8	2.9	61
1.7	6.4		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May	June
1	2.95	5.9	3.4	2.15	2.05	11.9	3.1	2.6	1.87	11.9	13.6	2.2
2	13.2	4.3	2.8	2.15	3.3	11.3	11.0	2.2	1.70	5.3	5.6	2.6
3	5.8	2.7	2.5	2.05	7.0	9.2	6.3	1.96	1.61	3.0	4.4	2.7
4	4.5	2.7	2.3	1.96	2.8	13.3	2.7	1.78	1.52	2.6	3.8	2.2
5	12.1	9.6	2.4	2.05	7.9	4.5	2.3	1.78	1.46	2.4	3.2	2.15
6	15.2	8.0	2.5	2.7	9.6	3.4	2.2	1.70	10.0	3.65	3.1	2.05
7	17.4	4.5	2.2	9.9	4.4	2.9	2.15	1.70	2.85	11.7	7.9	1.96
8	6.8	5.4	2.15	6.1	4.9	2.6	2.15	1.70	1.87	4.4	7.6	2.05
9	5.8	5.5	2.15	3.85	14.7	2.4	3.25	1.61	1.70	6.3	5.2	1.96
10	8.7	14.6	2.6	3.1	7.8	2.2	5.9	1.61	1.77	6.8	5.1	2.6
11	15.8	9.8	6.7	2.6	3.75	2.95	6.0	1.88	11.0	12.5	4.4	3.3
12	10.4	5.3	2.7	2.4	12.6	3.7	5.6	2.6	4.0	17.8	4.5	2.6
13	14.5	3.2	2.3	10.3	10.4	3.5	2.6	3.25	4.2	11.6	3.2	2.15
14	5.4	4.5	2.3	3.6	6.6	3.6	2.2	2.6	2.7	5.3	3.5	1.96
15	7.6	8.1	2.2	3.5	4.4	2.4	2.15	2.9	2.05	3.95	6.5	1.96
16	11.7	5.0	2.15	3.65	5.4	2.2	2.05	4.7	1.87	3.1	4.6	1.87
17	7.0	4.1	4.8	2.6	5.4	2.15	1.96	7.1	2.4	4.8	6.7	1.87
18	3.4	7.5	4.8	2.3	12.7	2.75	1.96	7.2	2.05	5.8	18.4	1.96
19	2.7	7.6	2.5	6.4	5.9	3.3	1.87	3.4	2.15	55	5.5	2.2
20	2.5	9.5	3.4	6.1	3.1	2.7	1.78	3.7	10.8	27.5	7.6	2.7
21	2.3	5.3	4.7	2.6	3.1	6.1	1.78	2.6	23	7.1	9.7	2.7
22	2.4	5.8	6.0	5.5	2.5	2.6	1.78	2.15	10.8	19.3	4.2	2.7
23	2.6	4.4	3.0	2.9	2.4	2.2	1.78	2.05	19.4	8.2	4.1	3.4
24	3.3	4.7	2.6	3.1	2.3	2.15	1.70	1.87	24	8.0	6.0	6.0
25	5.1	3.1	4.4	3.1	3.9	2.2	1.70	2.6	12.5	13.5	4.3	7.0
26	13.4	2.7	3.2	2.2	14.6	2.7	1.70	2.15	3.6	20.5	4.2	8.8
27	5.3	2.9	2.8	2.3	15.3	3.8	1.70	1.87	9.7	10.7	3.0	10.3
28	4.5	4.3	2.5	2.7	9.1	6.2	1.70	1.90	8.5	26	3.0	5.1
29	5.3	2.7	2.2	2.15	11.4	4.5	1.82	-	24	31	2.7	2.7
30	4.1	2.5	2.15	2.05	34.5	10.9	5.4	-	17.7	28	2.4	2.2
31	6.6	4.0	-	1.96	-	5.3	4.1	-	9.9	-	2.2	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	17.4	2.3	7.37	11.4	228	701
August	14.6	2.5	5.49	8.49	170	522
September	6.7	2.15	3.08	4.77	92.4	284
October	10.3	1.96	3.55	5.49	110	338
November	34.5	2.05	7.79	12.1	234	718
December	13.3	2.15	4.57	7.07	142	435
Calendar year 1949	34.5	1.46	4.58	7.09	1,670	5,130
January	11.0	1.70	3.04	4.70	94.4	290
February	7.2	1.61	2.68	4.15	75.2	231
March	24	1.46	7.51	11.6	233	714
April	55	2.4	12.6	19.5	378	1,160
May	18.4	2.2	5.49	8.49	170	522
June	10.3	1.87	3.20	4.95	95.9	294
Fiscal year 1949-50	55	1.46	5.54	8.57	2,020	6,210

Peak discharge (base, 100 mgd).--Apr. 19 (10 p.m.) 162 mgd (251 cfs), 3.76 ft; Apr. 22 (5:30 p.m.) 132 mgd (204 cfs), 3.55 ft.

Waikoloa Stream at Marine Dam, near Kamuela

Location.--Lat 20°02'45", long. 155°39'55", on right bank 160 ft upstream from Marine Dam and 1.5 miles north of Kamuela.

Drainage area.--1.3 sq mi.

Records available.--May 1947 to June 1950.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,450 ft (from topographic map).

Extremes.--Maximum discharge during year, 166 mgd (257 cfs) Apr. 19 (gage height, 3.77 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 0.84 mgd (1.30 cfs) Mar. 5.

1947-50: Maximum discharge, 615 mgd (952 cfs) Jan. 11, 1949 (gage height, 5.53 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 0.79 mgd (1.22 cfs) Mar. 6-8, 1949.

Remarks.--Records good below 10 mgd and fair above. Diversions above station for stock and domestic use.

Rating table, fiscal year 1949-50 (gage height, in feet, and discharge, in million gallons a day)

1.4	0.48	2.1	11.7
1.5	1.00	2.2	15.3
1.6	1.78	2.4	24.5
1.7	2.9	2.6	37
1.8	4.4	2.8	52
1.9	6.3	3.1	81
2.0	8.7		

Discharge, in million gallons, fiscal year July 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.6	6.3	3.5	1.47	1.39	19.7	2.7	2.0	1.31	16.1	20.5	1.89
2	19.1	4.9	2.55	1.55	2.35	15.1	16.1	1.62	1.16	6.2	6.3	2.1
3	7.6	2.55	2.0	1.47	8.4	13.5	7.6	1.39	1.00	2.9	4.8	2.55
4	4.7	2.25	1.78	1.47	2.45	20	2.55	1.23	.95	2.25	3.95	1.89
5	17.6	11.8	2.0	1.55	10.2	5.7	1.89	1.16	.90	2.0	3.2	1.70
6	24	10.5	2.1	2.3	14.0	3.95	1.70	1.16	13.3	3.25	2.9	1.62
7	28.5	5.0	1.78	13.2	5.7	2.9	1.62	1.16	2.75	15.3	9.6	1.47
8	8.4	5.9	1.62	7.4	5.2	2.45	1.62	1.16	1.47	5.0	10.5	1.55
9	7.6	6.0	1.55	4.1	23	2.25	3.65	1.08	1.16	7.5	5.6	1.55
10	11.9	20.5	2.1	2.9	12.5	2.1	6.6	1.00	1.21	8.4	6.2	1.96
11	22.5	14.6	7.7	2.25	4.1	2.65	7.6	1.28	15.3	18.2	5.1	3.2
12	16.0	5.9	2.35	2.0	18.4	3.9	6.5	2.1	3.95	27	4.6	2.25
13	22	3.2	1.89	13.6	15.8	3.5	2.1	2.9	4.2	17.0	3.35	1.70
14	6.4	4.6	1.78	4.0	8.6	4.0	1.70	2.1	2.4	5.8	3.3	1.55
15	9.8	10.4	1.70	3.3	5.0	2.35	1.55	2.55	1.55	4.1	8.0	1.47
16	17.0	5.8	1.62	3.75	6.7	1.70	1.55	4.6	1.31	2.9	5.4	1.39
17	9.6	4.2	4.6	2.25	5.9	1.55	1.39	9.0	2.0	5.3	8.0	1.39
18	3.65	9.5	5.4	1.89	17.2	2.4	1.39	9.0	1.47	6.3	28.5	1.39
19	2.55	9.3	2.1	7.4	7.9	3.2	1.31	3.35	1.62	74	6.6	1.62
20	2.1	12.8	3.1	7.8	3.35	2.35	1.23	3.5	15.0	36.5	9.2	2.1
21	2.0	5.9	4.7	2.25	2.9	8.7	1.23	2.45	36.5	9.0	13.6	2.45
22	2.0	6.1	7.0	6.1	2.25	2.1	1.16	1.70	15.1	25.5	4.7	1.70
23	2.25	4.4	2.7	2.7	2.1	1.62	1.16	1.55	31.5	10.3	4.2	3.05
24	3.2	5.2	2.25	2.65	2.0	1.47	1.16	1.39	40	9.6	7.0	7.2
25	4.5	2.9	4.3	3.1	3.75	1.62	1.08	2.2	25.5	19.2	4.8	8.7
26	19.5	2.45	3.2	1.89	22.5	2.25	1.08	1.55	3.8	31.5	4.4	12.2
27	6.6	2.6	2.45	1.91	25.5	3.25	1.00	1.31	13.1	15.7	2.9	13.8
28	4.1	4.7	2.0	2.35	12.6	6.6	1.00	1.39	12.9	36	2.8	5.7
29	6.6	2.55	1.70	1.62	16.0	4.3	1.31	-	34.5	51	2.55	2.55
30	4.4	2.1	1.55	1.47	53	14.5	5.8	-	27.5	43	2.1	2.0
31	7.8	3.7	-	1.39	-	6.1	4.1	-	13.0	-	1.89	-

Month	Million gallons a day			Cubic feet per second (mean)	Total runoff	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July	28.5	2.0	9.89	15.3	307	941
August	20.5	2.1	6.41	9.92	199	609
September	7.7	1.55	2.84	4.39	85.1	261
October	13.6	1.39	3.65	5.65	113	347
November	53	1.39	10.7	16.6	321	984
December	20	1.47	5.41	8.37	168	515
Calendar year 1949	53	.84	5.28	8.17	1,930	5,910
January	16.1	1.00	2.98	4.61	92.4	284
February	9.0	1.00	2.39	3.70	66.9	205
March	40	.90	10.6	16.4	327	1,000
April	74	2.0	17.2	26.6	517	1,590
May	28.5	1.89	6.66	10.3	207	634
June	13.8	1.39	3.19	4.94	95.7	294
Fiscal year 1949-50	74	.90	6.84	10.6	2,500	7,660

Peak discharge (base, 100 mgd).--Nov. 30 (9 p.m.) 110 mgd (170 cfs), 3.34 ft; Apr. 12 (5 p.m.) 104 mgd (161 cfs), 3.31 ft; Apr. 19 (10 p.m.) 166 mgd (257 cfs), 3.77 ft); Apr. 22 (5 p.m.) 136 mgd (210 cfs), 3.57 ft.

MISCELLANEOUS DISCHARGE MEASUREMENTS

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

Miscellaneous discharge measurements on Hawaii during fiscal year July 1949 to June 1950

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Aug. 13	Lahomene.....	Pacific Ocean...	At altitude 3,250 ft, near Waimanu.	3.99	2.58
Oct. 14	....do.....	....do.....	....do.....	5.19	3.35
Dec. 13	....do.....	....do.....	....do.....	3.63	2.35
Feb. 22	....do.....	....do.....	....do.....	2.26	1.46
May 1	....do.....	....do.....	....do.....	13.2	8.53
Aug. 13	Kakaauki.....	....do.....	At altitude 2,930 ft, near Waimanu.	1.41	.911
Oct. 14	....do.....	....do.....	....do.....	2.41	1.56
Dec. 13	....do.....	....do.....	....do.....	1.68	1.09
Feb. 22	....do.....	....do.....	....do.....	.746	.482
May 1	....do.....	....do.....	....do.....	7.03	4.54

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