Surface Water Supply of Hawaii 1950-51

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

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Prepared in cooperation with the Territory of Hawaii

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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, C. G. Paulsen, chief, under the general direction of J. V. B. Wells, chief, Surface Water Branch, and B. J. Peterson, chief, Annual Reports Section.

The data were computed under the supervision of M. H. Carson, district engineer, Honolulu.

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SURFACE WATER SUPPLY OF HAWAII, JULY 1, 1950, to JUNE 30, 1951

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, 1951. Since the beginning of stream-gaging work in Hawaii, in 1910, records of flow of streams and ditches have been obtained at about 575 stations for periods ranging from a few months to 40 years. In addition, hundreds of miscellaneous measurements have been made, and rather extensive studies of ground water have been made on all the inhabited islands.

In this volume are given the records of daily flow obtained at stations that were operated during the year ending June 30, 1951, 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, 1951, 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., and Waiahole 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 betwen 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 "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.

DOWNSTREAM ORDER OF LISTING GAGING STATIONS

Beginning with the report for the year ending June 30, 1950, 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 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.

EXPLANATION OF DATA

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 determin-

ing 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 daily discharge, the values for the maximum and the minimum day are underlined. If the value is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily values in million gallons. The mean for the month is given both in terms of million gallons a day (line headed "mgd") and in cubic feet per second (line headed "cfs"). The line headed "Ac-ft" gives the runoff for the month in acre-feet.

In the yearly summary below the monthly summary, the values of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

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, 1903-51

Year	W.S.P.	Year	W.S.P.	Year	W.S.P.	Year	W.S.P.	Year	W.S.P.
1903	*77	1919-20	516	1927-28	675	1935-36	815	1943-44	1015
1909-11†	318	1920-21	535	1928-29	695	1936-37	835	1944-45	1045
1912†	336	1921-22	555	1929-30	710	1937-38	865	1945-46	1065
1913†	373	1922-23	575	1930-31	725	1938-39	885	1946-47	1095
1913-15	430	1923-24	595	1931-32	740	1939-40	905	1947-48	1125
1915-16	445	1924-25	615	1932-33	755	1940-41	935	1948-49	1155
1916-17	465	1925-26	635	1933-34	770	1941-42	965	1949-50	1185
1917-18	485	1926-27	655	1934-35	795	1942-43	985	1950-51	1219
1918-19	515								

* 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 1950 to June 1951 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.	1924-51	McBryde Sugar Co.
Eleele ditch.....	....do.....	1924-51	Do.
Hanalei ditch.....	Above Kalihiwai Reservoir, near Kilauea.	1923-51	Kilauea Sugar Plantation Co.
Hanamaulu ditch.....	Below intake, near Hanamaulu.....	1925-51	Lihue Plantation Co.
Hanapepe field ditch....	Below Hanapepe River intake, near Eleele.	1924-51	McBryde Sugar Co.
Hanapepe Stream.....	At tidewater, near Eleele.....	1924-51	Do.
Kamcoloa ditch.....	Below Kauai Belt Road crossing, near Koloa.	1924-51	Do.
Kealia River.....	1 mile west of Kaneha Reservoir and 5½ miles northwest of Kealia.	1936-51	Lihue Plantation Co.
Koloa ditch.....	4½ miles north of Koloa and 6½ miles west of Lihue.	1927-51	Do.
Koula ditch.....	In Hanonui Valley, near Makaweli...	1949-51	Gay & Robinson.
Lawai Stream.....	½ mile above cannery, near Kalaheo.	1924-50	McBryde Sugar Co.
Lihue lower ditch.....	Below intake, near Lihue.....	1925-51	Lihue Plantation Co.
Lihue upper ditch.....	....do.....	1925-51	Do.
Olokele ditch.....	At powerhouse, near Makaweli.....	1926-51	Gay & Robinson.
Wahiawa main stream.....	Above Alexander Reservoir, near Kalaheo.	1924-51	McBryde Sugar Co.
Wahiawa Stream, East Branch.	....do.....	1929-51	Do.
West Lawai ditch.....	Near camp 12, near Kalaheo.....	1924-51	Do.

ISLAND OF OAHU

Alewa Heights Spring....	Below reservoir 3.....	1932-51*	Board of Water Supply, City and County of Honolulu.
Booth Springs.....	In Pauoa Valley, at altitude 685 feet.	1929-51*	Do.
Helemano ditch.....	About 3 miles below Upper Helemano Reservoir.	1933-51	Waialua Agricultural Co.
Hering Springs.....	In Makiki Valley, at altitude 970 feet.	1925-51*	Board of Water Supply, City and County of Honolulu.
Kahuawai Springs.....	In Pauoa Valley, at altitude 618 feet.	1925-51*	Do.
Kalihi tunnels.....	At diversion, at altitude 650 feet.	1926-51*	Do.
Kamananui ditch.....	In Kawailoa Gulch about 500 yards above third siphon from Government Road.	1934-51	Waialua Agricultural Co.
Kipapa Stream.....	At altitude 375 feet.....	1917-51	Waiahole Water Co.
Makiki Springs.....	In Makiki Valley, at altitude 350 feet.	1926-51*	Board of Water Supply, City and County of Honolulu.
Manoa tunnels.....	Upper Manoa Valley.....	1925-51*	Do.
Nuuanu tunnels.....	At Lower Luakaha.....	1926-51*	Do.
Nuuanu tunnel 3.....	At overflow, in upper Nuuanu Valley	1931-51*	Do.
Palolo tunnel.....	Upper Palolo Valley.....	1926-51*	Do.
Wahiawa Reservoir Outlet	About 1,200 feet below dam.....	1912-51*	Wahiawa Water Co.
Waiahole tunnel.....	At adit 8.....	1916-51	Waiahole Water Co.
Waiawa Stream.....	At altitude 750 feet.....	1917-51	Do.
Waikakalaua Stream.....	....do.....	1917-51	Do.
Waimalu Stream.....	At altitude 535 feet, near Aiea....	1947-51	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.....	1935-51	Wailuku Sugar Co.
Honokohau tunnel.....	At outlet of tunnel, at Mahinahina weir.	1917-51	Pioneer Mill Co.
Iao-Waikapu ditch.....	At lower end of tunnels, near Wailuku.	1923-51	Wailuku Sugar Co.
Kahoma tunnel.....	2,000 feet upstream from outlet, above Lahaina.	1920-51	Pioneer Mill Co.
Kama ditch.....	Below intake, near Wailuku.....	1933-51	Wailuku Sugar Co.
Kanaha ditch.....	At intake in Kanaha Gulch, above Lahainaluna.	1921-51	Pioneer Mill Co.
Kauaula tunnel.....	At outlet, above Lahaina.....	1920-51	Do.
K-3 flume.....	Above Lahainaluna.....	1931-51	Do.
Launiupoko ditch.....	At outlet, above Lahaina.....	1921-51	Do.
Maniania ditch.....	Below intake, near Wailuku.....	1923-51	Wailuku Sugar Co.
North Waiehu Stream.....	Near end of Waiehu Camp road, near Wailuku.	1922-51	Do.
South Waikapu ditch.....	Above second lateral, near reservoir 1, near Waikapu.	1935-51	Do.
Spreckels ditch.....	Below intake, near Waihee.....	1931-51	Do.
Ukumehame ditch.....	At outlet in Ukumehame Gulch, near Olowalu.	1931-51	Pioneer Mill Co.
Waihee ditch.....	Below intake, near Waihee.....	1931-51	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 1947-51	East Maui Irrigation Co.

ISLAND OF HAWAII

Hionamoa Gulch.....	Below all development tunnels, near Pahala.	1926-51	Hawaiian Agricultural Co.
Honokaape ditch.....	At Kukuihaele Village.....	1923-51	Hawaiian Irrigation Co.
Keaiwa Gulch.....	Below all development tunnels, near Pahala.	1926-51	Hawaiian Agricultural Co.
Kohala ditch.....	At Awini weir in Honokane, near Niulii.	1917-51†	Kohala Ditch Co.
Do.....	At Niulii weir, near Niulii.....	1917-51†	Do.
Lower Hamakua ditch.....	At main weir, near Kukuihaele.....	1921-51†	Hawaiian Irrigation Co.
Moaula Gulch.....	Below all development tunnels, near Pahala.	1929-51	Hawaiian Agricultural Co.
Noguchi tunnel 19.....	5.3 miles from Pahala, at altitude 3,500 feet.	1928-51	Do.
Pololu Inlet 1.....	At Pololu, near Niulii.....	1929-51	Kohala Ditch Co.
Pololu Inlet 2.....	In Waiakalae Gulch at Pololu, near Niulii.	1929-51	Do.
Pololu Inlet 3.....	In Opaepilau Gulch, above Kohala ditch, near Niulii.	1937-51	Do.
Pololu Inlet 5.....	In Niulii Gulch, above Kohala ditch, near Niulii.	1937-51	Do.
Pololu Inlet 6.....	In Waikane Gulch, above Kohala ditch, near Niulii.	1937-51	Do.
Puwaiole Stream.....	Above Kohala ditch, near Halawa....	1937-51	Do.
Waiapuka Stream.....	Above Kohala ditch, near Niulii....	1929-51	Do.
Waipuhi Stream.....	Above Kohala ditch, near Halawa....	1933-51	Do.
Waipunalau Stream.....	....do.....	1929-51	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 1951.

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.--32 years (1919-51), 21.7 mgd (33.6 cfs).

Extremes.--Maximum discharge during year, 5,160 mgd (7,980 cfs) Aug. 15 (gage height, 13.43 ft), from rating curve extended above 200 mgd as explained below; minimum, 1.57 mgd (2.43 cfs) June 24, 28-30.
1909-17, 1919-51: 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.

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

Revisions (fiscal years).--W 1219: 1914-17(M), 1920-38(M), 1940-43(M), 1947(M).

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.9	1.4	2.7	17.8	5.0	355
2.0	2.25	3.0	31	6.0	670
2.1	3.4	3.5	69	8.0	1,500
2.3	6.6	4.0	141		
2.5	11.2	4.5	241		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.1	18.8	9.2	2.7	3.05	4.9	36.5	6.8	13.4	23.5	5.7	2.25
2	3.7	28.5	10.6	2.6	2.8	12.8	22.5	6.4	92	176	5.4	2.25
3	3.55	10.6	6.8	2.5	2.35	70	13.1	6.0	233	185	5.0	2.15
4	3.15	6.0	10.4	2.7	2.15	42	10.4	6.0	661	63	4.7	2.1
5	2.95	4.8	7.6	6.3	2.15	40	13.5	5.7	84	34.5	4.6	2.0
6	2.8	3.85	6.2	4.7	2.1	40	15.2	5.4	29	22.5	4.3	2.0
7	2.8	4.6	26	3.7	1.91	18.7	8.9	5.4	21	18.2	4.1	2.1
8	2.8	4.4	22	*6.5	1.91	22	7.2	5.7	16.4	15.9	4.0	2.0
9	2.6	3.7	16.7	5.2	5.5	11.2	6.2	4.8	13.7	14.3	3.85	1.91
10	2.7	3.3	15.9	4.1	3.5	18.6	5.7	4.6	12.4	13.4	3.7	1.82
11	6.1	3.05	35	5.0	2.6	51	5.4	21	128	12.8	3.55	1.82
12	19.6	2.7	18.3	3.7	2.15	53	5.5	14.0	90	73	3.55	1.91
13	8.5	2.6	8.6	3.85	2.00	35.5	146	6.6	27.5	20.5	3.4	1.82
14	4.6	20	6.6	3.3	4.0	15.7	634	5.2	25	31	3.4	1.82
15	3.7	*1,320	5.7	2.8	5.7	13.4	524	16.8	21	17.6	3.3	1.82
16	3.15	1,250	5.2	2.5	3.55	*17.9	119	28	14.3	11.2	3.15	5.5
17	13.6	a879	4.8	2.35	5.3	18.1	34.5	51	11.8	9.6	3.15	6.2
18	17.6	a83	4.6	2.35	35	9.2	27.5	22	10.4	8.6	4.0	3.4
19	25.5	a60	4.3	2.25	120	7.6	19.8	67	9.4	17.2	3.85	2.25
20	10.1	a43	4.0	2.6	93	6.6	15.4	126	8.6	18.4	4.0	2.0
21	5.7	a30	3.85	2.5	15.6	6.0	13.1	68	142	10.2	3.55	1.82
22	11.0	a23	3.7	2.25	7.4	5.5	61	19.4	27.5	12.4	3.15	1.66
23	11.4	a19	3.55	2.7	6.6	5.2	58	14.3	50	8.6	2.95	1.66
24	17.6	a14	3.3	18.5	27	4.8	19.8	13.4	151	7.4	2.8	1.80
25	14.0	a11	3.15	9.0	44	4.6	13.7	10.2	177	6.8	2.8	4.1
26	8.1	8.9	3.15	16.4	28	4.3	11.2	*8.4	184	6.6	2.7	2.35
27	7.4	8.8	3.15	7.4	32.5	4.3	9.9	8.0	179	6.0	2.6	1.91
28	14.2	13.7	2.95	6.2	14.3	83	8.9	11.2	505	5.9	2.5	1.66
29	7.5	8.2	2.8	13.4	8.4	64	8.2	-	49	6.6	*2.35	1.57
30	4.8	7.4	2.7	7.4	6.2	138	8.0	-	30.5	6.8	2.35	1.66
31	17.8	6.6	-	4.0	-	31	7.2	-	25	-	2.35	-
Total	263.10	3,902.50	260.80	161.45	490.72	858.9	1,889.3	567.3	3,041.9	863.5	110.80	69.31
Mean:												
mgd	8.49	126	8.69	5.21	16.4	27.7	60.9	20.3	98.1	28.8	3.57	2.31
cfs	13.1	195	13.4	8.06	25.4	42.9	94.2	31.4	152	44.6	5.52	3.57
Ac-ft	807	11,980	800	495	1,510	2,640	5,800	1,740	9,340	2,650	340	213

Calendar year 1950. Max 1,320 Min 1.91 Mean(mgd) 30.1 Mean(cfs) 46.6 Ac-ft 33,740
Fiscal year 1950-51: Max 1,320 Min 1.57 Mean(mgd) 34.2 Mean(cfs) 52.9 Ac-ft 38,320

Peak discharge (base, 850 mgd).--Aug. 15 (12 p.m.) 5,160 mgd (7,980 cfs), 13.43 ft; Jan. 13 (11 p.m.) 1,700 mgd (2,630 cfs), 8.38 ft; Mar. 4 (12:30 a.m.) 3,160 mgd (4,890 cfs), 10.77 ft; Mar. 21 (2:30 p.m.) 1,130 mgd (1,750 cfs), 7.18 ft; Mar. 28 (10:30 a.m.) 2,830 mgd (4,380 cfs), 10.30 ft.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for stations on 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 1951. 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.--20 years (1920-26, 1937-51), 5.20 mgd (8.05 cfs).

Extremes.--Maximum discharge during year, 1,250 mgd (1,930 cfs) Aug. 15 (gage height, 7.23 ft), from rating curve extended above 21 mgd; minimum, 0.47 mgd (0.73 cfs) June 28-30. 1920-26, 1936-51: Maximum discharge, that of Aug. 15, 1950; minimum, 0.05 mgd (0.08 cfs) May 3, 4, 1941.

Remarks.--Records good except those above 25 mgd, which are poor.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.0	0.37	1.5	3.2	3.5	96
1.1	.64	1.7	5.6	4.0	166
1.2	.99	2.0	11.3	4.7	318
1.3	1.51	2.5	27		
1.4	2.25	3.1	60		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.95	2.4	1.33	0.64	0.78	0.85	9.8	1.27	12.9	6.7	2.35	0.74
2	.85	3.7	1.27	.64	.71	.88	6.7	1.12	52	27	2.0	.74
3	.78	2.0	1.22	.64	.67	16.0	3.0	1.07	70	40	1.86	.71
4	.71	1.33	1.22	.67	.61	7.5	2.0	1.03	299	26	1.78	.71
5	.64	1.12	1.17	.91	.58	7.0	1.70	1.03	39.5	14.8	1.70	.67
6	.61	.88	1.12	.99	.58	8.2	1.57	.95	14.4	8.0	1.63	.64
7	.58	.85	1.22	*.85	.56	4.1	1.33	.91	9.1	6.2	1.57	.64
8	.58	.91	1.86	.85	.53	3.2	1.12	.95	6.4	5.2	1.51	.64
9	.58	.81	1.63	.85	.50	2.1	.99	.88	5.0	4.6	1.45	.61
10	.58	.71	1.70	.88	.56	2.1	.91	.81	4.6	4.4	1.39	.53
11	.58	.64	9.3	.85	.56	6.3	.85	.91	44	4.2	1.39	.53
12	.95	.61	5.7	.81	.53	14.2	1.32	1.57	40	14.4	1.39	.53
13	1.07	.56	2.15	.91	.50	5.3	3.1	1.07	14.7	5.6	1.39	.53
14	.78	1.45	1.45	.91	.50	2.9	88	.88	10.0	5.2	1.33	.53
15	.67	299	1.17	.78	.56	1.86	75	2.65	8.6	5.1	1.39	.50
16	.61	295	1.03	.71	.58	1.58	29.5	5.0	5.6	3.55	1.33	.56
17	1.27	281	.99	.64	.61	*3.75	9.0	9.3	4.4	2.9	1.33	.74
18	2.0	31.5	.91	.64	3.9	1.63	6.1	3.7	3.65	*2.5	1.39	.67
19	3.2	12.2	.88	.61	13.3	1.17	4.1	24.5	3.4	2.5	1.39	.58
20	1.86	7.4	.81	.58	19.4	.99	3.0	67	3.0	2.5	1.45	.56
21	1.12	5.2	.78	.58	4.6	.88	2.4	20	63	3.3	1.51	.56
22	1.04	4.1	.74	.58	1.70	.81	8.1	6.6	15.1	2.9	1.45	.53
23	2.55	3.4	.74	.67	1.07	.74	12.8	4.7	8.7	2.7	1.39	.53
24	2.4	2.9	.71	1.24	.91	.71	5.0	5.0	29	2.4	1.33	.56
25	2.35	2.5	.71	1.78	4.5	.67	3.0	3.2	46	2.15	1.17	.78
26	1.70	2.25	.71	1.45	3.05	.64	2.25	*2.6	87	2.0	1.07	.61
27	1.12	2.0	.71	1.70	4.4	.61	1.93	3.55	52	1.86	.88	.53
28	1.22	2.0	.71	1.33	2.15	17.2	1.63	7.7	91	1.78	.88	.50
29	*1.39	1.70	.67	1.33	1.39	17.8	1.51	-	19.5	1.70	*.81	.47
30	.99	1.51	.64	1.33	1.03	22.5	1.63	-	10.9	2.0	.78	.50
31	1.12	1.39	-	.95	-	7.9	1.39	-	7.8	-	.78	-
Total	36.85	973.02	45.25	28.30	71.32	162.07	290.73	179.95	1,080.25	214.14	43.07	17.93
Mean:												
mgd	1.19	31.4	1.51	0.913	2.38	5.23	9.38	6.43	34.8	7.14	1.39	0.598
cfs	1.84	48.6	2.34	1.41	3.68	8.09	14.5	9.95	53.8	11.0	2.15	0.925
Ac-ft	113	2,990	139	87	219	497	892	552	3,320	657	132	55

Calendar year 1950. Max 299 Min 0.50 Mean(mgd) 6.76 Mean(cfs) 10.5 Ac-ft 7,580
Fiscal year 1950-51: Max 299 Min 0.47 Mean(mgd) 8.61 Mean(cfs) 13.3 Ac-ft 9,650

Peak discharge (base, 200 mgd).--Aug. 15 (12 p.m.) 1,250 mgd (1,930 cfs), 7.23 ft; Jan. 14 (1 a.m.) 280 mgd (433 cfs), 4.55 ft; Mar. 2 (8:30 p.m.) 376 mgd (582 cfs), 4.92 ft; Mar. 4 (2 a.m.) 1,160 mgd (1,790 cfs), 7.02 ft; Mar. 11 (8 p.m.) 204 mgd (316 cfs), 4.21 ft; Mar. 21 (2:30 p.m.) 475 mgd (735 cfs), 5.25 ft; Mar. 28 (12 m.) 318 mgd (492 cfs), 4.71 ft.

* Discharge measurement made on this day.

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 1951.

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

Average discharge.--24 years (1927-51), 16.3 mgd (25.2 cfs).

Extremes.--1926-51: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	18.8	7.0	7.0	5.8	4.8	14	10	3.05	16.3	10	6.0
2	6.7	23	6.5	5.9	5.2	12.2	11	9.0	3.4	16.3	9.8	5.2
3	6.5	14.4	10.9	6.7	4.6	18.1	8.6	8.0	9.1	15.1	9.3	5.0
4	6.0	8.4	18.8	6.7	4.2	24	6.5	8.2	34	14.0	9.2	4.7
5	5.6	7.2	18.8	9.6	4.1	20	5.5	8.2	31	13.5	9.0	4.5
6	5.5	5.8	16.3	9.4	3.8	21	8.0	7.9	24	14.0	8.5	4.3
7	5.3	5.6	15.2	7.9	3.8	16.4	6.0	7.0	16.8	17.5	8.2	4.1
8	5.3	6.0	17.6	10.1	3.7	17.5	4.5	7.2	6.3	18.8	7.7	4.0
9	5.3	5.3	20	9.2	6.2	13.5	5.0	6.7	4.8	13	7.6	3.8
10	5.0	4.8	18.8	8.4	5.6	13.7	4.3	6.2	9.4	9.0	7.3	3.7
11	7.5	4.6	24	8.8	4.2	20	4.2	6.2	11.3	8.0	7.0	3.6
12	17.0	*4.2	20	7.5	2.4	19.0	4.1	16	11.3	11	6.8	3.6
13	11.8	4.1	17.5	6.0	2.9	13.3	5.5	9.2	15.1	9.0	6.6	3.5
14	7.5	*9.1	14.6	6.3	4.7	10.7	33	7.0	15.1	8.2	6.5	3.5
15	6.2	45	13.5	6.2	8.4	9.4	30	6.5	11.5	8.0	6.4	3.5
16	5.6	52	12.6	5.6	5.6	9.1	8.0	19.0	11.7	8.0	6.3	6.0
17	11.8	24	12.0	1.86	6.0	12.0	7.0	25	15.1	13	6.2	6.7
18	16.8	16.3	11.3	1.50	16.8	9.6	6.5	20	14.9	13	6.2	4.5
19	20.5	8.6	10.7	3.2	25	9.4	15	24	10.0	13	6.2	4.0
20	14.0	5.3	10.1	4.6	25	8.4	16	33.5	9.4	21	6.2	3.6
21	8.4	3.8	9.8	4.8	18.8	7.5	14	32.5	12.6	18	6.8	3.4
22	9.8	6.3	9.2	4.7	11.3	7.2	13	28	12.4	16	7.5	3.3
23	13.8	12.2	9.2	4.7	8.4	7.0	20	21.5	13.8	14	7.0	3.3
24	14.8	13.7	8.8	12.5	18.0	6.7	12	19.9	18.8	13	6.7	3.7
25	14.6	12.0	8.6	13.5	21	6.3	13	20	19.2	12	6.5	5.3
26	11.1	10.7	8.1	15.8	17.5	5.5	12	13.4	12.5	12	6.3	4.0
27	8.8	9.8	6.3	12.6	22.5	3.5	11	8.1	9.3	11	6.2	3.5
28	13.5	9.4	5.5	9.9	15.1	4.0	10	3.3	9.0	10	6.2	3.2
29	10.1	8.8	6.2	13.1	10.9	14	15	-	14.5	11	6.2	3.0
30	7.4	8.1	5.6	11.1	6.1	25	12	-	16.8	11	6.8	3.0
31	14.3	7.4	-	7.2	-	20	11	-	16.3	-	6.7	-
Total	303.9	374.7	373.5	242.36	297.6	388.8	345.7	391.4	424.45	387.7	223.9	123.5
Mean:												
mgd	9.80	12.1	12.4	7.82	9.92	12.5	11.2	14.0	13.7	12.9	7.22	4.12
cfs	15.2	18.7	19.2	12.1	15.3	19.3	17.3	21.7	21.2	20.0	11.2	6.37
Ac-ft	933	1,150	1,150	744	913	1,190	1,060	1,200	1,300	1,190	687	379

Calendar year 1950. Max 52 Min 1.50 Mean(mgd) 15.8 Mean(cfs) 24.4 Ac-ft 17,680
Fiscal year 1950-51: Max 52 Min 1.50 Mean(mgd) 10.6 Mean(cfs) 16.4 Ac-ft 11,900

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 22 to Feb. 15, Apr. 9 to May 29, May 31 to June 30; discharge estimated on basis of discharge figures furnished by Kekaha Sugar Co. and comparison with records for stations on nearby streams.

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 1951.

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, 18,100 mgd (28,000 cfs) Aug. 17 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 80 mgd; minimum recorded, 10.3 mgd (15.9 cfs) July 9-11.
1916, 1917-18, 1925-51: Maximum discharge, that of Aug. 17, 1950; minimum, 5.2 mgd (8.0 cfs) Nov. 4, 1927.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Kokee ditch diverts water above station for irrigation near Kekaha (see p. 13).

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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.1							-	61	124	15.1	11.8
2	11.1							-	209	520	14.7	11.8
3	10.8							-	463	430	15.9	12.2
4	10.8							-	1,500	216	15.9	12.2
5	10.8							-	300	156	15.9	12.2
6	10.6							-	94	104	15.9	11.8
7	10.6							-	62	a83	15.9	11.5
8	10.6							-	56	a72	15.9	11.2
9	10.3							-	53	a61	15.9	11.5
10	10.3							-	52	*a53	15.5	11.5
11	10.3							-	320	51	14.7	11.5
12	13.1							-	496	124	14.3	11.8
13	12.0							-	a154	a53	13.9	11.8
14	10.8							-	a104	61	13.5	11.5
15	10.8							-	a97	a49	13.5	10.9
16	10.6							-	a82	a32.5	13.5	11.2
17	11.7							-	a73	a23	12.5	11.5
18	15.1							-	a65	a21	11.8	11.5
19	17.2							-	a59	a20.5	11.8	11.2
20	15.4							-	a53	30	11.8	10.9
21	11.7							-	a540	23.5	11.8	10.9
22	10.8							-	201	22.5	11.8	10.9
23	14.4							(*)	160	21.5	12.2	11.2
24	14.4							30.5	411	a20.5	12.5	11.5
25	15.1							23	497	a18.0	12.5	11.5
26	13.5							23	860	a16.3	12.5	11.5
27	11.7							27.5	490	a15.1	12.5	11.2
28	11.7							47	1,080	14.7	12.2	10.9
29	12.2							-	290	15.1	12.2	10.9
30	*11.1							-	194	15.5	12.2	10.9
31	a11							-	145	-	12.2	-
Total	371.6	-	-	-	-	-	-	-	9,221	2,466.7	422.5	342.9
Mean:												
mgd	12.0	-	-	-	-	-	-	-	297	82.2	13.6	11.4
cfs	18.6	-	-	-	-	-	-	-	460	127	21.0	17.6
Ac-ft	1,140	-	-	-	-	-	-	-	28,300	7,570	1,300	1,050

Calendar year : Max Min Mean(mgd) Mean(cfs) Ac-ft
Fiscal year : Max Min Mean(mgd) Mean(cfs) Ac-ft

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for stations on nearby streams.

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 1951.

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.--32 years (1918-24, 1925-51), 35.5 mgd (54.9 cfs).

Extremes.--1907-51: 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. Ditch diverts water from Waimea River 1 mile downstream from confluence with Waialae River. Flow regulated by headgates. Water used for irrigation in vicinity of Kekaha.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32	41	0	30	30	36.5	41	34.5	28	15.6	51	34.5
2	32	46	0	30	30	32	44	34.5	26.5	24	48	32
3	32	46	0	30	30	36.5	44	34.5	27	28	44	32
4	30	44	0	30	28	34.5	46	34.5	18.2	28	41	32
5	30	41	0	32	28	36.5	48	34.5	23	28	41	32
6	28	32	0	34.5	28	36.5	46	32	15.6	26	41	32
7	28	32	0	32	28	36.5	44	32	10.6	28	39	32
8	28	36.5	0	32	28	36.5	36.5	32	9.9	28	39	32
9	28	32	0	32	28	34.5	36.5	30	9.6	32	36.5	32
10	28	30	0	32	28	34.5	36.5	30	12.2	35.5	36.5	30
11	30	30	0	39	28	38	34.5	31	19.0	41	36.5	30
12	39	28	0	*32	28	36.5	46	40	19.8	41	36.5	30
13	34.5	28	0	32	28	36.5	42	32	21	41	36.5	30
14	32	28.5	0	32	30	36.5	33	30	23	44	36.5	30
15	30	35.5	0	30	28	36.5	38.5	34	19.2	46	34.5	30
16	28	3.85	0	28	28	34.5	48	51	13.8	40	34.5	30
17	39	9.4	0	30	28	42	51	48	16.5	*47	34.5	36.5
18	46	.76	0	32	41	42	51	46	22	51	36.5	34.5
19	46	.28	30.5	30	43	34.5	48	47	28	51	36.5	32
20	41	.14	34.5	28	51	32	44	32	28	51	36.5	30
21	34.5	.05	32	28	51	30	41	32	25.5	48	36.5	30
22	33.5	0	32	29.5	40	30	36.5	32	19.3	46	36.5	30
23	46	0	32	40	32	30	13.7	*32	15.6	51	34.5	30
24	45	0	32	44	36.5	28	0	32	25.5	51	34.5	30
25	48	0	30	47	41	28	0	32	22.5	48	34.5	32
26	45	0	30	42	43	28	0	32	28	46	34.5	30
27	34.5	0	32	41	51	28	0	32	28	46	32	30
28	34.5	0	32	39	41	36.5	0	32	28	44	34.5	30
29	41	0	32	36.5	34.5	36.5	0	-	25	46	34.5	28
30	*36.5	0	30	36.5	32	39	0	-	18.3	51	35	30
31	34.5	0	-	32	-	36.5	26	-	15.6	-	*43	-
Total	1,094.5	544.98	379.0	1,043.0	1,021.0	1,074.0	975.7	975.5	642.2	1,203.1	1,166.0	933.5
Mean:												
mgd	35.3	17.6	12.6	33.6	34.0	34.6	31.5	34.8	20.7	40.1	37.6	31.1
cfs	54.6	27.2	19.5	52.0	52.6	53.5	48.7	53.8	32.0	62.0	58.2	48.1
Ac-ft	3,360	1,670	1,160	3,200	3,130	3,300	2,990	2,990	1,970	3,690	3,580	2,860

Calendar year 1950. Max 53 Min 0 Mean(mgd) 29.7 Mean(cfs) 46.0 Ac-ft 33,280
Fiscal year 1950-51: Max 51 Min 0 Mean(mgd) 30.3 Mean(cfs) 46.9 Ac-ft 33,900

* Discharge measurement made on this day.

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 1951.

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.--25 years (1925-47, 1948-51), 48.5 mgd (75.0 cfs).

Extremes.--Maximum discharge during year, 20,000 mgd (30,900 cfs) Aug. 17 (gage height, about 25 ft, from floodmarks), from rating curve extended above 500 mgd by test on model of station site; no flow at times.
1921-51: Maximum discharge, that of Aug. 17, 1950; no flow occasionally, owing to regulation.

Remarks.--Records fair except those for periods of doubtful or no gage-height record and those above 500 mgd, which are 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.

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 3				Mar. 4 to June 30			
5.6	0	7.3	170	6.1	0.24	7.3	64
5.7	.5	7.6	260	6.2	.55	7.6	121
5.8	1.4	8.0	385	6.3	1.09	8.0	240
5.9	2.9	9.0	820	6.4	2.1	8.5	450
6.0	5.1	10.0	1,350	6.6	6.2	9.0	710
6.2	13.5	11.0	2,050	6.8	15.4	11.0	2,050
6.4	27	13.0	4,000	7.0	30	13.0	4,000
6.6	46	19.0	10,800				
7.0	105						

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	7.4	68	1.3	0.4	0.3	92	0.7	355	160	2.7	0.6
2	0	38	70	1.2	.4	.3	50	.5	888	300	1.7	.6
3	0	17.8	60	1.2	.4	138	12.0	.5	756	650	1.4	.6
4	0	51	56	1.2	.4	74	2.6	.5	4,000	350	1.3	.5
5	0	5.2	52	1.3	.4	43	1.7	.4	800	260	1.2	.5
6	0	0	50	1.3	.4	46	1.6	.4	260	140	1.2	.5
7	0	0	52	1.2	.4	16.5	.9	.2	160	120	1.2	.5
8	0	.9	70	1.1	.4	5.6	.2	.2	130	100	1.2	.5
9	0	0	54	1.1	.4	1.1	0	.2	120	90	1.2	.5
10	0	0	56	1.2	.4	.3	0	.2	100	*80	1.2	.5
11	0	0	130	1.2	.4	22.5	0	.9	1,100	72	1.1	.5
12	5.0	0	125	*.9	.4	109	33	7.7	1,300	268	1.0	.5
13	4.4	0	60	.9	.4	42	144	.1	500	84	1.0	.5
14	.8	0	54	.8	.5	16.4	1,300	0	280	78	1.0	.5
15	0	2,500	50	.7	.4	25	1,470	6.6	230	72	1.0	.5
16	0	10,000	45	.6	.4	.4	466	29	160	42	1.0	.5
17	23	9,000	42	.6	.4	19.4	135	31.5	130	18.8	1.0	.5
18	14.6	1,600	38	.7	1.4	1.0	100	61	110	7.4	1.0	.5
19	9.3	700	15.9	.7	141	0	46	372	110	14.3	1.1	.5
20	9.0	400	3.1	.7	186	0	31.5	1,170	130	14.4	1.1	.4
21	.9	300	2.8	.6	31	0	21.5	295	1,500	12.8	1.1	.4
22	.1	200	2.6	.6	2.5	0	140	97	450	11.5	1.0	.4
23	33	140	2.4	2.4	.5	0	145	*73	250	2.9	1.0	.4
24	30.5	*120	2.2	14.0	.4	0	102	66	500	2.4	1.0	.4
25	18.7	110	2.0	10.2	25.5	0	75	42	550	2.1	1.0	.4
26	10.9	100	1.8	1.5	11.3	0	55	34	1,100	2.0	1.0	.4
27	3.6	90	1.6	1.1	23	0	45	103	700	1.9	1.0	.3
28	4.0	100	1.4	.5	.8	106	40	276	1,400	3.0	1.0	.3
29	6.3	85	1.3	.4	.4	122	37	-	450	48	.8	.3
30	4.4	78	1.3	.4	.2	219	40	-	250	8.4	.8	.3
31	3.7	74	-	.4	-	80	7.9	-	200	-	.6	-
Total	182.2	25,717.3	1,170.4	52.0	430.9	1,087.8	4,594.9	2,668.6	18,969	3,015.9	34.9	13.8
Mean:												
mgd	5.88	830	39.0	1.68	14.4	35.1	148	95.3	612	101	1.13	0.460
cfs	9.10	1,280	60.3	2.60	22.3	54.3	229	147	947	156	1.75	0.712
Ac-ft	559	78,920	3,590	160	1,320	3,340	14,100	8,190	58,210	9,260	107	42

Calendar year 1950. Max 10,000 Min 0 Mean(mgd) 131 Mean(cfs) 203 Ac-ft 146,300
Fiscal year 1950-51: Max 10,000 Min 0 Mean(mgd) 159 Mean(cfs) 246 Ac-ft 177,800

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 15 to Sept. 3, Jan. 26-31, Mar. 4 to Apr. 10, May 28-30; doubtful gage-height record Sept. 4-18; discharge estimated on basis of records for station near Waimea and Kawaikoi Stream.

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 1951.

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.--7 years (1944-51), 84.7 mgd (131 cfs).

Extremes.--Maximum discharge during year, 22,000 mgd (34,000 cfs) Aug. 17 (gage height, 18.7 ft, from floodmarks), from rating curve extended above 3,300 mgd as explained below; *minimum*, 0.60 mgd (0.93 cfs) Aug. 6.
1943-51: 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 except those for periods of no gage-height record, which are fair. Several ditches divert most of low flow for irrigation of sugarcane.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.20	1.04	71	4.6	4.3	7.1	128	12.8	273	180	15.8	6.6
2	1.20	8.0	76	4.5	5.7	7.1	75	10.9	730	305	10.2	5.2
3	1.28	12.8	62	4.5	5.5	127	33	8.1	819	790	8.4	4.8
4	1.28	17.0	58	4.3	5.3	113	20.5	8.1	4,710	428	7.6	4.6
5	1.28	8.7	55	4.0	5.1	66	15.0	6.9	983	310	7.1	4.1
6	1.36	.70	52	3.2	5.0	71	12.5	4.6	316	*168	7.1	3.95
7	1.54	.70	58	3.1	5.0	51	12.0	3.8	*194	132	7.1	3.95
8	1.28	.76	80	4.8	5.0	28.5	10.6	3.55	140	108	7.3	3.95
9	1.12	.90	58	2.95	5.0	24	8.3	*3.35	116	93	7.8	3.95
10	1.04	.83	62	3.8	5.0	17.2	6.3	2.95	100	88	7.1	3.65
11	1.04	.83	149	6.3	4.8	18.7	5.3	2.85	1,290	83	7.1	3.5
12	1.04	.90	143	5.0	4.8	128	22	5.5	1,700	219	7.3	3.5
13	1.86	.90	66	4.3	4.6	a62	27	3.2	568	96	7.1	3.8
14	1.20	.90	58	*4.3	6.2	a34	1,450	2.85	330	83	7.1	3.8
15	1.04	3,080	52	4.5	5.2	*18.4	1,650	2.75	270	84	7.1	3.65
16	1.04	11,200	48	4.5	4.5	13.6	661	20.5	180	60	6.9	3.65
17	2.9	*10,000	45	5.0	4.0	26	112	49	140	35	6.9	4.1
18	12.7	*1,820	42	5.7	4.0	15.8	87	29.5	108	26	6.6	5.0
19	3.3	*a900	37	5.9	106	7.0	44	262	106	24	7.3	3.65
20	4.2	a550	26	5.7	207	4.8	26.5	1,460	126	29	7.3	3.25
21	1.54	a350	18.0	5.5	50	4.3	21.5	300	*1,870	24.5	6.9	2.95
22	1.36	*a230	13.2	5.3	25.5	4.3	88	96	551	23.5	6.6	2.95
23	12.9	151	9.3	6.3	18.8	5.3	149	62	285	22.5	6.2	2.8
24	7.0	129	7.1	5.9	16.0	5.3	84	62	540	15.7	5.8	4.1
25	14.8	112	6.3	21.5	15.7	5.3	58	43	651	12.7	6.4	3.95
26	3.65	102	5.5	5.7	28	3.8	52	32	1,450	10.2	5.8	3.5
27	1.74	94	5.3	5.7	18.8	3.3	47	86	828	9.7	5.4	3.1
28	1.04	98	5.1	5.0	16.8	24	44	190	*1,840	9.2	5.4	2.8
29	1.28	89	5.1	4.8	11.7	217	40	-	532	20.5	5.4	2.7
30	1.12	80	4.8	4.8	9.1	208	43	-	316	43	*5.4	2.8
31	.90	76	-	4.6	-	117	30	-	230	-	7.1	-
Total	90.23	29,115.96	1,377.7	166.05	612.4	1,437.8	5,062.5	2,774.20	22,292	3,532.5	222.6	114.30
Mean:												
mgd	2.91	939	45.9	5.36	20.4	46.4	163	99.1	719	118	7.18	3.81
cfs	4.50	1,450	71.0	8.29	31.6	71.8	252	153	1,110	183	11.1	5.89
Ac-ft	277	89,350	4,230	510	1,880	4,410	15,540	8,510	68,410	10,840	683	351

Calendar year 1950: Max 11,200 Min 0.70 Mean(mgd) 141 Mean(cfs) 218 Ac-ft 157,800
Fiscal year 1950-51: Max 11,200 Min 0.70 Mean(mgd) 183 Mean(cfs) 283 Ac-ft 205,000

Peak discharge (base, 5,600 mgd).--Aug. 17 (6 a.m.) 22,000 mgd (34,000 cfs), 18.7 ft, from floodmarks; Mar. 4 (2:30 a.m.) 16,500 mgd (25,700 cfs), 17.00 ft; Mar. 11 (9:30 p.m.) 5,620 mgd (8,700 cfs), 11.20 ft; Mar. 21 (4 p.m.) 8,660 mgd (13,400 cfs), 13.60 ft.

* Discharge measurement made on this day.

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

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 1951.

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.--12 years (1912-17, 1944-51), 61.4 mgd (95.0 cfs).

Extremes.--Maximum discharge during year, 8,300 mgd (12,800 cfs) Mar. 4 (gage height, 11.01 ft), from rating curve extended above 150 mgd on basis of slope-area determination at gage height, 9.46 ft; minimum, 2.8 mgd (4.3 cfs) June 22.
1943-51: Maximum discharge, that of Mar. 4, 1951; minimum, that of June 22, 1951.

Remarks.--Records good except those above 150 mgd, which are fair.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.9	12.2	20	9.1	6.7	7.2	57	13.4	489	35	18.0	7.2
2	21	24	22	8.6	8.1	7.6	21.5	12.4	786	67	16.9	6.7
3	12.7	13.8	18.5	8.6	7.2	44	14.4	11.9	774	128	14.9	6.3
4	9.9	110	22.5	9.5	6.3	29	13.4	11.4	2,090	*94	12.9	5.9
5	9.2	17.8	18.5	14.3	6.3	13.4	12.4	11.4	527	52	12.4	5.9
6	9.6	11.3	16.9	11.0	6.3	*11.4	11.9	11.0	186	39	12.4	7.8
7	9.2	*30	15.9	9.1	5.9	10.5	11.4	10.0	135	31	11.9	18.3
8	9.6	17.3	21.5	9.1	5.9	9.1	10.0	9.5	87	30	11.9	7.2
9	8.9	11.0	19.6	9.1	5.9	8.6	9.5	9.1	71	26.5	11.4	5.0
10	11.7	20.5	15.4	25.5	5.4	7.6	9.1	8.6	66	35.5	11.4	4.6
11	12.8	10.0	133	16.9	5.4	7.6	10.5	8.1	816	46	13.4	4.6
12	13.3	8.6	115	11.0	5.4	27	119	8.6	594	55	11.0	5.4
13	11.0	8.3	28.5	*9.5	5.0	13.4	112	8.6	196	34	10.0	6.3
14	9.6	8.3	18.0	9.5	8.6	9.5	450	8.1	116	33	10.5	6.3
15	9.6	471	15.9	9.1	9.1	8.1	714	*19.9	87	27	10.0	4.6
16	10.2	1,980	16.4	8.6	8.1	7.6	301	18.4	66	21	10.5	16.4
17	48	2,790	24.5	7.6	8.1	8.1	76	22	59	19.0	10.5	9.1
18	18.5	365	17.3	7.2	7.6	8.1	72	36	52	18.0	14.9	5.0
19	15.8	144	12.9	6.7	13.0	7.2	31.5	457	139	17.4	13.4	4.1
20	11.7	92	12.4	6.3	48	7.2	21.5	984	174	27	11.4	4.1
21	9.6	76	11.9	6.3	27.5	6.7	18.5	167	922	18.0	9.1	4.1
22	23.5	61	11.9	36.5	10.0	6.7	33	82	200	41	8.6	3.7
23	25	52	11.0	20	8.6	6.7	29.5	66	98	16.4	8.6	4.1
24	57	47	10.5	32.5	7.2	6.7	20	54	98	14.9	8.6	4.6
25	30.5	42	11.0	18.9	9.1	7.2	16.4	30	116	13.9	9.5	5.9
26	13.2	29	11.0	10.5	10.6	7.2	14.4	27.5	343	13.9	8.6	4.6
27	10.2	26.5	11.0	10.5	19.6	7.2	13.4	117	160	12.9	9.1	4.1
28	34	34	10.5	10.0	7.6	17.8	12.4	396	248	15.5	10.0	4.1
29	15.5	24.5	10.0	10.5	8.7	29.5	12.4	-	108	89	7.6	4.6
30	11.3	21.5	9.5	8.1	6.7	15.8	16.9	-	82	33.5	15.1	5.9
31	9.9	20.5	-	8.7	-	32.5	15.9	-	42	-	11.0	-
Total	511.9	6,579.1	693.0	376.8	295.9	396.2	2,280.9	2,618.9	9,907	1,104.4	355.5	186.5
Mean:												
mgd	16.5	212	23.1	12.2	9.86	12.8	73.6	93.5	320	36.8	11.5	6.22
cfs	25.5	328	35.7	18.9	15.3	19.8	114	145	495	56.9	17.8	9.62
Ac-ft	1,570	20,190	2,130	1,160	908	1,220	7,000	8,040	30,400	3,390	1,090	572

Calendar year 1950. Max 2,790 Min 5.0 Mean(mgd) 53.2 Mean(cfs) 82.3 Ac-ft 59,640
Fiscal year 1950-51: Max 2,790 Min 3.7 Mean(mgd) 69.3 Mean(cfs) 107 Ac-ft 77,670

Peak discharge (base, 1,300 mgd).--Aug. 17 (12:30 a.m.) 5,960 mgd (9,220 cfs), 9.82 ft; Feb. 20 (12:30 a.m.) 3,590 mgd (5,550 cfs), 8.32 ft; Mar. 4 (2:30 a.m.) 8,300 mgd (12,800 cfs), 11.01 ft; Mar. 11 (7:30 p.m.) 4,300 mgd (6,650 cfs), 8.82 ft; Mar. 21 (3 p.m.) 5,450 mgd (8,430 cfs), 9.52 ft.
* Discharge measurement made on this day.

Hanapepe River at Koula, near Eleele

Location.--Lat 21°57'20", long. 159°33'15", on left bank just downstream from Manuahi Stream, 4 miles northeast of Eleele.

Drainage area.--18.8 sq mi.

Records available.--May 1917 to January 1921, December 1926 to June 1951. 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.--27 years (1917-20, 1927-51), 56.4 mgd (87.3 cfs).

Extremes.--Maximum discharge during year, 5,890 mgd (9,110 cfs) Aug. 16 (gage height, 8.90 ft), from rating curve extended as explained below; minimum, 6.2 mgd (9.6 cfs) June 9-13, 15, 20-23, 25, 26, 28, 29.

1910-21, 1926-51: Maximum discharge, 10,400 mgd (16,100 cfs) Dec. 17, 1949 (gage height, 11.74 ft), from rating curve extended above 2,400 mgd by test on model of station site; minimum, 6.2 mgd (9.6 cfs) Oct. 4, 5, 1939, June 9-13, 15, 20-23, 25, 26, 28, 29, 1951.

Remarks.--Records fair except those for period of doubtful or no gage-height record and those above 2,400 mgd, which are poor. Hanapepe ditch diverts water from river 3 miles above station for irrigation in vicinity of Makaweli.

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 11

-0.6	6.2	1.0	145
-.4	10.8	2.0	360
-.2	18.8	3.0	710
0	30	4.0	1,260
.5	74	5.0	1,930

Mar. 12 to June 30

-0.4	5.2	0.4	56
-.2	11.1	.8	113
0	21	1.0	145
.2	35.5		

Note.--Same as preceding table above 1.0 ft.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.7	20	14	9	9.5	8.5	13.9	10.0	381	12.8	17.0	7.3
2	29	33	13	9	9.8	8.7	12.7	11.5	460	17.6	13.4	7.0
3	28	14.8	12	8.5	9.5	36	8.7	9.8	555	51	16.9	6.8
4	13.7	113	13	8	9.5	14.5	8.5	10.0	1,330	*32.5	10.1	7.0
5	13.3	20	12	11	9.8	9.0	8.7	9.8	546	15.3	8.5	7.0
6	12.6	13.7	11	10	9.5	8.2	9.0	10.8	243	18.2	8.1	8.2
7	12.2	30.5	36	10	9.5	8.0	8.5	10.8	188	14.0	7.8	23
8	12.6	21.5	35	9.5	9.5	7.6	8.2	10.8	108	17.7	7.5	7.8
9	12.2	16.6	30	9.5	9.5	7.6	8.0	*10.0	51	15.9	7.3	6.8
10	13.0	45	32	29.5	9.0	7.8	7.6	9.2	41	36	7.3	6.5
11	15.7	18.8	145	11	8.7	8.2	8.0	8.7	*859	34.5	8.1	6.2
12	14.4	14.4	175	10	8.7	8.7	110	8.7	583	23	7.0	6.5
13	12.6	13.3	41	9:5	9.0	8.5	223	8.2	178	13.6	7.0	8.0
14	12.2	*12.8	25	*9.5	10.0	8.2	350	8.5	86	27	7.0	7.3
15	14.4	189	21	9.5	9.5	8.2	772	10.3	51	16.9	7.0	6.5
16	15.3	1,300	18	9.5	9.5	8.0	319	10.0	34	11.9	7.8	21.5
17	49	1,130	45	9.5	10.0	8.0	70	13.8	24	10.4	7.3	10.4
18	23	*204	25	9.8	9.2	8.0	64	24	19.9	10.1	9.9	7.8
19	25	88	18	9.8	9.2	8.0	25	585	94	10.1	8.5	6.8
20	14.0	53	15	9.8	32	8.0	17.9	775	97	28.5	7.3	6.2
21	12.6	38	13	9.5	17.4	8.0	18.5	129	*806	15.3	7.0	6.2
22	37.5	31.5	11	24.5	9.2	8.0	52	46	171	62	7.5	6.2
23	21	26	10	15.3	9.0	8.0	16.6	28	66	12.2	7.3	6.2
24	70	23	10	29	9.0	8.2	11.9	19.8	38	9.4	7.0	7.3
25	49	21	9.5	13.4	9.2	8.2	10.8	16.2	29	8.8	7.3	7.5
26	17.9	20	9.5	10.5	18.4	8.0	10.8	15.3	104	8.5	7.3	6.8
27	15.3	19	9.5	10.3	20.5	8.0	10.5	110	58	8.1	8.1	6.8
28	55	34.5	9	12.1	9.5	8.2	10.3	338	62	9.3	7.8	6.5
29	24.5	20	9	12.6	9.0	9.5	10.5	-	31.5	105	7.5	6.5
30	17.5	18	9	10.3	*8.7	7.8	10.5	-	17.6	28	*12.5	6.5
31	18.4	15	-	9.5	-	8.7	10.3	-	14.5	-	9.1	-
Total	694.6	3,617.4	835.5	368.9	330.8	288.3	2,225.4	2,257.2	7,326.5	683.6	269.2	241.1
Mean:												
mgd	22.4	117	27.8	11.9	11.0	9.30	71.8	80.6	236	22.8	8.68	8.04
cfs	34.7	181	43.0	18.4	17.0	14.4	111	125	365	35.3	13.4	12.4
Ac-ft	2,130	11,100	2,560	1,130	1,020	885	6,830	6,930	22,480	2,100	826	740

Calendar year 1950. Max 1,300 Min 7.6 Mean(mgd) 57.8 Mean(cfs) 89.4 Ac-ft 64,780
Fiscal year 1950-51: Max 1,330 Min 6.2 Mean(mgd) 52.4 Mean(cfs) 81.1 Ac-ft 58,730

Peak discharge (base, 2,300 mgd).--Aug. 16 (5 a.m.) 5,890 mgd (9,110 cfs), 8.90 ft; Feb. 19 (11 p.m.) 2,730 mgd (4,220 cfs), 5.88 ft; Mar. 4 (2 a.m.) 3,730 mgd (5,770 cfs), 6.91 ft; Mar. 11 (7 p.m.) 5,010 mgd (7,750 cfs), 8.11 ft; Mar. 21 (3 p.m.) 4,240 mgd (6,560 cfs), 7.41 ft.

* Discharge measurement made on this day.

Note.--Doubtful or no gage-height record Aug. 24-27, Aug. 29 to Sept. 6, 9, 10, 15, 16, Sept. 18 to Oct. 9, Oct. 11 to Nov. 30, Jan. 20, 21, Feb. 6-9; discharge estimated on basis of recorder graph and records 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 1951.

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.--29 years (1921-24, 1925-51), 66.9 mgd (104 cfs).

Extremes.--Maximum discharge during year, 10,300 mgd (15,900 cfs) Aug. 16 (gage height, 10.6 ft, from floodmarks); minimum not determined.
1911-51: 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 periods of no gage-height record, which are poor.

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 20 to Sept. 14, Sept. 17-19, Oct. 10 to Jan. 13)

July 1 to Oct. 9

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		

Oct. 10 to June 30

0.6	1.55	1.6	20.5
.7	2.2	2.0	47
.8	3.0	2.5	111
1.0	5.2	3.0	225
1.2	8.7		

Note.--Same as preceding table above 3.0 ft.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.64	1.56	2.95	2.2	2.0	2.95	2.35	3.2	79	75	10.7	2.75
2	1.58	2.2	2.95	2.2	1.94	2.1	2.4	3.1	57	140	6.9	2.6
3	2.1	2.45	2.95	2.2	1.86	44	3.0	3.0	160	150	7.7	2.6
4	1.75	52	2.95	2.2	1.86	27	3.2	2.9	849	140	7.1	2.35
5	2.05	3.1	2.95	2.2	2.1	13.8	3.5	2.85	895	75	5.8	2.35
6	1.58	1.64	2.95	2.2	2.0	5.0	4.0	2.75	470	72	5.6	2.2
7	1.42	1.94	2.95	*2.2	1.86	3.5	3.85	2.7	307	68	4.7	2.7
8	1.42	1.81	3.05	2.2	1.78	3.5	22	2.6	92	66	4.4	3.4
9	1.32	1.75	3.05	2.2	1.78	3.3	7.7	2.5	62	70	4.2	2.35
10	1.27	1.53	3.0	23	1.70	2.8	3.3	2.5	73	121	4.1	2.2
11	1.32	1.85	51	34.5	1.78	3.2	2.6	2.5	1,000	166	4.4	2.15
12	1.37	1.53	63	9.9	1.70	3.6	61	*2.6	600	136	4.6	2.15
13	1.37	1.42	5.4	4.0	1.64	3.6	29	2.45	300	85	4.2	2.05
14	1.42	1.37	3.2	3.3	1.64	2.9	440	2.35	150	102	4.0	2.15
15	1.48	245	2.8	2.9	1.70	2.2	477	2.6	80	84	3.9	2.05
16	1.58	1,200	2.6	*2.6	1.64	2.0	272	2.85	60	66	3.7	2.35
17	5.0	1,000	57	2.4	1.70	1.94	72	3.5	45	55	3.5	2.7
18	3.2	500	9.5	2.8	1.70	1.94	73	3.8	37	54	3.7	2.45
19	1.94	300	3.1	2.5	1.78	1.94	39	425	300	35.5	4.1	2.0
20	1.81	90	2.7	2.5	15.9	1.94	20.5	823	100	68	3.7	1.81
21	1.58	73	2.5	2.5	18.5	1.94	18.4	99	500	45	3.5	1.74
22	1.81	55	2.45	3.45	2.95	1.86	18.3	63	180	113	*3.3	1.74
23	2.35	25	2.4	4.1	2.25	1.86	47	58	90	37	3.0	1.74
24	47	8.1	2.35	2.8	2.1	1.86	59	35.5	110	11.2	3.2	1.68
25	9.3	3.8	2.35	2.7	2.25	1.78	36.5	26.5	120	*8.5	3.3	1.62
26	3.25	3.5	2.3	2.5	2.85	1.70	38	33	320	7.9	3.3	1.62
27	1.75	3.45	2.3	2.7	19.5	1.86	26.5	54	250	7.3	3.1	1.62
28	12.7	3.5	2.3	2.5	4.3	2.0	6.5	43	700	7.3	3.3	1.55
29	2.7	3.25	2.2	*2.5	*3.75	2.25	3.9	-	250	68	3.1	1.55
30	1.58	3.0	2.2	2.35	3.05	2.35	3.4	-	140	32	2.9	1.74
31	1.48	3.0	-	2.2	-	2.0	3.3	-	100	-	3.1	-
Total	122.12	3,595.75	253.40	140.50	111.56	154.67	1,802.20	1,710.75	8,476	2,165.7	136.1	63.96
Mean:												
mgd	3.94	116	8.45	4.53	3.72	4.99	58.1	61.1	273	72.2	4.39	2.13
cfs	6.10	179	13.1	7.01	5.76	7.72	89.9	94.5	422	112	6.79	3.30
Ac-ft	375	11,030	778	431	342	475	5,530	5,250	26,010	6,650	418	196

Calendar year 1950: Max 1,200 Min 1.27 Mean(mgd) 60.6 Mean(cfs) 93.8 Ac-ft 67,900
Fiscal year 1950-51: Max 1,200 Min 1.27 Mean(mgd) 51.3 Mean(cfs) 79.4 Ac-ft 57,480

Peak discharge (base, 2,900 mgd).--Aug. 16 (time unknown) 10,300 mgd (15,900 cfs), 10.6 ft, from floodmarks; Mar. 11 (time unknown) 7,380 mgd (11,400 cfs), 8.75 ft.
* Discharge measurement made on this day.
Note.--No gage-height record Aug. 16-19, 30, 31, Sept. 15, 16, Sept. 20 to Oct. 9, Mar. 10 to Apr. 6; discharge estimated on basis of records for stations on nearby streams.

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 1951 in reports of Geological Survey. 1926 to June 1932 in files of Lihue Plantation Co.

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

Average discharge.--19 years, 23.1 mgd (35.7 cfs).

Extremes.--1932-51: Maximum daily discharge, 64 mgd (99 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.7	21	20.5	18.0	16.4	20	20.5	15.2	23	0.75	0.51	17.2
2	4.1	24	18.8	17.2	16.4	19.6	18.8	15.2	21	2.5	.75	17.2
3	2.9	21	18.4	18.4	16.0	26.5	19.2	15.2	31.5	3.15	.62	16.8
4	2.7	26	20	20.5	16.0	23	19.2	14.8	35.5	2.4	.51	16.8
5	2.4	21.5	18.8	20	16.4	21	19.6	14.5	27	1.04	.40	16.8
6	2.9	20	18.8	18.0	16.0	20.5	19.2	14.5	16.6	1.04	.40	18.8
7	2.9	23	22.5	18.8	15.6	19.2	18.4	14.1	16.2	.75	.40	20.5
8	2.9	21.5	20	18.8	16.8	18.8	17.6	14.1	9.8	.62	.40	17.2
9	2.7	22.5	19.6	18.8	16.8	18.4	17.6	13.7	8.1	.62	.40	17.2
10	3.1	25	22	22	15.6	18.4	17.2	13.7	7.2	.75	8.8	17.2
11	3.35	21	30.5	20.5	15.6	19.6	17.6	15.2	17.1	1.66	20.5	18.0
12	9.1	20	27.5	19.2	15.6	20.5	28	14.1	9.4	3.1	18.4	18.0
13	18.8	19.6	22.5	18.4	15.2	19.6	28	14.1	3.35	1.04	18.0	19.6
14	19.2	23	21.5	17.6	16.0	18.8	29	13.9	2.4	1.37	18.0	17.2
15	22	35.5	21.5	17.2	15.2	18.0	32.5	16.8	1.91	.75	18.0	18.0
16	20.5	38	22	16.8	15.2	18.4	24.5	16.0	1.73	.62	19.2	23
17	24	38	24	17.2	16.4	17.6	21.5	17.6	1.55	.62	18.8	20
18	22.5	26	21.5	17.6	18.0	16.8	20.5	18.0	1.55	.51	22	17.6
19	21.5	20	20	16.8	23.5	16.8	18.0	33	10.4	1.26	21.5	16.8
20	20	*18	19.2	18.0	28.5	16.4	17.2	28	5.4	.89	20	16.4
21	20	16.8	18.8	16.8	23	16.0	16.8	15.6	12.3	.93	18.4	16.4
22	23	15.6	18.4	21	19.2	16.0	19.2	12.6	2.4	.75	18.0	16.8
23	20.5	15.2	18.4	18.8	18.4	16.0	18.4	11.5	2.4	.62	18.0	16.4
24	26	14.8	18.0	21.5	18.4	15.6	16.8	11.1	2.8	.51	18.4	16.8
25	23.5	17.2	18.0	19.2	21.5	15.6	16.4	10.4	6.9	.40	18.4	16.4
26	21	20	18.0	19.2	24	15.2	15.6	11.1	13.4	.40	18.0	16.4
27	21.5	20	18.0	*19.2	22	15.6	15.6	18.0	6.7	.40	21	16.0
28	26.5	21	18.0	18.4	21.5	21.5	15.2	24.5	14.5	.51	18.8	16.0
29	21.5	19.2	17.6	18.8	19.2	19.6	14.8	-	2.5	1.37	17.6	16.8
30	21	18.8	17.6	16.8	18.4	21.5	15.2	-	1.37	.98	21.5	16.8
31	21.5	18.8	-	16.8	-	18.4	14.8	-	1.04	-	18.0	-
Total	456.25	682.0	610.4	576.3	546.8	578.9	602.9	446.5	317.00	32.31	413.69	525.1
Mean:												
mgd	14.7	22.0	20.3	18.6	18.2	18.7	19.4	15.9	10.2	1.08	13.3	17.5
cfs	22.7	34.0	31.4	28.8	28.2	28.9	30.0	24.6	15.8	1.67	20.6	27.1
Ac-ft	1,400	2,090	1,870	1,770	1,680	1,780	1,850	1,370	973	99	1,270	1,610

Calendar year 1950: Max 38 Min 0.75 Mean(mgd) 13.1 Mean(cfs) 20.3 Ac-ft 14,700
Fiscal year 1950-51: Max 38 Min 0.40 Mean(mgd) 15.9 Mean(cfs) 24.6 Ac-ft 17,760

* Discharge measurement made on this day.

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 1951 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.--19 years, 12.2 mgd (18.9 cfs).

Extremes.--1932-51: Maximum daily discharge, 38 mgd (59 cfs) Dec. 21, 1933, and Apr. 24, 1934; no flow Apr. 1, 7, 13, 1938, Jan. 24, Dec. 19, 20, 1949.

Remarks.--Records good. Water used for power and irrigation in vicinity of Lihue.

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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.8	14.0	12.3	10.7	10.5	11.6	13.5	10.5	15.6	11.0	10.1	10.7
2	15.1	15.0	11.6	10.5	10.5	11.9	12.3	10.5	15.6	12.3	10.5	10.5
3	13.1	13.8	11.3	11.9	10.2	15.1	13.0	10.2	16.5	8.8	10.7	10.2
4	12.2	16.1	13.0	12.8	10.3	13.6	14.0	10.2	17.8	8.8	10.5	10.2
5	12.7	14.9	12.3	12.8	10.7	12.6	14.6	9.9	11.3	9.6	11.6	10.5
6	13.1	13.5	11.6	11.0	10.2	13.4	14.0	9.9	9.1	11.3	11.9	12.5
7	12.2	16.0	13.3	11.3	9.9	12.5	12.5	9.6	9.5	11.0	12.2	15.0
8	12.2	15.3	13.4	11.0	10.2	11.9	11.6	9.6	9.6	11.0	12.2	10.7
9	11.9	15.4	12.2	11.9	10.0	11.0	11.6	9.6	12.8	11.3	11.8	11.0
10	13.0	16.6	13.1	15.1	9.9	11.8	11.0	9.6	12.5	10.5	12.1	10.7
11	13.4	14.9	17.2	13.8	9.9	12.7	13.0	11.0	13.4	9.9	12.5	11.0
12	13.4	14.0	16.2	13.2	9.6	13.6	17.9	9.6	12.8	9.6	11.3	11.8
13	11.9	13.4	14.1	12.2	9.6	*13.1	18.2	9.6	11.9	9.9	11.3	12.9
14	12.2	14.9	13.4	11.3	9.9	12.2	18.3	9.6	11.6	11.1	11.0	11.0
15	14.4	17.1	14.0	11.0	9.9	11.0	18.1	13.8	11.6	10.7	11.0	12.1
16	13.2	11.8	14.0	10.7	9.9	11.7	15.9	11.0	11.6	10.7	11.2	17.8
17	15.7	3.35	15.9	11.0	10.0	11.0	16.0	14.1	11.6	11.0	11.3	13.8
18	14.7	5.3	14.0	12.2	10.4	10.5	15.3	15.0	11.6	11.6	12.8	11.6
19	14.2	12.8	13.1	10.5	13.9	10.2	14.3	14.5	12.6	12.8	11.6	10.7
20	13.9	12.5	12.6	11.0	18.3	10.2	13.7	11.0	12.6	13.3	11.0	10.5
21	14.3	13.7	12.2	10.5	14.8	9.9	13.1	11.6	10.3	12.5	10.7	10.5
22	16.6	14.0	11.6	15.7	12.2	9.9	14.1	13.3	9.9	12.5	10.7	10.5
23	15.3	13.7	11.3	13.4	11.6	9.9	13.4	14.6	10.6	11.6	*10.6	10.2
24	18.1	13.4	11.4	14.9	11.1	9.9	12.4	13.4	11.1	11.6	11.3	11.6
25	16.8	13.1	11.3	12.4	14.3	9.9	11.9	12.5	11.5	11.8	11.0	10.2
26	15.0	12.8	11.0	11.9	16.2	9.6	11.6	14.3	9.1	12.2	11.0	9.9
27	14.5	12.8	11.0	13.7	14.6	10.0	11.3	14.9	8.2	12.2	11.6	10.2
28	16.6	13.4	10.7	11.9	13.7	14.7	11.0	15.4	8.1	13.7	11.3	9.9
29	14.9	11.9	10.7	12.3	12.2	13.1	11.0	-	8.0	12.7	10.8	10.5
30	14.3	11.9	10.7	10.7	11.6	12.8	11.0	-	9.3	9.9	11.9	10.5
31	14.0	11.6	-	10.5	-	11.0	10.5	-	10.5	-	11.0	-
Total	435.7	412.95	380.5	373.8	346.1	362.3	420.1	328.8	358.2	336.9	350.5	339.2
Mean:												
mgd	14.1	13.3	12.7	12.1	11.5	11.7	13.6	11.7	11.6	11.2	11.3	11.3
cfs	21.8	20.6	19.6	18.7	17.8	18.1	21.0	18.1	17.8	17.3	17.5	17.5
Ac-ft	1,340	1,270	1,170	1,150	1,060	1,110	1,290	1,010	1,100	1,030	1,080	1,040

Calendar year 1950: Max 18.3 Min 0.36 Mean(mgd) 12.6 Mean(cfs) 19.5 Ac-ft 14,130
Fiscal year 1950-51: Max 18.3 Min 3.35 Mean(mgd) 12.2 Mean(cfs) 18.9 Ac-ft 13,650

* Discharge measurement made on this day.

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 1951.

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

Average discharge.--14 years (1937-51), 7.15 mgd (11.1 cfs).

Extremes.--1936-51: Maximum daily discharge, 46 mgd (71 cfs) Apr. 3, 1948; no flow at times each year.

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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	26	21.5	21.5	0	28	21.5	0	0	0	21.5
2	0	21	26	21.5	21.5	0	28	21.5	0	0	0	21.5
3	0	28	24.5	23	19.8	0	28	21.5	0	0	0	19.8
4	0	10.2	28	26	19.8	0	29.5	21.5	.30	0	0	19.8
5	0	0	26	26	21.5	0	29.5	19.8	0	0	0	19.8
6	0	0	26	23	19.8	0	28	19.8	0	0	0	23
7	6.5	0	28	23	19.8	0	26	19.8	0	0	4.1	24.5
8	9.4	0	28	23	21.5	0	17.4	19.8	0	0	8.2	21.5
9	8.9	0	26	24.5	21.5	0	0	19.8	0	0	7.9	21.5
10	10.0	21	28	29.5	19.8	0	10.0	19.8	0	0	13.9	19.8
11	11.7	28	34.5	28	19.8	0	24.5	21.5	.82	0	26	21.5
12	14.6	28	10.3	28	19.8	0	16.0	19.8	0	0	24.5	22
13	23	28	20.5	24.5	19.8	0	0	19.8	0	0	24.5	23
14	24.5	29.5	29.5	23	19.8	0	0	18.3	0	0	23	21.5
15	26	17.4	29.5	21.5	19.8	15.4	0	24	0	0	23	21.5
16	24.5	1.47	31	21.5	19.8	23	0	21.5	0	0	24.5	28
17	28	.93	23	21.5	21.5	23	0	26	0	0	23	24.5
18	26	0	0	23	23	21.5	0	26	0	.09	28	21.5
19	26	0	0	21.5	29.5	21.5	0	11.3	0	.10	26	19.8
20	26	0	17.5	23	34.5	21.5	0	0	0	0	24.5	19.8
21	26	0	26	21.5	29.5	21.5	0	0	.38	0	23	19.8
22	31	0	24.5	29.5	26	19.8	0	0	0	0	21.5	19.8
23	29.5	8.8	24.5	26	24.5	19.8	0	0	0	0	*21.5	19.8
24	21	28	24.5	*28	23	19.8	0	0	0	0	23	19.8
25	0	28	24.5	24.5	28	19.8	0	0	0	0	23	18.3
26	0	28	23	24.5	29.5	19.8	0	0	0	0	23	18.3
27	0	28	23	24.5	29.5	19.8	0	0	0	0	26	18.3
28	0	29.5	23	*23	28	28	0	0	0	0	24.5	18.3
29	0	28	23	24.5	24.5	28	16.5	-	0	0	21.5	19.8
30	0	26	21.5	23	14.3	26	23	-	0	0	26	19.8
31	0	26	-	21.5	-	24.5	21.5	-	0	-	23	-
Total	372.7	443.80	699.8	747.0	690.6	372.7	325.9	393.0	1.50	0.19	537.1	627.8
Mean:												
mgd	12.0	14.3	23.3	24.1	23.0	12.0	10.5	14.0	0.048	0.006	17.3	20.9
cfs	18.6	22.1	36.1	37.3	35.6	18.6	16.2	21.7	0.074	0.009	26.8	32.3
Ac-ft	1,140	1,360	2,150	2,290	2,120	1,140	1,000	1,210	4.6	0.6	1,650	1,930

Calendar year 1950: Max 34.5 Min 0 Mean(mgd) 9.67 Mean(cfs) 15.0 Ac-ft 10,820
Fiscal year 1950-51: Max 34.5 Min 0 Mean(mgd) 14.3 Mean(cfs) 22.1 Ac-ft 16,000

* Discharge measurement made on this day.

North Fork Wailua River at altitude 650 ft, 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 1951.

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.--30 years (1921-51), 49.1 mgd (76.0 cfs).

Extremes.--Maximum discharge during year, 3,900 mgd (6,030 cfs) Aug. 16 (gage height, 11.85 ft), from rating curve extended above 240 mgd by test on model of station site; minimum, 0.27 mgd (0.42 cfs) June 28-30.
1914-51: 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, that of June 28-30, 1951.

Remarks.--Records good except those for periods of fragmentary or no gage-height record, which are poor. 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 29				Apr. 29 to June 30			
1.0	0.16	2.0	23.5	0.9	0.23	1.5	8.3
1.1	.39	2.5	54	1.0	.66	1.7	14.5
1.2	.92	3.0	93	1.1	1.40	2.0	29.5
1.3	1.86	4.0	211	1.2	2.45	2.5	64
1.4	3.25	5.0	436	1.3	3.95		
1.6	7.7	5.2	497				
1.8	14.0						

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.3	35	3.5	0.47	0.35	25	12.8	0.39	84	36	23.5	0.44
2	26	19.4	3.5	.47	.35	26.5	2.4	.39	83	68	32.5	.38
3	11.2	5.2	3.5	.47	.35	57	9.5	.39	139	70	25.5	.36
4	9.9	70	.67	.43	.35	33	1.0	.39	330	52	18.9	.32
5	9.9	36	.67	1.10	.35	*26	3.0	.39	258	31	16.3	.36
6	10.5	30.5	.67	.52	.35	25	1.0	.39	134	33.5	13.4	.44
7	4.1	41	3.55	.47	.35	23	.80	.32	120	28.5	7.7	3.0
8	.99	38	1.97	.57	.35	22.5	25	.32	55	25.5	.88	.44
9	.92	37	.92	.52	.35	21	25	.32	40	28	.81	.36
10	.92	33	2.1	8.5	.35	22.5	25	.32	32	31.5	.96	.36
11	.85	7.4	51	19.3	.32	25	.40	.29	350	38.5	3.9	.36
12	1.04	1.64	57	2.6	.32	29.5	8.0	.29	200	f55	.88	.36
13	1.24	1.53	14.8	.79	.32	25	50	*.29	92	26	.81	.91
14	1.15	9.9	1.76	.57	.32	23.5	150	.29	53	34.5	.81	.44
15	5.6	263	2.55	.57	.32	8.6	180	.62	37	21.5	.76	.36
16	2.2	480	2.5	.52	.32	.74	80	.35	30	18.0	.81	5.5
17	16.0	400	41	.52	.32	.55	50	.85	25	15.4	.73	.73
18	7.5	100	31	.47	.57	.47	36	2.85	21	13.6	3.5	.44
19	5.1	60	26.5	.47	11.1	.43	32	257	150	27	2.25	.40
20	1.76	46	9.2	.57	53	.39	28	270	50	32.5	.73	.36
21	1.07	40	.57	.57	10.2	.39	26	69	280	27.5	.62	.36
22	9.1	24	.57	6.0	.52	.39	32	39.5	82	29.5	*.57	.36
23	2.85	4.0	.52	.78	.35	.39	29	27	47	15.4	.53	.36
24	41	3.5	.52	2.85	.32	.39	26	22	58	13.3	.53	.36
25	46	3.5	.52	.52	3.9	.35	23	20	60	*11.9	.57	.32
26	32	3.5	.52	.47	24.5	.35	22	21.5	150	11.6	.53	.32
27	30	3.5	.52	.47	5.0	.35	22	f53	115	10.2	1.75	.32
28	61	4.0	.47	*.47	1.43	12.6	21	f50	370	18.4	.73	.27
29	36.5	3.8	.47	.52	.47	4.0	3.5	-	100	60	.53	.27
30	33.5	3.7	.47	.43	9.3	3.75	.39	-	60	29.5	4.3	.27
31	33	3.5	-	.39	-	.57	.39	-	45	-	.49	-
Total	456.19	1,811.57	263.51	53.37	126.40	419.21	925.18	838.45	3,650	913.3	166.78	19.53
Mesn:												
mgd	14.7	58.4	8.78	1.72	4.21	13.5	29.8	29.9	118	30.4	5.38	0.651
cfs	22.7	90.4	13.6	2.66	6.51	20.9	46.1	46.3	183	47.0	8.32	1.01
Ac-ft	1,400	5,560	809	164	388	1,290	2,840	2,570	11,200	2,800	512	60

Calendar year 1950. Max 480 Min 0.32 Mean(mgd) 29.9 Mean(cfs) 46.3 Ac-ft 33,550
Fiscal year 1950-51: Max 480 Min 0.27 Mean(mgd) 26.4 Mean(cfs) 40.8 Ac-ft 29,590

Peak discharge (base, 1,260 mgd).--Aug. 16 (time unknown) 3,900 mgd (6,030 cfs), 11.85 ft from floodmarks; Feb. 20 (1 a.m.) 1,380 mgd (2,140 cfs), 7.42 ft.
* Discharge measurement made on this day.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
Note.--No gage-height record Aug. 16 to Sept. 5, Jan. 4-31, Mar. 7 to Apr. 3; discharge estimated on basis of records for stations on nearby streams and ditches.

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 1951.

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.--1910-51: 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.80	0.57	0.21	0.80	0.55	2.4	1.11	0.43	0.95	0.12	0.12	0.03
2	.80	.43	.12	.80	.55	2.4	1.64	.67	1.24	.12	.12	.05
3	.67	.43	0	.80	.55	3.5	.80	.67	1.40	.21	.05	.08
4	.67	.55	.01	.94	.55	2.15	1.09	.55	1.09	.12	0	.02
5	.67	.43	.33	1.09	.55	1.40	1.40	.55	.67	.12	0	.36
6	.67	.43	.55	.80	.55	1.40	1.09	.55	.31	.05	0	.55
7	.43	.43	.94	.67	.43	1.40	.67	.55	.59	.24	0	.31
8	.21	.43	.80	.80	.55	1.40	.67	.55	.55	.05	0	.21
9	.21	.77	.55	.67	.55	1.24	1.58	.43	.43	.05	0	.21
10	.21	.94	.80	1.64	.55	1.24	1.06	.43	.43	.21	0	.12
11	.21	.80	1.78	1.46	.55	1.24	.31	.43	.86	.31	.02	.12
12	.21	.55	1.98	1.40	.55	1.09	.72	.43	.32	.31	0	.21
13	.21	.43	1.59	1.09	.55	1.09	.80	.43	.21	.31	0	.21
14	.30	.21	1.09	.80	.55	1.09	.12	.43	.31	.31	0	.21
15	1.09	.31	1.24	.80	.55	.80	.21	.43	.31	.21	0	.21
16	.80	.74	1.24	.67	.55	.43	.05	.43	.21	.21	0	.21
17	1.09	.55	1.78	.67	.55	.43	.27	.43	.21	.21	0	.21
18	1.09	.43	1.78	.76	.67	.43	.43	.43	.21	.21	.17	.21
19	.76	.43	1.78	.80	1.47	.43	.13	.67	.21	.31	.18	.21
20	.43	.43	1.40	.80	3.05	.43	0	.21	.12	.43	.31	.21
21	.31	.21	.80	.67	2.4	.43	0	.15	.35	.31	.21	.21
22	.55	.21	.55	1.40	1.27	.43	.26	.12	.21	.43	.21	.12
23	.67	.09	.43	.94	.80	.43	.67	.12	.21	.21	.21	.12
24	.94	0	.31	1.09	.80	.43	.55	0	.21	.21	.21	.12
25	1.09	.14	.21	.85	1.09	.43	.43	0	.21	.21	.31	0
26	.85	.21	.21	.80	1.24	.43	.55	0	.31	.21	.21	0
27	.80	.21	.57	.80	1.58	.43	.55	0	.21	.21	.12	.34
28	.67	.12	.80	.80	1.09	1.32	.55	0	.36	.12	.21	.55
29	.67	0	.80	.80	.80	1.91	.31	-	.21	.21	.18	.43
30	.67	.43	.80	.67	1.18	1.33	.21	-	.12	.12	.31	.31
31	.67	.55	-	.55	-	.55	.31	-	.12	-	.12	-
Total	19.42	12.46	25.45	27.63	26.67	34.11	18.54	10.09	13.15	6.35	3.27	6.15
Mean:												
mgd	0.626	0.402	0.848	0.891	0.889	1.10	0.598	0.360	0.424	0.212	0.105	0.205
cfs	0.969	0.622	1.31	1.38	1.38	1.70	0.925	0.557	0.656	0.328	0.162	0.317
Ac-ft	60	38	78	85	82	105	57	31	40	19	10	19

Calendar year 1950. Max 3.5 Min 0 Mean(mgd) 0.684 Mean(cfs) 1.06 Ac-ft 767
Fiscal year 1950-51: Max 3.5 Min 0 Mean(mgd) 0.557 Mean(cfs) 0.862 Ac-ft 624

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 1951.

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.--31 years (1920-51), 30.3 mgd (46.9 cfs).

Extremes.--Maximum discharge during year, 1,740 mgd (2,690 cfs) Mar. 11 (gage height, 8.34 ft), from rating curve extended above 270 mgd by test on model of station site; minimum, 8.3 mgd (12.8 cfs) Nov. 13-17.
1912-51: 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.

Revisions (fiscal years).--W 770: 1932-33.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.9	6.6	2.0	57
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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.9	16.9	14.1	10.7	9.4	10.7	13.5	11.8	25	39.5	18.4	11.5
2	17.6	21	13.8	10.4	9.2	11.0	13.2	11.8	25	78	19.7	11.2
3	13.5	15.1	13.5	11.0	9.2	55	11.8	11.5	60	80	21	11.0
4	12.4	28.5	17.9	11.2	9.0	27.5	15.1	11.2	190	52	17.1	10.7
5	12.1	16.1	13.8	11.8	9.2	18.9	20.5	11.0	248	37	16.1	10.7
6	12.1	13.8	13.5	10.7	9.0	16.4	14.4	10.7	136	34	15.1	11.2
7	12.1	16.4	16.1	11.0	9.0	15.1	12.4	10.7	125	31.5	14.4	11.8
8	12.1	16.1	15.1	12.4	8.7	15.1	11.5	10.4	60	29	14.1	11.0
9	11.5	15.4	13.8	*11.0	9.0	12.9	11.0	10.2	43	35.5	13.8	10.7
10	11.5	16.4	17.4	34	8.7	13.2	10.7	10.2	35	30	13.5	10.7
11	12.9	14.4	52	38.5	8.5	16.6	10.7	10.4	310	35.5	14.1	10.7
12	13.2	13.5	28.5	16.9	8.5	23.5	21.5	10.4	187	47	13.2	10.7
13	11.8	12.9	20.5	12.6	8.3	16.7	53	*9.7	89	28.5	12.9	11.5
14	13.5	14.1	17.4	11.8	8.5	13.8	113	9.7	55	34	12.9	11.2
15	14.8	147	15.4	11.2	8.5	12.6	146	12.4	42	25.5	12.6	10.7
16	14.1	217	17.4	11.0	8.3	12.4	71	11.8	33.5	23	12.6	16.7
17	20.5	195	22.5	10.7	8.5	12.1	36.5	16.4	29.5	21.5	12.4	13.5
18	16.1	77	16.4	10.7	10.2	11.2	32	16.2	25.5	21	12.9	11.5
19	14.8	52	14.4	10.7	18.6	11.0	24	151	136	26	13.2	10.4
20	12.9	39.5	13.5	11.2	45	10.7	20.5	170	53	28	12.6	10.2
21	12.6	31.5	12.9	10.4	22.5	10.4	18.5	56	260	30	12.1	10.0
22	16.1	26	12.4	11.0	11.8	10.2	25	32.5	80	33	*12.4	10.2
23	14.8	22.5	12.1	11.0	10.2	10.2	23	25.5	50	21	12.4	10.0
24	35.5	20.5	11.8	13.2	10.4	10.0	16.7	21	63	19.3	13.2	9.7
25	20	18.9	11.8	11.2	19.2	9.7	15.4	18.9	74	*18.2	12.6	9.7
26	15.1	18.2	11.5	11.5	23	9.7	14.4	18.2	145	17.4	12.4	9.4
27	14.4	17.1	11.5	12.4	20	9.4	13.8	23	120	16.4	12.6	9.4
28	28.5	17.1	11.2	11.2	14.1	16.4	13.2	20.5	338	17.1	12.4	9.4
29	16.7	15.4	11.0	12.1	11.8	19.9	12.9	-	106	25.5	11.8	9.7
30	15.1	14.8	10.7	10.4	10.7	21.5	12.6	-	62	22	12.1	9.7
31	14.4	14.4	-	10.2	-	13.8	12.4	-	48	-	11.8	-
Total	475.6	1,174.5	483.9	404.1	377.0	477.6	840.2	743.1	3,253.5	956.4	428.4	324.8
Mean:												
mgd	15.3	37.9	16.1	13.0	12.6	15.4	27.1	26.5	105	31.9	13.8	10.8
cfs	23.7	58.6	24.9	20.1	19.5	23.8	41.9	41.0	162	49.4	21.4	16.7
Ac-ft	1,460	3,600	1,490	1,240	1,160	1,470	2,580	2,280	9,980	2,940	1,310	997

Calendar year 1950 : Max 264 Min 8.3 Mean(mgd) 26.0 Mean(cfs) 40.2 Ac-ft 29,110
Fiscal year 1950-51 : Max 338 Min 8.3 Mean(mgd) 27.2 Mean(cfs) 42.1 Ac-ft 30,510

Peak discharge (base, 1,000 mgd).--Mar. 11 (6:30 p.m.) 1,740 mgd (2,690 cfs), 8.34 ft; Mar. 21 (1 p.m.) 1,520 mgd (2,350 cfs), 7.94 ft; Mar. 28 (11 a.m.) 1,370 mgd (2,120 cfs), 7.58 ft.
* Discharge measurement made on this day.

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 1951 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.--14 years (1937-51), 12.1 mgd (18.7 cfs).

Extremes.--1936-51: Maximum daily discharge, 41 mgd (63 cfs) June 4, 1937; no flow May 15 to June 3, 1940, Mar. 10, 11, Apr. 18-24, Aug. 18-25, Dec. 4-7, 1950.

Remarks.--Records good except those for periods of doubtful gage-height record, which are fair. Ditch diverts water from North Fork Wailua River to reservoir 2,000 ft above station and thence to fields for irrigation of sugarcane. Flow regulated by gates at reservoir.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.7	21	23.5	12.6	d11.0	27.5	1.85	27.5	2.65	0.42	0.18	8.0
2	4.5	26.5	17.2	11.0	11.0	12.6	8.4	18.8	1.77	.48	.18	.36
3	4.4	29	11.6	11.0	10.4	.18	8.9	11.0	.18	.48	.18	.36
4	5.7	31.5	11.6	11.0	10.4	0	8.9	11.0	.18	.48	.18	.36
5	9.9	22.5	11.0	11.6	9.4	0	9.4	13.8	.18	.54	.18	6.8
6	16.5	12.6	14.3	11.0	8.9	0	9.4	18.8	.18	.60	.18	9.4
7	22.5	26	16.5	11.0	9.4	0	9.4	22.5	.18	.60	.24	12.6
8	26.5	31.5	17.6	11.6	9.4	3.5	11.6	22.5	.18	.60	.24	13.2
9	20	29	17.6	*11.6	9.4	2.3	14.3	22.5	.18	.60	.24	13.2
10	17.6	23.5	17.6	10.4	9.4	2.25	14.3	18.8	.18	.60	9.1	12.6
11	20	17.6	20	14.0	9.4	4.5	16.5	14.3	.30	.60	15.4	12.6
12	26.5	17.6	20	23.5	9.4	3.7	20	d12.6	.30	.54	18.8	12.6
13	27.5	17.6	29	29	8.9	1.55	16.5	d10.4	.30	.48	17.6	12.1
14	22.5	17.6	31.5	20	8.9	1.72	12.1	d9.9	.30	.42	17.6	12.1
15	20	11.2	29	15.4	8.9	2.85	5.9	10.4	4.5	.36	17.6	12.1
16	18.8	.18	25	14.3	8.4	2.75	.30	11.6	.18	.36	14.3	12.1
17	16.5	.18	16.5	16.5	7.9	10.5	.18	13.2	.18	.36	10.4	12.6
18	13.8	0	14.3	17.6	8.4	22.5	.24	14.3	.18	.30	5.4	12.1
19	16.5	0	21.5	17.6	10.4	15.4	.24	12.2	.18	.30	.36	10.4
20	21	0	31.5	17.6	15.4	12.1	.08	.36	.18	.30	.42	8.9
21	25	0	37.5	15.4	21	10.4	7.2	.42	.24	.30	6.1	8.9
22	23.5	0	34.5	14.3	14.3	9.9	8.3	.38	.24	.30	8.9	8.9
23	23.5	0	21.5	15.4	9.4	9.4	.30	.36	.24	.18	12.6	8.9
24	18.8	0	14.3	14.3	9.4	9.4	.30	.36	.24	.18	14.3	8.9
25	17.6	0	13.8	15.4	9.4	8.9	2.5	.36	.24	.24	*14.3	11.0
26	20	2.55	16.5	13.8	9.9	7.9	4.0	.36	.24	.24	7.1	13.8
27	20	4.2	22.5	13.8	9.9	7.9	4.1	.42	.24	.30	.36	13.2
28	20	4.0	23.5	13.2	14.3	9.4	7.8	.42	.30	.30	.42	12.6
29	15.4	8.4	17.6	13.2	18.8	12.6	12.6	-	.30	6.6	2.3	12.1
30	11.6	19.4	13.8	12.1	22.5	4.1	25.5	-	.36	5.5	3.3	12.1
31	12.6	26.5	-	d11.0	-	.36	30.5	-	.36	-	10.6	-
Total	548.4	400.11	612.3	450.2	333.6	216.16	271.57	299.54	15.46	23.56	209.06	304.88
Mean:												
mgd	17.7	12.9	20.4	14.5	11.1	6.97	8.76	10.7	0.499	0.785	6.74	10.2
cfs	27.4	20.0	31.6	22.4	17.2	10.8	13.6	16.6	0.772	1.21	10.4	15.8
Ac-ft	1,680	1,230	1,880	1,380	1,020	663	833	919	47	72	642	936

Calendar year 1950: Max 37.5 Min 0 Mean(mgd) 10.1 Mean(cfs) 15.6 Ac-ft 11,260
Fiscal year 1950-51: Max 37.5 Min 0 Mean(mgd) 10.1 Mean(cfs) 15.6 Ac-ft 11,300

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of reconstructed graph based on gage readings on Nov. 1 and Feb. 14.

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 1951.

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

Average discharge.--14 years (1937-51), 13.0 mgd (20.1 cfs).

Extremes.--Maximum discharge during year, 2,550 mgd (3,950 cfs) Mar. 21 (gage height, 3.96 ft), from rating curve extended above 330 mgd by logarithmic plotting; no flow many times.
1936-51: 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

-0.03	0	0.5	18.9
0	.10	.6	28.5
.1	.74	.8	54
.2	2.55	1.0	90
.3	6.1	1.2	140
.4	11.5	1.6	275

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.50	0	0	0	0	0	12.0	0	14.7	16.5	12.9	0
2	5.8	0	0	0	0	6.5	7.2	0	12.9	69	15.0	0
3	1.30	0	0	0	0	78	.54	0	19.9	57	12.9	0
4	.86	1.26	4.1	0	0	*25	.91	0	117	28	10.9	0
5	.06	.85	.71	0	0	15.0	.53	0	222	18.1	9.7	0
6	0	1.74	0	0	0	15.0	0	0	64	16.5	9.7	0
7	0	.24	0	0	0	13.2	0	0	52	15.7	8.7	0
8	0	0	0	0	0	12.0	0	0	19.8	15.0	1.50	0
9	0	0	0	0	0	8.6	0	0	10.8	9.6	0	0
10	0	.03	0	7.8	0	11.4	0	0	7.3	68	0	0
11	0	0	6.5	2.35	0	15.6	0	0	259	34	0	.16
12	.05	0	.16	0	0	17.1	.01	0	126	46	0	0
13	0	0	0	0	0	13.3	5.5	0	31	21	0	0
14	0	.09	0	0	0	10.9	.04	0	18.9	31	0	0
15	0	186	0	0	0	9.7	.80	0	15.0	18.1	0	0
16	0	118	0	0	0	9.7	0	0	7.8	15.0	0	.87
17	0	94	5.8	0	0	9.1	0	0	0	14.3	0	2.4
18	0	35.5	.14	0	0	8.6	0	.12	6.5	12.9	.76	.31
19	0	18.9	0	0	.52	5.5	0	112	89	35	2.55	0
20	0	13.6	0	0	28	.14	0	149	25	28	2.55	0
21	0	7.0	0	0	3.65	0	0	34	229	26	1.30	0
22	0	0	0	0	0	0	.04	15.0	31	22	0	0
23	0	0	0	0	.72	0	0	10.9	21	12.9	0	0
24	11.3	3.35	0	0	.85	0	0	9.1	46	10.3	.08	0
25	.29	8.6	0	0	11.0	0	0	8.6	49	10.9	0	0
26	0	8.6	0	0	10.1	0	0	2.3	72	10.3	0	0
27	0	9.1	0	0	1.88	0	0	9.2	58	9.7	0	0
28	4.2	.95	0	0	.24	.01	0	10.3	260	13.6	0	0
29	.19	0	0	0	0	0	.05	-	42	19.9	0	0
30	2.3	0	0	0	0	14.3	0	-	24.5	8.5	0	0
31	.17	0	-	0	-	10.3	0	-	18.9	-	0	-
Total	27.02	507.81	17.41	10.15	56.96	308.95	27.62	360.52	1,970.0	712.8	88.54	3.74
Mean:												
mgd	0.872	16.4	0.580	0.327	1.90	9.97	0.891	12.9	63.5	23.8	2.86	0.125
cfs	1.35	25.4	0.897	0.506	2.94	15.4	1.38	20.0	98.2	36.8	4.43	0.193
Ac-ft	83	1,560	53	31	175	948	85	1,110	6,050	2,190	272	11

Calendar year 1950 . Max 356 Min 0 Mean(mgd) 11.5 Mean(cfs) 17.8 Ac-ft 12,850
Fiscal year 1950-51 : Max 260 Min 0 Mean(mgd) 11.2 Mean(cfs) 17.3 Ac-ft 12,570

Peak discharge (base, 1,400 mgd).--Mar. 11 (7 p.m.) 1,590 mgd (2,460 cfs), 3.32 ft; Mar. 21 (2 p.m.) 2,550 mgd (3,950 cfs), 3.96 ft; Mar. 28 (9:30 a.m.) 2,110 mgd (3,260 cfs), 3.73 ft.
* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recroder 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 datum 2.52 ft higher.

Average discharge.--33 years (1917-20, 1921-51), 5.45 mgd (8.43 cfs).

Extremes.--1909-14, 1915-51: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

Remarks.--Records good. Ditch diverts water from Kapaa River for irrigation in vicinity of Kapaa. Flow regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.71	3.85	2.25	1.64	1.44	2.3	0.28	4.3	0.14	0	0.28	1.94
2	.08	7.0	4.3	1.55	1.35	1.01	4.1	1.69	.12	0	.69	1.92
3	1.32	2.9	7.4	1.99	1.35	1.92	7.7	1.69	.25	0	.37	1.86
4	1.55	5.7	10.1	1.99	1.35	0	6.2	1.60	.26	0	.20	1.78
5	2.15	1.64	4.7	2.25	1.52	0	9.8	1.52	.16	0	.55	1.78
6	2.1	.36	2.25	1.82	1.44	0	3.35	1.44	0	0	.21	1.86
7	2.1	2.95	2.35	2.4	1.44	0	2.1	1.44	0	0	.18	1.94
8	1.99	2.35	2.35	2.4	1.44	0	1.86	1.35	0	0	7.0	1.86
9	1.82	2.25	2.25	1.99	1.52	.74	1.60	1.35	0	4.5	8.5	1.69
10	1.82	2.25	3.45	24	1.44	.18	1.52	1.28	.79	3.35	6.2	1.78
11	2.35	2.1	10.0	16.8	1.44	.49	1.52	1.97	.30	.21	3.05	1.68
12	2.45	1.82	7.6	4.2	1.35	0	5.9	1.60	0	.18	2.7	2.15
13	1.90	1.82	3.6	2.5	1.28	0	6.5	1.35	0	.16	2.7	2.8
14	3.2	2.8	2.65	2.05	1.44	0	2.5	1.28	0	.18	2.5	2.3
15	2.85	3.35	2.45	1.78	1.44	0	1.10	3.15	0	.18	2.5	2.1
16	2.75	.02	2.75	1.78	1.35	0	.23	*1.86	4.5	.18	2.6	6.3
17	6.3	.01	1.06	1.69	1.52	0	2.15	4.8	10.4	.18	2.4	1.04
18	3.1	.01	2.65	1.69	3.6	0	1.91	5.8	3.45	.84	1.77	2.1
19	2.45	.01	2.25	1.60	13.3	0	1.47	17.4	.99	.28	.23	2.05
20	2.1	.01	2.1	2.05	17.3	2.5	6.7	.39	.12	.23	.21	2.05
21	2.1	4.6	1.99	1.69	6.8	4.2	8.4	.16	.27	.23	1.09	1.94
22	2.75	9.8	1.99	1.78	2.6	4.2	5.2	.14	0	.23	2.3	1.94
23	2.45	9.5	1.82	1.78	1.47	4.5	.16	.14	0	2.1	2.4	1.69
24	8.6	5.4	1.73	1.69	1.28	4.2	.75	.16	0	2.6	2.95	1.78
25	4.7	.62	1.82	1.60	2.45	4.2	1.28	.21	0	1.85	2.5	1.69
26	2.55	.45	1.73	1.69	.23	4.1	1.22	6.6	0	2.25	2.3	1.60
27	2.35	.35	1.73	2.1	3.6	4.2	5.6	5.5	0	1.73	2.4	1.60
28	12.2	9.0	1.64	1.78	3.25	15.2	3.35	.16	0	.55	2.2	1.60
29	2.6	7.9	1.55	2.2	2.3	13.0	5.6	-	0	.32	2.05	1.69
30	.16	5.2	1.55	1.52	1.94	3.6	5.9	-	0	6.2	2.05	1.78
31	2.05	2.45	-	1.44	-	.32	6.0	-	0	-	2.05	-
Total	88.60	98.47	96.06	97.44	84.23	70.86	111.95	70.33	21.74	28.53	69.13	60.29
Mean:												
mgd	2.86	3.18	3.20	3.14	2.81	2.29	3.61	2.51	0.701	0.951	2.23	2.01
cfs	4.43	4.92	4.95	4.86	4.35	3.54	5.59	3.88	1.08	1.47	3.45	3.11
Ac-ft	272	302	295	299	258	217	344	216	67	88	212	185

Calendar year 1950: Max 24 Min 0 Mean(mgd) 3.04 Mean(cfs) 4.70 Ac-ft 3,400
Fiscal year 1950-51: Max 24 Min 0 Mean(mgd) 2.46 Mean(cfs) 3.81 Ac-ft 2,760

* Discharge measurement made on this day.

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.--December 1936 to June 1951 in reports of Geological Survey. July 1925 to November 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder and Parshall flume. July 1925 to November 1936 water-stage recorder at site 150 ft downstream at different datum.

Average discharge.--14 years (1937-51), 3.84 mgd (5.94 cfs).

Extremes.--1936-51: 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 good. Ditch diverts water from Makaleha Stream for irrigation of sugarcane. Diversion is regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.0	9.1	6.1	5.4	5.3	8.2	0.03	1.87	0.08	0.22	0.10	5.4
2	8.8	10.4	3.6	5.1	5.1	3.35	.05	4.2	.03	.25	.10	5.4
3	6.4	7.9	.20	5.8	5.0	1.23	.05	4.2	.05	.31	.08	5.3
4	5.8	11.3	.20	6.4	5.0	.93	3.55	4.2	.26	.25	.06	5.3
5	5.7	8.7	3.9	7.4	5.5	.42	7.6	4.2	2.05	.22	.05	5.2
6	6.4	6.9	6.4	5.6	5.0	.36	6.9	4.2	3.05	.17	.05	5.4
7	5.9	10.9	6.9	7.1	5.0	.25	5.8	4.2	.89	.14	.05	6.4
8	5.8	9.3	7.9	8.1	5.2	.24	5.4	4.2	.20	.12	.05	5.4
9	5.7	8.3	6.9	6.4	6.1	.14	5.3	4.1	.11	.10	.05	5.2
10	6.3	9.4	9.8	11.9	5.0	.14	4.9	4.0	.03	.24	2.35	5.2
11	8.1	7.4	12.6	10.4	4.9	.20	5.2	4.6	.96	.25	5.4	5.4
12	8.1	6.4	12.0	8.3	4.8	.22	6.5	4.5	.40	.28	5.4	5.3
13	6.9	6.4	9.8	6.2	4.8	.12	3.8	4.2	.17	.22	5.3	6.7
14	9.5	9.4	6.9	5.8	5.2	.08	.72	*4.2	.08	.20	5.3	5.4
15	9.8	10.7	7.4	5.5	5.0	.08	.88	5.2	.06	.20	5.3	5.9
16	8.8	3.45	8.7	5.4	4.9	.06	.79	4.9	.05	.14	6.4	9.3
17	11.1	2.3	11.2	5.6	5.4	.06	.46	5.3	.03	.12	5.5	8.1
18	9.8	1.21	7.8	6.4	7.5	.05	.39	5.3	.03	.12	7.2	6.4
19	8.8	.49	6.4	6.0	9.3	2.5	.28	3.5	.06	.17	6.4	5.4
20	7.4	.46	6.0	7.0	10.9	3.85	.20	3.25	.06	.17	6.0	5.1
21	7.8	.42	5.9	5.4	9.3	2.1	.17	1.60	.67	.12	5.6	5.1
22	10.1	.39	5.7	7.3	6.4	1.99	.17	.79	.56	.10	5.6	5.7
23	8.3	.36	5.5	6.4	5.8	2.05	.20	.45	.39	.08	6.0	5.1
24	12.4	.36	5.5	6.9	6.8	1.99	.17	.31	.39	.06	7.2	5.1
25	10.4	.34	5.6	5.9	9.8	1.93	.12	.22	.39	.06	*5.9	5.0
26	8.3	.31	5.7	6.4	9.8	1.87	.10	.20	.42	.06	5.8	5.0
27	8.4	.31	5.4	8.5	9.8	1.99	.08	.17	.36	.05	6.4	4.9
28	11.9	.34	5.2	6.4	8.8	2.8	.08	.10	.61	.05	6.0	4.9
29	8.3	.28	5.1	7.8	6.4	.06	.06	-	.56	.06	5.6	4.9
30	7.4	3.15	5.1	5.8	5.8	.05	.12	-	.40	.10	5.8	5.2
31	7.4	5.8	-	5.4	-	.06	.12	-	.31	-	5.5	-
Total	251.8	152.47	195.40	208.0	193.6	39.37	60.19	88.16	13.71	4.63	126.54	168.1
Mean:												
mgd	8.12	4.92	6.51	6.71	6.45	1.27	1.94	3.15	0.442	0.154	4.08	5.60
cfs	12.6	7.61	10.1	10.4	9.98	1.96	3.00	4.87	0.684	0.238	6.31	8.66
Ac-ft	773	468	600	638	594	121	185	271	42	14	388	516

Calendar year 1950 : Max 12.6 Min 0.05 Mean(mgd) 3.88 Mean(cfs) 6.00 Ac-ft 4,350
Fiscal year 1950-51 : Max 12.6 Min 0.03 Mean(mgd) 4.11 Mean(cfs) 6.36 Ac-ft 4,610

* Discharge measurement made on this day.

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 1951.

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.--14 years (1937-51), 3.18 mgd (4.92 cfs).

Extremes.--1936-51: Maximum daily discharge, 48 mgd (74 cfs) Feb. 7, 1949; no flow at times.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are fair. Water that passes station is returned to Anahola River.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.17	0	0.11	0.05	0.05	a0	3.25	0.17	5.5	7.8	0.17	0.11
2	.17	0	.11	.05	0	a0	4.6	.17	3.85	24	.23	.11
3	0	0	.11	.05	.05	a9.2	2.5	.17	10.1	31.5	.17	.11
4	0	0	.11	.11	.05	a13	3.05	.17	23.5	16.7	.11	.11
5	0	0	.11	.05	.05	a10	7.7	.17	38	9.5	.11	.11
6	0	0	.11	0	.05	a6.7	4.4	.17	21.5	8.8	.11	.11
7	0	0	.17	0	.05	a5.6	2.5	.17	19.3	6.3	.17	.11
8	0	0	.11	0	.05	4.4	.77	.17	8.0	4.7	.17	.11
9	0	0	.05	0	.05	3.3	.17	.17	6.0	3.85	.17	.11
10	0	0	.11	.11	.05	3.95	.17	.17	5.4	7.7	.17	.11
11	0	0	.23	0	.11	5.0	.17	.23	24.5	11.5	.17	.11
12	0	0	.11	0	.11	5.6	.17	.17	29	15.6	.17	.11
13	.11	0	.05	0	.11	6.4	.31	.17	12.4	6.5	.17	.11
14	.05	0	.05	0	.11	3.15	14.2	.17	7.8	9.2	.17	.11
15	0	.30	.05	0	.11	1.60	31	.17	6.1	d5.6	.17	.11
16	.05	16.1	.05	0	.11	.17	13.3	.17	5.1	d4.1	.17	.11
17	.05	32.5	.05	0	.11	.17	7.5	.23	4.2	d3.3	.17	.11
18	0	15.2	0	0	0	.17	7.5	.23	3.85	d3.1	.11	.11
19	0	3.6	0	0	0	.17	4.6	.47	26	d20	.11	.11
20	0	.11	0	0	.23	.17	3.65	22.5	11.6	d11	.11	.11
21	0	3.05	0	0	0	.17	3.3	24	34.5	9.9	.11	.05
22	.17	3.5	0	0	0	.17	12.0	8.0	12.7	8.7	.11	.05
23	.05	3.15	0	.05	0	.23	10.5	5.3	11.8	4.6	.11	.05
24	.11	2.8	0	.05	0	.23	4.0	4.0	19.5	3.0	.17	.05
25	0	.88	.11	.05	0	.23	3.3	3.3	17.9	.23	.11	0
26	0	.11	.11	.05	.11	.23	3.0	3.15	23.5	.20	.11	0
27	0	.11	.11	.11	.05	.23	2.65	5.1	21	.17	.11	0
28	0	.11	.11	.11	0	.31	2.5	4.0	39.5	.17	.17	0
29	0	.11	.11	.05	0	.17	1.30	-	18.6	.17	.17	.05
30	0	.11	.05	.05	0	.23	.17	-	10.7	.17	.17	0
31	0	.11	-	.05	-	.11	.17	-	8.0	-	.11	-
Total	0.93	81.85	2.29	0.99	1.61	81.06	154.40	83.06	489.40	238.06	4.55	2.45
Mean:												
mgd	0.030	2.64	0.076	0.032	0.054	2.61	4.98	2.97	15.8	7.94	0.147	0.082
cfs	0.046	4.08	0.118	0.050	0.084	4.04	7.71	4.60	24.4	12.3	0.227	0.127
Ac-ft	2.9	251	7.0	3.0	4.9	249	474	255	1,500	731	14	7.5

Calendar year 1950: Max 32.5 Min 0 Mean(mgd) 2.69 Mean(cfs) 4.16 Ac-ft 3,010
Fiscal year 1950-51: Max 39.5 Min 0 Mean(mgd) 3.13 Mean(cfs) 4.84 Ac-ft 3,500

a No gage-height record; discharge estimated on basis of records for stations on nearby streams.
d Doubtful gage-height record; discharge estimated as in footnote "a."

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 1951. 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.--28 years (1921-25, 1927-51), 3.26 mgd (5.04 cfs).

Extremes.--1921-51: Maximum daily discharge, 40 mgd (62 cfs) Nov. 12, 1947; no flow at times.

Remarks.--Records good. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.75	3.75	2.15	1.84	0.84	17.6	1.13	1.66	0.07	0.07	3.85	1.14
2	8.1	7.3	2.35	1.75	.84	5.8	.11	1.66	.05	.13	5.0	1.14
3	2.15	2.65	2.05	2.15	.76	9.3	.20	1.50	.07	.11	3.2	1.14
4	1.56	7.7	3.65	2.65	.76	.57	.75	1.50	.13	.05	2.75	1.05
5	1.50	2.65	2.65	3.0	1.22	.40	2.6	1.39	.41	.05	2.55	1.05
6	1.50	3.05	2.05	1.27	.91	.35	1.33	1.30	.16	.05	2.35	1.14
7	1.50	4.1	8.5	1.14	.76	.23	.57	1.30	.09	.05	2.15	1.30
8	1.84	3.55	5.9	1.22	.76	.20	1.81	1.22	.09	.05	2.05	1.05
9	1.56	2.65	2.55	1.05	.98	.17	2.05	1.14	.07	.05	2.05	.91
10	1.39	3.95	6.1	5.4	.76	.17	1.84	1.14	.07	.07	1.94	.91
11	2.9	2.7	19.5	6.5	.70	.17	2.35	2.8	.95	.07	2.35	.91
12	3.0	2.35	10.0	2.15	.63	.17	4.3	1.74	.26	.07	1.84	.91
13	3.45	2.35	4.6	1.22	.63	.17	16.8	1.22	.13	.07	1.75	1.08
14	2.05	5.6	4.0	1.05	.76	.16	9.6	*1.14	.11	.09	1.66	1.22
15	2.05	31	4.3	.98	.84	1.22	.23	2.65	.09	.09	1.50	.91
16	1.84	9.4	3.1	.98	.70	2.45	.09	3.2	.09	.09	1.66	5.2
17	4.6	.27	6.9	.98	.72	2.25	.07	7.2	.09	.07	1.50	3.25
18	3.3	.13	3.3	.98	6.3	1.84	.09	11.5	.09	.07	1.88	1.30
19	3.75	3.85	2.75	1.05	5.9	1.75	.07	30	.14	.11	1.84	.98
20	2.35	5.5	2.55	1.45	23.5	1.66	.07	11.4	.09	.07	1.66	.91
21	2.65	1.37	2.45	1.30	7.9	1.56	.07	.13	.58	.07	1.39	.84
22	4.1	.13	2.35	1.92	2.2	1.50	.09	.07	.11	.07	1.50	.84
23	3.8	.13	2.25	2.05	1.94	1.50	.09	.07	.09	.07	1.56	.84
24	13.6	.11	2.25	1.94	6.2	1.39	.05	.07	.13	1.78	2.2	.76
25	7.3	1.78	2.25	1.22	9.6	1.30	.05	.07	.16	3.55	1.84	.70
26	2.85	2.55	2.25	1.14	16.6	1.30	.05	.07	.17	3.25	1.39	.70
27	3.0	2.55	2.15	2.8	8.0	1.30	.07	.07	.13	3.0	1.75	.70
28	11.6	3.1	2.05	1.30	4.9	6.9	.07	.07	.63	3.2	1.56	.63
29	3.0	2.25	1.84	1.22	2.65	5.9	.97	-	.13	5.8	1.22	.76
30	3.0	2.45	1.84	1.05	2.15	15.2	2.25	-	.11	4.0	1.50	.84
31	2.75	2.15	-	.91	-	3.85	1.84	-	.07	-	1.30	-
Total	109.79	123.07	120.63	55.86	111.41	88.33	51.66	87.28	5.56	26.27	82.74	35.11
Mean:												
mgd	3.54	3.97	4.02	1.80	3.71	2.85	1.67	3.12	0.179	0.876	2.02	1.17
cfs	5.48	6.14	6.22	2.79	5.74	4.41	2.58	4.83	0.277	1.36	3.13	1.81
Ac-ft	337	378	370	171	342	271	159	268	17	81	193	108

Calendar year 1950. Max 31 Min 0.03 Mean(mgd) 2.90 Mean(cfs) 4.49 Ac-ft 3,250
Fiscal year 1950-51: Max 31 Min 0.05 Mean(mgd) 2.40 Mean(cfs) 3.71 Ac-ft 2,700

* Discharge measurement made on this day.

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 1951.

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. 29, 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.--32 years (1919-51), 13.4 mgd (20.7 cfs).

Extremes.--Maximum discharge during year, 2,300 mgd (3,560 cfs) Mar. 28 (gage height, 6.54 ft), from rating curve extended above 230 mgd by logarithmic plotting; minimum, 1.66 mgd (2.55 cfs) Nov. 14.

1910, 1912-51: 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 preceding page).

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.45	3.1	4.2	2.7	1.95	21.5	3.55	3.6	6.1	22	8.6	2.7
2	8.1	5.7	4.7	2.55	1.90	7.6	4.7	3.4	5.4	36.5	8.9	2.7
3	4.6	4.9	4.2	2.75	1.85	117	3.4	3.3	7.8	50	7.7	2.7
4	3.55	4.7	4.8	3.0	1.80	23	3.45	3.2	39.5	26.5	7.1	2.65
5	3.3	3.3	4.2	3.45	2.55	13.9	9.4	3.15	137	20	6.6	2.55
6	3.3	3.05	3.7	2.75	2.1	14.3	6.6	3.05	63	17.6	6.1	2.55
7	3.2	3.6	5.5	2.65	1.85	8.9	3.7	3.0	27	15.3	5.8	2.55
8	3.3	3.3	4.9	2.7	1.80	7.4	3.2	2.9	15.7	13.9	5.6	2.5
9	3.15	3.2	3.7	2.5	1.80	5.9	2.9	2.8	12.5	16.6	5.3	2.4
10	3.05	3.0	3.85	3.4	1.75	5.3	2.7	2.7	11.3	21.5	5.0	2.4
11	3.3	2.9	15.8	6.9	1.70	5.2	2.65	3.05	267	21	5.0	2.4
12	3.45	2.7	8.0	4.3	1.70	5.4	3.8	3.0	123	24	4.7	2.4
13	4.1	2.65	5.0	2.7	1.70	6.0	20.5	2.65	41	13.9	4.5	2.4
14	3.55	3.0	4.5	2.5	1.80	4.4	41	*2.5	25.5	17.1	4.4	2.3
15	3.3	169	4.6	2.4	1.85	3.7	30	3.2	18.7	13.9	4.1	2.3
16	3.15	74	4.0	2.3	1.75	3.45	11.9	3.3	14.8	11.7	4.1	3.05
17	4.1	82	5.4	2.25	1.80	3.3	8.9	5.9	13.0	10.9	3.95	2.75
18	3.95	25	4.2	2.25	2.85	3.15	10.1	5.4	11.7	10.5	4.1	2.45
19	3.85	13.0	3.45	2.45	2.9	3.05	8.0	58	143	30	4.1	2.2
20	3.45	6.5	3.2	2.45	11.0	2.9	6.6	104	25	19.7	3.7	2.15
21	*3.45	6.1	3.05	2.5	2.1	2.8	5.8	54	167	16.6	3.55	2.1
22	3.45	6.6	3.05	2.25	1.80	2.75	14.1	16.2	39	14.3	3.45	2.1
23	3.85	7.1	2.9	2.65	1.75	2.8	15.6	11.3	24	11.7	3.55	2.05
24	8.3	6.3	2.8	2.4	1.70	2.7	7.1	9.2	22	10.5	3.95	2.05
25	5.6	5.8	2.9	2.15	1.80	2.65	5.9	8.0	24.5	9.5	3.55	2.05
26	3.85	5.4	3.0	2.1	4.1	2.5	5.3	6.6	28.5	*9.2	3.3	2.0
27	3.45	5.2	2.9	2.55	2.25	2.55	4.8	6.1	30.5	8.9	3.2	1.95
28	7.3	4.9	2.8	2.4	1.80	3.05	4.5	5.8	295	8.9	3.05	1.90
29	3.95	4.6	2.7	2.15	1.70	3.95	4.1	-	48	8.9	2.9	2.0
30	3.2	5.2	2.65	*2.05	1.70	5.7	4.1	-	31.5	10.1	2.8	2.1
31	3.15	4.4	-	1.95	-	4.2	3.85	-	25.5	-	2.75	-
Total	124.75	480.20	130.65	84.10	69.10	301.00	262.20	339.30	1,743.5	521.2	145.40	70.40
Mean:												
mgd	4.02	15.5	4.36	2.71	2.30	9.71	8.46	12.1	56.2	17.4	4.69	2.35
cfs	6.22	24.0	6.75	4.19	3.56	15.0	13.1	18.7	87.0	26.9	7.25	3.64
Ac-ft	383	1,470	401	258	212	924	805	1,040	5,350	1,600	446	216

Calendar year 1950. Max 359 Min 1.70 Mean(mgd) 11.6 Mean(cfs) 17.9 Ac-ft 12,960
Fiscal year 1950-51: Max 295 Min 1.70 Mean(mgd) 11.7 Mean(cfs) 18.1 Ac-ft 13,100

Peak discharge (base, 900 mgd).--Mar. 5 (11 p.m.) 1,000 mgd (1,550 cfs), 4.98 ft; Mar. 11 (7:30 p.m.) 1,720 mgd (2,660 cfs), 5.87 ft; Mar. 19 (8:30 a.m.) 1,630 mgd (2,520 cfs), 5.82 ft; Mar. 21 (3 p.m.) 1,900 mgd (2,940 cfs), 6.09 ft; Mar. 28 (3 p.m.) 2,300 mgd (3,560 cfs), 6.54 ft.

* Discharge measurement made on this day.

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 1951 in reports of Geological Survey. 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.--14 years (1937-51), 2.54 mgd (3.93 cfs).

Extremes.--1936-51: 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.9	3.25	4.2	2.7	1.86	3.35	1.53	1.54	0	0	0	3.05
2	4.7	4.0	4.3	2.65	1.80	3.6	.06	3.45	0	0	0	3.0
3	4.6	4.3	4.1	2.85	1.74	2.2	.04	3.45	0	0	0	2.9
4	3.9	3.75	4.2	2.9	1.69	0	.03	3.35	0	0	0	2.85
5	3.7	3.35	4.2	3.2	2.15	0	2.6	3.25	.01	0	2.15	2.7
6	3.6	3.05	3.9	2.9	2.1	0	4.4	3.2	0	0	5.6	2.7
7	3.45	3.25	4.0	2.8	1.86	0	4.2	3.1	0	0	5.5	2.7
8	3.45	3.25	4.4	2.85	1.74	0	4.0	3.05	0	0	5.4	2.6
9	3.2	3.2	4.0	2.6	1.80	0	3.35	2.9	0	0	5.2	2.55
10	3.1	3.0	3.9	2.85	1.74	0	1.60	2.9	0	0	5.1	2.45
11	3.35	2.9	5.1	3.55	1.69	0	0	2.9	.02	0	5.1	2.45
12	3.45	2.7	5.2	3.6	1.64	0	0	3.0	.01	0	4.8	2.55
13	3.6	2.6	4.7	2.9	1.64	0	.01	2.8	0	0	4.7	2.4
14	3.55	2.7	4.3	2.65	1.69	0	0	2.65	0	0	4.6	2.35
15	3.45	4.5	4.3	2.55	1.86	1.82	0	2.85	0	0	4.4	2.3
16	3.35	5.1	4.0	2.45	1.74	3.55	0	2.85	0	0	4.4	2.85
17	3.55	4.0	4.4	2.4	1.74	3.25	0	3.0	0	0	4.3	2.7
18	3.6	2.0	4.2	2.35	2.3	3.1	0	3.1	0	0	4.3	2.55
19	3.6	0	3.7	2.6	2.55	3.0	0	1.72	0	0	2.45	2.3
20	3.55	0	3.55	2.45	2.8	2.9	0	0	0	0	.03	2.15
21	3.55	0	3.45	2.45	2.85	2.85	0	0	0	0	*1.35	2.1
22	3.4	0	3.35	2.2	2.15	2.8	0	0	0	0	3.7	2.05
23	3.45	0	3.1	2.4	2.05	2.85	0	0	0	0	3.7	2.05
24	4.0	0	3.0	2.3	1.98	2.7	0	0	0	0	3.9	2.05
25	4.2	0	3.1	2.05	1.98	2.65	0	0	0	0	3.8	1.98
26	3.75	0	3.25	1.98	2.05	2.6	0	0	0	2.45	3.6	1.92
27	3.55	0	3.2	2.2	2.3	2.6	.86	0	0	5.4	3.45	1.92
28	4.1	0	2.9	2.3	2.15	2.7	.04	0	.01	5.5	3.35	1.86
29	3.8	0	2.8	2.15	1.92	3.2	.03	-	0	5.6	3.2	1.92
30	3.4	0	2.65	1.98	1.86	3.25	0	-	0	1.78	3.1	1.98
31	3.25	3.15	-	1.92	-	3.45	0	-	0	-	3.25	-
Total	113.10	64.05	115.45	79.73	59.42	58.42	22.75	55.06	0.05	20.73	104.43	71.93
Mean:												
mgd	3.65	2.07	3.85	2.57	1.98	1.88	0.734	1.97	0.002	0.691	3.37	2.40
cfs	5.65	3.20	5.96	3.98	3.08	2.91	1.14	3.05	0.003	1.07	5.21	3.71
Ac-ft	347	197	354	245	182	179	70	169	0.2	64	320	221

Calendar year 1950. Max 8.0 Min 0 Mean(mgd) 2.56 Mean(cfs) 3.96 Ac-ft 2,860
Fiscal year 1950-51: Max 5.6 Min 0 Mean(mgd) 2.10 Mean(cfs) 3.25 Ac-ft 2,350

* Discharge measurement made on this day.

Ka Loko ditch near Kilauea

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

Records available.--August 1932 to June 1951.

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

Average discharge.--18 years (1933-51), 3.65 mgd (5.65 cfs).

Extremes.--1932-51: 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. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.39	1.54	1.71	1.31	0.81	a13	2.05	a1.7	3.2	1.47	3.35	1.23
2	2.85	2.65	1.98	1.23	.81	2.95	2.25	a1.5	2.6	2.95	3.6	1.31
3	1.71	2.05	1.71	1.31	.81	30.5	1.54	a1.5	4.3	2.75	2.75	1.31
4	1.39	3.35	1.89	1.39	.81	7.4	1.71	a1.5	9.4	3.15	2.65	1.23
5	1.39	1.63	1.98	1.54	1.23	5.6	6.2	a1.5	37.5	5.6	2.45	1.23
6	1.31	1.50	1.54	1.23	.88	5.8	2.7	a1.5	16.8	5.4	2.45	1.31
7	1.31	1.93	2.4	1.23	.81	3.25	1.71	a1.4	10.3	4.7	2.25	1.31
8	1.39	2.1	2.35	1.23	.75	2.85	1.39	a1.4	6.2	4.5	2.25	1.23
9	1.23	1.98	1.80	1.23	.81	2.45	1.23	a1.4	4.9	5.2	2.25	1.16
10	1.23	1.54	1.98	2.35	.75	2.25	1.16	a1.4	4.6	8.0	2.05	1.16
11	1.39	1.39	7.6	4.6	.68	2.25	1.23	a1.5	17.6	5.6	2.15	1.16
12	1.47	1.23	3.55	2.0	.68	2.15	1.47	1.31	9.3	7.5	1.89	1.16
13	1.54	1.23	2.35	1.31	.68	2.65	a1.6	1.23	2.7	4.4	1.89	1.16
14	a1.24	1.44	2.05	1.16	.75	1.98	a1.8	1.23	1.71	6.6	1.80	1.09
15	a1.24	21.5	2.15	1.09	.75	1.71	a9.7	1.54	3.2	4.3	1.71	1.09
16	a1.4	18.2	1.89	1.02	.68	1.71	a5.4	1.47	4.5	3.7	1.71	1.39
17	a1.39	18.7	4.0	.95	.81	1.54	a2.6	3.15	4.3	3.45	1.63	1.16
18	a1.39	7.5	2.15	.95	1.62	1.47	a3.5	3.3	3.9	3.45	1.80	1.02
19	a1.39	4.0	1.80	1.02	2.2	1.47	a2.4	15.8	9.5	11.3	1.71	.95
20	a1.23	3.15	1.63	1.09	5.6	1.39	a17	23.5	2.1	4.6	1.63	.95
21	1.39	2.75	1.54	.95	2.8	1.39	a13	17.9	8.3	3.9	1.47	.88
22	1.74	2.55	1.54	1.31	1.02	1.31	a8.8	5.5	2.3	3.8	1.47	.81
23	1.71	2.35	1.47	1.09	.95	1.31	a2.4	3.9	1.54	*3.55	1.54	.68
24	4.7	2.15	1.47	.95	1.54	1.23	a2.4	3.25	1.63	3.8	1.80	.68
25	3.05	2.05	1.47	.88	1.53	1.16	a2.1	2.85	1.75	3.55	1.54	.68
26	1.71	2.05	1.54	.88	6.3	1.16	a2.1	2.75	2.8	3.35	1.39	.68
27	1.82	1.98	1.39	1.16	3.2	1.23	a2.1	2.55	2.9	3.15	1.39	.63
28	4.3	2.05	1.39	.95	1.71	1.98	a2.1	2.45	13.0	3.25	1.39	.68
29	1.80	1.80	1.31	.95	a1.23	1.80	a1.9	-	3.7	3.7	1.31	.68
30	1.80	1.80	1.31	.88	a1.09	4.2	a1.7	-	2.45	3.9	1.39	.75
31	1.47	1.71	-	.81	-	1.99	a1.7	-	1.80	-	1.23	-
Total	54.37	121.85	62.94	40.05	44.29	113.13	108.94	109.98	200.78	134.57	59.89	30.76
Mean:												
mgd	1.75	3.93	2.10	1.29	1.48	3.65	3.51	3.93	6.48	4.49	1.93	1.03
cfs	2.71	6.08	3.25	2.00	2.29	5.65	5.43	6.08	10.0	6.95	2.99	1.59
Ac-ft	167	374	193	123	136	347	334	338	616	413	184	94

Calendar year 1950. Max 33 Min 0.68 Mean(mgd) 3.11 Mean(cfs) 4.81 Ac-ft 3,480
Fiscal year 1950-51: Max 37.5 Min 0.63 Mean(mgd) 2.96 Mean(cfs) 4.58 Ac-ft 3,320

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and once-daily staff-gage readings.

Puu Ka Ele ditch near Kilauea

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

Records available.--August 1932 to June 1951.

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

Average discharge.--18 years (1933-51), 3.00 mgd (4.64 cfs).

Extremes.--1932-51: Maximum daily discharge, 21 mgd (32 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.80	1.80	2.25	a1.6	1.23	12.0	a1.8	0	0	0	3.55	1.47
2	2.65	2.15	2.25	1.63	1.31	4.0	3.35	0	0	.03	3.55	1.47
3	1.89	1.89	2.25	1.71	1.31	17.7	2.15	0	0	.04	2.95	1.39
4	1.80	3.35	2.35	1.71	a1.4	9.9	2.15	0	.37	0	2.85	1.39
5	1.71	1.98	2.45	1.80	a1.7	2.35	3.1	0	2.0	0	2.75	1.39
6	1.71	1.98	2.05	1.54	a1.4	0	1.71	0	.62	0	2.55	1.47
7	1.71	2.35	2.85	1.54	a1.4	0	1.23	0	.11	0	2.45	1.63
8	1.71	2.65	2.35	1.54	a1.4	0	1.09	0	0	0	2.45	1.39
9	1.71	2.35	2.05	1.63	a1.3	0	1.09	0	0	0	2.35	1.39
10	1.63	2.05	2.15	2.25	1.31	0	1.02	0	0	.05	2.25	1.39
11	1.80	1.89	6.9	2.9	1.23	0	.51	0	1.30	1.91	2.25	1.39
12	1.80	1.80	3.7	1.80	1.23	0	0	0	1.31	4.1	2.15	1.31
13	1.71	1.71	2.75	1.54	1.23	0	.13	0	.04	1.49	2.05	1.31*
14	1.80	1.89	2.55	1.47	1.31	0	.85	0	0	2.85	1.98	1.31
15	1.71	14.2	2.75	1.47	1.31	0	.65	0	0	2.05	1.98	1.23
16	1.80	11.7	2.55	1.39	1.23	0	0	0	0	2.55	1.89	1.39
17	2.05	8.5	3.9	1.39	1.31	0	0	0	0	3.15	1.89	1.31
18	1.71	1.96	2.65	1.47	1.89	a0	0	0	0	3.05	1.89	1.16
19	1.80	.94	2.35	1.54	2.05	a.8	2.25	.68	1.50	3.9	1.89	1.16
20	1.71	2.15	2.15	1.47	4.6	a1.5	3.25	1.43	.04	.41	1.89	1.16
21	1.63	2.7	2.05	1.39	2.7	a1.5	3.05	.85	.89	.06	1.80	1.16
22	1.71	3.05	2.05	1.54	1.47	a1.5	1.04	0	.02	0	1.71	1.09
23	1.71	2.75	a2.0	1.54	1.63	a1.5	0	1.92	0	0	1.71	1.02
24	3.8	2.65	a1.8	1.39	1.89	a1.5	1.10	3.55	0	1.78	*1.98	1.02
25	2.65	2.45	a1.8	1.31	1.98	a1.5	2.25	3.25	0	3.45	1.71	1.16
26	1.89	2.55	a1.8	1.39	6.6	a1.5	2.45	3.05	0	3.45	1.63	1.09
27	1.89	2.25	a1.7	1.47	3.75	a1.5	.63	1.48	0	3.35	1.63	1.16
28	3.05	2.45	a1.7	1.47	2.05	a1.5	0	0	2.0	3.35	1.54	1.09
29	1.98	2.15	a1.6	1.47	1.71	a1.5	0	-	.32	3.55	1.54	1.16
30	1.98	2.35	a1.6	1.39	1.54	a3.2	0	-	0	3.35	1.63	1.16
31	1.71	2.35	-	1.31	-	a2.2	0	-	0	-	1.54	-
Total	60.21	96.99	73.35	49.06	56.47	67.15	36.85	16.21	10.52	47.92	65.98	38.22
Mean:												
mgd	1.94	3.13	2.44	1.58	1.88	2.17	1.19	0.579	0.339	1.60	2.13	1.27
cfs	3.00	4.84	3.78	2.44	2.91	3.36	1.84	0.896	0.525	2.48	3.30	1.96
Ac-ft	185	298	225	151	173	206	113	50	32	147	202	117

Calendar year 1950: Max 17.7 Min 0 Mean(mgd) 1.99 Mean(cfs) 3.08 Ac-ft 2,220
Fiscal year 1950-51: Max 17.7 Min 0 Mean(mgd) 1.70 Mean(cfs) 2.63 Ac-ft 1,900

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and occasional readings of staff gage.

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 1951.

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

Average discharge.--16 years (1934-42, 1943-51), 2.61 mgd (4.04 cfs).

Extremes.--1934-51: 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 period 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.46	1.78	1.70	1.16	0.88	11.7	2.25	0.14	4.0	0.14	3.05	1.09
2	2.15	2.55	1.78	1.12	.76	2.45	2.45	.14	4.0	.14	3.35	1.09
3	1.62	2.4	1.62	1.30	.76	3.3	2.05	.14	3.75	.14	3.15	1.09
4	1.46	7.1	1.78	1.38	.88	.88	3.05	.14	1.09	.14	2.85	1.02
5	1.46	2.55	1.87	1.54	1.30	.76	6.1	.14	1.22	.11	2.65	1.02
6	1.46	2.6	1.62	1.23	.88	.64	4.0	.14	.76	.08	2.55	1.09
7	1.38	3.8	3.65	1.16	.88	.47	2.85	.11	.64	.06	2.4	1.16
8	1.38	3.35	2.85	1.16	.88	*.42	1.38	.68	.58	.06	2.35	1.02
9	1.38	2.55	1.96	1.16	.88	.42	.58	1.30	.52	.04	2.15	1.02
10	1.38	2.35	2.25	3.2	.88	.42	.52	1.23	.52	.06	1.96	1.09
11	1.70	1.87	9.9	2.65	.82	.42	.52	1.62	.70	.06	1.87	1.09
12	1.54	1.70	6.1	1.87	.82	1.43	.52	1.47	.64	.08	1.78	1.09
13	1.23	1.62	3.25	1.23	.76	1.23	.70	1.30	.47	.06	1.70	1.23
14	1.30	1.89	2.55	1.09	.88	.52	.88	1.30	1.82	.04	1.54	1.09
15	1.23	21	2.45	1.02	.82	.47	1.09	1.70	a1.5	.04	1.46	1.09
16	1.38	22	2.05	.95	.76	.47	.80	1.62	a1.3	.04	1.46	1.46
17	1.87	5.5	2.45	1.02	.70	.47	.70	3.7	a3.2	1.24	1.46	1.23
18	1.38	.55	1.96	1.09	1.09	.47	.64	7.9	a1.7	2.85	1.87	1.09
19	1.62	1.69	1.70	1.16	1.70	1.26	2.05	21.5	a8.5	3.0	1.62	1.02
20	1.54	3.05	1.54	1.16	14.6	1.96	2.95	16.9	a3.5	.64	1.70	.95
21	1.23	2.65	1.54	1.02	4.5	1.96	2.75	.88	a5.0	.58	1.46	.95
22	1.30	2.55	1.46	1.46	1.86	1.78	1.55	.58	a3.0	.58	1.46	.82
23	1.46	2.45	1.46	1.23	2.25	1.87	.47	1.40	a1.0	.52	1.54	.70
24	3.4	2.45	1.30	1.09	2.25	1.70	.33	2.55	a.5	1.44	*1.54	.76
25	3.55	2.25	1.30	.95	3.1	1.70	.33	2.35	a.3	2.65	1.54	.64
26	2.05	2.15	1.38	.95	16.2	1.62	.29	2.15	a.3	2.7	1.46	.64
27	1.96	2.05	1.30	1.09	9.3	1.70	.25	2.9	a.2	2.95	1.46	.64
28	3.25	2.35	1.23	1.02	3.7	2.25	.17	3.05	a4.0	2.85	1.30	.64
29	1.96	1.78	1.23	1.16	2.25	2.25	.17	-	.21	3.05	1.23	.64
30	1.96	1.87	1.16	.95	2.15	3.25	.17	-	.21	2.95	1.38	.70
31	1.54	1.78	-	.88	-	2.65	.14	-	.17	-	1.16	-
Total	53.58	116.23	68.39	39.45	79.49	52.89	42.70	79.03	55.30	29.29	58.45	29.16
Mean:												
mgd	1.73	3.75	2.28	1.27	2.65	1.71	1.38	2.82	1.78	0.976	1.89	0.972
cfs	2.68	5.80	3.53	1.96	4.10	2.65	2.14	4.36	2.75	1.51	2.92	1.50
Ac-ft	164	357	210	121	244	162	131	243	170	90	179	89

Calendar year 1950. Max 22 Min 0.08 Mean(mgd) 2.15 Mean(cfs) 3.33 Ac-ft 2,410
Fiscal year 1950-51: Max 22 Min 0.04 Mean(mgd) 1.93 Mean(cfs) 2.99 Ac-ft 2,160

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of adjoining good record, recorded range in stage, and records for stations on nearby streams.

Hanalei River at altitude 625 ft, near Hanalei

Location.--Lat 22°07'10", long. 159°28'05", on right bank 0.4 mile downstream from Kaapoko Stream and 6.2 miles southeast of Hanalei.

Drainage area.--7.4 sq mi.

Records available.--January 1914 to June 1951.

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.--33 years (1918-51), 46.9 mgd (72.5 cfs).

Extremes.--Maximum discharge during year, 5,940 mgd (9,190 cfs) Mar. 28 (gage height, 8.43 ft), from rating curve extended as explained below; minimum, 6.3 mgd (9.8 cfs) Nov. 17. 1914-51: 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 fair except those above 200 mgd, 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.2	5.2	2.0	133
.4	10.9	2.5	213
.6	17.5	3.0	320
1.0	37	3.5	465
1.5	75	4.5	890

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	28	17.0	16.3	8.9	8.0	22.5	63	13.4	218	54	44	9.7
2	47	32	12.4	8.6	7.7	18.7	29.5	13.1	288	140	51	9.7
3	29.5	16.9	11.2	9.2	7.7	126	24	12.1	348	174	48	9.2
4	27.5	68	18.0	11.8	7.7	58	30.5	11.8	802	108	39	9.4
5	27	17.8	12.4	12.4	8.0	41	29	11.5	507	62	37	10.0
6	28	13.7	11.2	8.9	7.4	32	24	11.2	186	58	34.5	10.6
7	26.5	25	26	10.1	7.2	25	17.2	10.6	173	54	33.5	13.0
8	27	19.2	18.7	11.6	9.0	22.5	15.0	10.3	75	*50	33	9.7
9	25.5	17.6	14.7	9.7	10.0	17.9	14.0	10.0	58	52	32	9.4
10	28.5	30.5	26.5	27	7.7	17.9	12.8	9.7	47	56	25.5	10.0
11	33	14.7	147	48	7.2	27	14.0	16.4	320	79	17.3	10.0
12	26	12.1	61	13.9	6.9	40	158	11.9	204	134	12.8	10.3
13	9.4	11.2	28	10.3	6.6	31	178	9.7	80	50	12.4	12.3
14	10.9	29	21	8.9	7.2	*20.5	225	9.4	62	67	11.8	10.3
15	14.8	512	19.5	8.6	6.9	16.8	300	22	50	47	11.5	10.6
16	13.2	536	24.5	8.3	6.6	24.5	118	17.9	44	44	12.4	20
17	27	842	45	8.0	9.6	15.4	66	32	39.5	42	11.5	12.8
18	17.4	138	19.8	8.3	14.8	13.1	51	38	37	40	15.0	10.3
19	15.0	66	15.4	8.3	67	12.1	35	590	370	74	14.7	9.4
20	11.5	47	13.4	10.3	151	11.5	29	404	166	66	12.1	9.2
21	10.9	*37	12.4	8.3	42	10.9	25.5	92	375	58	11.2	9.4
22	20.5	31.5	11.8	18.2	16.1	10.6	52	*47	92	59	10.9	10.0
23	13.7	28	11.2	11.5	12.4	10.3	38.5	37	66	42	11.2	9.7
24	47	25.5	10.9	27.5	12.8	10.0	25	30	134	39	11.5	9.4
25	26.5	21.5	10.6	12.6	29	9.7	20.5	26	184	38.5	11.2	9.7
26	14.0	16.4	10.3	*13.5	75	9.4	18.7	27.5	329	37.5	*10.7	9.4
27	13.7	16.4	10.0	13.4	41	9.7	17.5	81	234	36	11.8	9.7
28	44	18.7	9.7	10.6	28	62	16.4	168	776	43	10.6	9.7
29	19.2	13.7	9.2	11.0	17.2	37.5	15.4	-	121	79	10.3	10.9
30	15.2	13.1	8.9	8.9	14.0	71	15.0	-	75	60	12.6	9.7
31	17.6	12.4	-	8.3	-	24	13.7	-	62	-	10.0	-
Total	715.0	2,699.9	667.0	394.9	651.7	858.5	1,691.2	1,773.5	6,522.5	1,943.0	631.0	313.5
Mean:												
mgd	23.1	87.1	22.2	12.7	21.7	27.7	54.6	63.3	210	64.8	20.4	10.4
cfs	35.7	135	34.3	19.6	33.6	42.9	84.5	97.9	325	100	31.6	16.1
Ac-ft	2,190	8,290	2,050	1,210	2,000	2,630	5,190	5,440	20,020	5,960	1,940	962

Calendar year 1950 : Max 842 Min 6.6 Mean(mgd) 51.3 Mean(cfs) 79.4 Ac-ft 57,470
Fiscal year 1950-51 : Max 842 Min 6.6 Mean(mgd) 51.7 Mean(cfs) 80.0 Ac-ft 57,880

Peak discharge (base, 2,000 mgd).--Aug. 17 (1:30 a.m.) 3,100 mgd (4,800 cfs), 6.82 ft; Feb. 20 (12 p.m.) 3,700 mgd (5,720 cfs), 7.22 ft; Mar. 4 (5 a.m.) 3,700 mgd (5,720 cfs), 7.21 ft; Mar. 11 (5 p.m.) 2,820 mgd (4,360 cfs), 6.58 ft; Mar. 19 (4 p.m.) 2,960 mgd (4,580 cfs), 6.73 ft; Mar. 28 (9 a.m.) 5,940 mgd (9,190 cfs), 8.43 ft.

* Discharge measurement made on this day.

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 1951.

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

Average discharge.--19 years (1932-51), 11.1 mgd (17.2 cfs).

Extremes.--Maximum discharge during year, 1,630 mgd (2,520 cfs) Aug. 17 (gage height, 6.90 ft), from rating curve extended above 60 mgd; minimum, not determined.
1931-51: 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 faulty or no gage-height record and those above 60 mgd, which are p. or.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.3	2.1	1.5	28
.4	2.9	2.0	55
.5	4.0	2.5	96
.7	6.7	3.0	158
1.0	12.5	3.7	297

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.55	8.6	5.3	3.9	2.9	7.0	12.5	4.1	5.2	9.5	5.2	4.0
2	3.65	15.8	5.0	3.6	2.9	6.3	8.0	4.1	12.7	70	5.0	4.0
3	3.45	6.6	4.7	3.7	2.8	30	5.7	3.9	76	65	4.8	3.9
4	3.35	6.1	5.3	3.9	2.8	50	6.8	4.3	68	25	4.6	3.9
5	3.25	4.4	4.8	4.0	2.8	23	8.7	4.0	33	12	4.5	3.9
6	3.25	4.6	4.6	3.5	2.8	16	8.0	3.8	12.6	9.0	4.4	3.9
7	3.25	6.0	7.0	3.7	2.75	11	5.0	3.9	8.8	8.0	4.5	4.2
8	3.35	4.4	6.0	3.7	2.8	9.0	4.4	*4.2	7.0	7.5	4.5	4.0
9	3.1	3.9	5.3	3.5	2.8	7.0	4.0	3.85	6.1	7.0	4.5	4.0
10	5.9	3.85	6.8	7.0	2.8	10	3.8	3.55	5.7	7.0	4.4	3.9
11	8.6	3.55	25	9.0	2.8	*35	3.8	11.9	38.5	7.0	4.3	3.9
12	12.1	3.45	12	4.4	2.8	24.5	4.4	6.2	35.5	28.5	4.3	3.9
13	4.9	3.35	7.4	3.8	2.8	18.2	25	4.1	12.8	*8.4	4.3	3.9
14	4.1	9.7	6.6	3.4	5.5	9.2	124	3.8	16.9	19.2	4.3	3.9
15	3.8	293	6.2	3.2	3.6	7.4	138	8.2	9.3	8.8	4.3	3.9
16	4.0	271	6.6	3.1	3.4	8.2	52	8.6	6.6	6.4	4.3	5.5
17	11.9	297	10	3.0	5.0	6.7	13.9	27.5	5.7	6.1	4.4	4.2
18	8.2	50	6.0	3.0	22	5.3	10.8	21	5.3	5.7	5.2	4.0
19	11.1	21	5.4	2.9	55	4.6	7.4	40	5.2	20.5	4.6	4.0
20	5.9	10	5.0	3.1	40	4.4	6.3	42	5.0	11.8	4.5	4.0
21	4.4	8.0	4.8	*2.9	15	4.1	5.6	54	30	7.9	4.4	4.0
22	8.6	7.0	4.6	2.9	6.0	4.0	58	11.4	11	9.7	4.3	4.0
23	5.6	6.4	4.4	3.1	10	4.0	28	7.2	18	6.0	4.3	4.0
24	9.8	6.0	4.3	7.6	17	3.65	8.7	6.0	45	5.6	4.3	3.9
25	7.8	5.6	4.2	4.3	23	3.55	6.6	5.2	46	5.3	4.3	3.8
26	5.3	5.4	4.1	5.3	30	3.45	5.7	4.8	48	5.2	4.1	3.8
27	8.4	5.3	4.0	4.8	19	4.1	5.3	4.9	45	5.0	4.1	3.8
28	11.9	5.4	4.0	4.0	8.4	25	4.9	5.0	220	5.0	4.0	3.8
29	5.6	5.3	3.9	6.1	5.5	21.5	4.6	-	40	5.7	4.0	4.0
30	4.4	5.1	3.9	4.2	5.0	61	4.5	-	20	5.0	4.0	3.9
31	5.6	5.0	-	3.35	-	13.5	4.4	-	10	-	4.0	-
Total	188.10	1,090.60	187.2	127.95	309.95	440.65	588.8	311.30	908.9	402.8	136.7	119.9
Mean:												
mgd	6.07	35.2	6.24	4.13	10.3	14.2	19.0	11.1	29.3	13.4	4.41	4.00
cfs	9.39	54.5	9.65	6.39	15.9	22.0	29.4	17.2	45.3	20.7	6.82	6.19
Ac-ft	577	3,350	574	393	951	1,350	1,810	955	2,790	1,240	420	368

Calendar year 1950: Max 297 Min 2.75 Mean(mgd) 11.9 Mean(cfs) 18.4 Ac-ft 13,340
Fiscal year 1950-51: Max 297 Min 2.75 Mean(mgd) 13.2 Mean(cfs) 20.4 Ac-ft 14,780

Peak discharge (base, 400 mgd).--Aug. 17 (1 a.m.) 1,630 mgd (2,520 cfs), 6.90 ft; Jan. 22 (12:30 p.m.) 442 mgd (684 cfs), 4.21 ft; Mar. 3 (11 p.m.) 442 mgd (684 cfs), 4.16 ft.
* Discharge measurement made on this day.
Note.--No gage-height record Aug. 18 to Oct. 20, Nov. 9 to Dec. 11, Mar. 4, Mar. 21 to Apr. 11, May 29 to June 30; discharge estimated on basis of records for nearby streams.

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 1951.

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

Average discharge.--19 years (1932-51), 3.67 mgd (5.68 cfs).

Extremes.--Maximum discharge during year, 1,100 mgd (1,700 cfs) Aug. 16 (gage height, 7.29 ft), from rating curve extended above 30 mgd by area-square root of depth studies; minimum, 0.29 mgd (0.45 cfs) Nov. 8, 12-14.
1931-51: Maximum discharge, that of Aug. 16; minimum, 0.17 mgd (0.26 cfs) Mar. 21, 22, 1934.

Remarks.--Records good except those for periods of no gage-height record and those above 30 mgd, which are fair.

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 16

0.9	0.11	1.7	15.3
1.0	.53	2.0	27
1.1	1.29	2.5	56
1.2	2.5	3.0	101
1.3	4.1	3.5	168
1.5	9.0	4.3	308

Aug. 17 to June 30

0.9	0.14	1.4	6.9
1.0	.60	1.6	12.5
1.1	1.47	1.9	22.5
1.2	2.8		

Note.--Same as preceding table above 1.9 ft.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.59	1.52	0.95	0.52	0.38	2.85	4.6	1.0	1.12	2.2	0.96	0.43
2	.59	3.45	.95	.48	.38	2.35	2.5	.95	6.4	35	.88	.43
3	.53	1.38	.90	.52	.33	14.6	1.69	.95	42	31.5	.88	.43
4	.47	.95	.90	.56	.33	24	1.69	1.1	67	11.8	.88	.43
5	.47	.65	.90	.60	.33	11.7	1.69	1.0	13.5	4.8	.88	.43
6	.42	.65	.90	.50	.33	8.5	1.57	.92	5.0	2.65	.80	.43
7	.42	.79	2.0	.48	.33	4.0	1.04	*.96	3.15	1.93	.80	.43
8	.47	.59	1.3	.45	.33	3.3	.80	1.12	2.35	1.69	.74	.43
9	.42	.53	1.0	.45	.43	*2.2	.74	.80	1.93	1.34	.74	.43
10	.73	.53	1.8	1.1	.38	3.85	.67	.74	1.69	1.23	.67	.43
11	1.27	.47	10	1.3	.33	11.4	.67	2.45	19.4	1.23	.67	.43
12	2.5	.47	4.0	.80	.33	8.7	.80	1.23	17.9	*4.9	.67	.43
13	.72	.47	2.0	.50	.33	5.7	26	.88	5.4	1.47	.67	.43
14	.53	1.58	1.7	.45	4.0	2.8	73	.74	5.8	3.45	.60	.43
15	.47	292	1.5	.40	.96	2.05	100	1.81	3.3	1.81	.60	.38
16	.53	178	1.8	.40	.60	2.95	33	2.45	2.2	1.47	.60	.60
17	2.35	86	2.7	.40	3.95	1.93	10	8.4	1.81	1.34	.60	.67
18	1.54	10.1	1.5	.38	6.0	1.34	5.0	5.2	1.57	1.04	.96	.48
19	2.1	4.8	1.0	*.38	25	1.12	3.1	13.2	1.47	4.5	.67	.43
20	1.11	3.15	.80	.38	17.8	.96	2.3	21.5	1.34	2.35	.67	.43
21	.79	2.2	.74	.33	2.65	.88	2.0	28	16.4	1.93	.60	.43
22	1.53	1.93	.68	.33	1.57	.80	23	5.1	4.8	1.93	.53	.38
23	1.03	1.47	.65	.38	3.25	.74	11	2.65	15.0	1.34	.53	.38
24	1.67	1.2	.64	1.47	3.65	.67	3.5	1.93	25.5	1.12	.53	.38
25	1.30	1.1	.61	.80	7.8	.67	2.3	1.57	24.5	1.04	.53	.48
26	.87	1.0	.60	1.12	8.6	.60	1.7	1.34	24	1.04	.53	.43
27	1.20	1.0	.58	.88	6.3	.80	1.4	1.23	30	.96	*.48	.43
28	1.89	1.2	.56	.67	2.95	10.3	1.2	1.23	111	.96	.48	.43
29	.95	1.1	.55	1.12	1.81	6.1	1.1	-	9.3	1.04	.48	.43
30	.72	1.0	.55	.74	1.57	31.5	1.1	-	4.0	.96	.48	.43
31	1.00	.95	-	.48	-	5.0	1.0	-	2.65	-	.48	-
Total	31.18	602.23	44.76	19.37	102.80	174.36	320.16	110.45	471.48	130.02	20.59	13.21
Mean:												
mgd	1.01	19.4	1.49	0.625	3.43	5.62	10.3	3.94	15.2	4.33	0.664	0.440
cfs	1.56	30.0	2.31	0.967	5.31	8.70	15.9	6.10	23.5	6.70	1.03	0.681
Ac-ft	96	1,850	137	59	315	535	983	339	1,450	399	63	41

Calendar year 1950: Max 292 Min 0.33 Mean(mgd) 4.60 Mean(cfs) 7.12 Ac-ft 5,150
Fiscal year 1950-51: Max 292 Min 0.33 Mean(mgd) 5.59 Mean(cfs) 8.65 Ac-ft 6,270

Peak discharge (base, 220 mgd).--Aug. 16 (10 p.m.) 1,100 mgd (1,700 cfs), 7.29 ft; Jan. 13 (10:30 p.m.) 327 mgd (506 cfs), 4.38 ft; Mar. 3 (12 p.m.) 347 mgd (537 cfs), 4.46 ft; Mar. 28 (12 m.) 805 mgd (1,250 cfs), 6.36 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 24 to Oct. 18; Jan. 15 to Feb. 7; discharge estimated on basis of records for nearby streams.

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 1951.

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

Average discharge.--19 years (1932-51), 4.59 mgd (7.10 cfs).

Extremes.--Maximum discharge during year, 665 mgd (1,030 cfs) Aug. 15 (gage height, 4.55 ft), from rating curve extended above 18 mgd by logarithmic plotting; minimum, 2.75 mgd (4.25 cfs) July 21 to Aug. 1.
1931-51: Maximum discharge, that of Aug. 15; minimum, 1.73 mgd (2.68 cfs) June 2, 1945.

Remarks.--Records fair except those for period of no gage-height record and those above 18 mgd, which are poor.

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 15

1.0	2.15	1.8	23.5
1.1	3.2	2.1	42
1.3	6.4	2.5	80
1.5	11.5	3.0	153

Aug. 16 to June 30

1.0	2.4	1.7	19.6
1.2	4.9	2.0	36
1.4	9.1	2.3	59

Note.--Same as preceding table above 2.3 ft.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	2.9	4.2	3.2	2.85	3.3	6.8	3.9	4.5	8.0	4.2	4.5
2	3.0	*3.0	4.0	3.2	2.85	3.3	5.5	3.7	5.3	23	4.2	4.5
3	3.0	3.0	4.0	3.3	2.85	5.3	4.5	3.6	10.5	26.5	4.2	4.5
4	3.0	3.0	4.0	3.4	2.85	9.3	4.1	3.5	62	15.6	4.2	4.5
5	3.0	2.9	3.9	3.2	2.85	7.2	3.65	3.4	21	10.6	4.2	4.5
6	3.0	2.9	3.9	3.1	2.85	4.9	3.4	3.3	11.7	8.4	4.2	4.5
7	3.0	2.9	4.5	3.1	2.85	4.1	3.3	*4.5	9.1	7.6	4.2	4.5
8	3.0	2.9	4.2	3.2	2.85	3.85	3.05	4.2	8.0	6.9	4.2	4.5
9	3.0	2.9	4.0	3.1	2.85	3.4	3.05	4.1	7.1	6.5	4.2	4.5
10	3.0	2.9	4.6	3.5	2.85	*3.4	2.95	3.9	6.7	6.3	4.2	4.5
11	3.1	2.9	6.0	3.7	2.85	3.7	2.95	4.3	16.7	5.9	4.2	4.5
12	3.0	2.9	5.0	3.2	2.85	4.1	2.95	4.2	28	*6.8	4.2	4.5
13	3.0	2.9	4.5	3.0	2.85	3.65	10.6	4.1	14.5	4.6	4.2	4.5
14	3.0	3.1	4.3	3.0	3.3	3.4	48	3.9	10.9	4.5	4.2	4.5
15	2.9	125	4.3	2.9	2.95	3.3	79	3.8	9.1	4.3	4.2	4.5
16	2.9	100	4.5	2.9	2.95	3.55	25	3.9	8.2	4.2	4.2	4.5
17	2.9	45	5.2	2.9	3.25	3.4	8.1	4.6	7.8	4.2	4.2	4.5
18	2.9	11	4.2	2.8	3.85	3.3	7.0	4.5	7.1	4.2	4.2	4.5
19	2.9	7.0	4.0	2.8	6.9	2.15	6.3	5.2	6.9	4.3	4.2	4.5
20	2.9	6.5	3.8	*2.85	6.7	3.05	5.8	18.9	6.7	4.2	4.2	4.5
21	2.9	6.0	3.7	2.85	4.1	2.95	5.3	28.5	18.1	4.2	4.2	4.5
22	2.75	5.6	3.6	2.85	3.5	2.95	11	10.7	12.1	4.2	4.2	4.5
23	2.75	5.2	3.5	2.85	3.3	2.95	8.4	7.3	12.7	4.2	4.2	4.5
24	2.75	5.0	3.4	3.05	3.15	2.95	7.0	6.1	32.5	4.2	4.2	4.5
25	2.75	4.8	3.4	2.95	3.3	2.95	6.1	5.5	34	4.2	4.2	4.3
26	2.75	4.7	3.3	2.95	3.3	2.95	5.6	5.1	43	4.2	4.2	4.3
27	2.75	4.6	3.3	2.85	3.3	2.95	5.2	4.9	31	4.2	*4.3	4.3
28	2.75	4.7	3.3	2.85	3.15	3.8	4.8	4.6	141	4.2	4.3	4.3
29	2.75	4.5	3.3	2.85	3.15	3.9	4.4	-	25	4.2	4.3	4.3
30	2.75	4.4	3.3	2.85	3.05	17.8	4.2	-	12.0	4.2	4.3	4.3
31	2.9	4.3	-	2.85	-	8.0	4.0	-	8.9	-	4.3	-
Total	90.05	389.4	121.2	94.10	100.25	136.60	301.80	168.2	632.1	208.6	130.7	133.8
Mean:												
mgd	2.90	12.6	4.04	3.04	3.34	4.41	9.74	6.01	20.4	6.95	4.22	4.46
cfs	4.49	19.5	6.25	4.70	5.17	6.82	15.1	9.30	31.6	10.8	6.53	6.90
Ac-ft	276	1,200	372	289	308	419	926	516	1,940	640	401	411

Calendar year 1950: Max 125 Min 1.92 Mean(mgd) 4.83 Mean(cfs) 7.47 Ac-ft 5,420
Fiscal year 1950-51: Max 141 Min 2.75 Mean(mgd) 6.87 Mean(cfs) 10.6 Ac-ft 7,700

Peak discharge (base, 70 mgd).--Aug. 15 (10 p.m.) 665 mgd (1,030 cfs), 4.55 ft; Jan. 15 (1:30 a.m.) 153 mgd (237 cfs), 3.00 ft; Mar. 4 (2 a.m.) 203 mgd (314 cfs), 3.25 ft; Mar. 11 (10 p.m.) 98 mgd (152 cfs), 2.65 ft; Mar. 28 (11:30 a.m.) 530 mgd (820 cfs), 4.32 ft.

* Discharge measurement made on this day.

Note.--Doubtful or no gage-height record Aug. 16 to Oct. 19, Jan. 16 to Feb. 6; discharge estimated on basis of records for nearby streams.

MISCELLANEOUS DISCHARGE MEASUREMENTS

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

Miscellaneous discharge measurements on Kauai during fiscal year July 1950 to June 1951

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Aug. 10	Milolii.....	Pacific Ocean..	At altitude 100 ft, near Hanalei.	1.82	1.18
Oct. 14	Kokee.....	Waiahulu Stream	At range station pump, near Waimea.	.829	.536

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 1951.

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

Average discharge.--34 years (1915-24, 1926-51), 10.7 mgd (16.6 cfs).

Extremes.--Maximum discharge during year, 1,160 mgd (1,790 cfs) Mar. 26 (gage height, 7.00 ft), from rating curve extended above 43 mgd by test on model of station site; minimum, 0.34 mgd (0.53 cfs) Nov. 17.

1913-51: Maximum discharge, 3,550 mgd (5,490 cfs), revised, Jan. 1, 1933 (gage height, 11.7 ft, from flookmarks), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.

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
725.....	1931	July 31, 1930	8.34	1,980	3,060
740.....	1932	Feb. 28, 1932	8.46	2,080	3,220
755.....	1933	Jan. 1, 1933	11.7	3,550	5,490
795.....	1935	Feb. 27, 1935	10.14	2,800	4,330
835.....	1937	Dec. 28, 1936	8.56	2,120	3,280
865.....	1938	Sept.28, 1937	8.43	2,030	3,140

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

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.5	0.30	1.8	1.31	2.4	9.6	3.5	93
1.6	.52	2.0	2.85	2.7	20	4.1	197
1.7	.84	2.2	5.4	3.0	38.5		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.92	4.5	2.85	1.51	0.89	3.55	6.7	1.31	16.3	6.8	3.2	1.58
2	6.9	37.5	3.6	1.44	.74	5.7	2.75	1.22	46	5.9	5.8	1.54
3	2.05	128	1.98	1.61	.65	62	10.3	1.26	24	6.7	9.1	1.08
4	1.78	26	1.85	1.22	1.06	6.5	11.9	1.22	65	7.3	3.05	.98
5	5.5	7.2	3.35	2.2	2.05	4.6	6.8	1.08	174	5.7	2.6	1.03
6	2.45	7.8	2.15	2.05	.78	22	5.5	.98	25.5	7.6	2.35	2.7
7	1.58	20.5	4.9	1.36	.62	6.3	2.75	.89	17.8	12.0	4.3	3.1
8	1.44	5.8	9.0	1.08	.52	3.75	2.4	.84	9.3	11.7	4.7	1.08
9	1.60	*9.1	2.7	18.9	*.94	3.05	1.98	.78	12.1	13.2	2.15	1.08
10	6.2	12.1	13.6	7.0	.72	11.5	1.71	.71	15.2	6.7	8.1	.93
11	2.95	6.5	a31	1.81	.50	4.3	1.79	.68	54	5.1	3.35	1.03
12	1.85	4.7	a9.0	1.31	.45	3.9	5.7	.68	53	4.7	2.35	1.42
13	1.85	4.2	a6.2	1.62	.43	2.7	10.5	.58	53	3.95	2.15	9.5
14	6.9	7.6	a4.5	1.22	.43	2.35	23.5	.52	14.7	3.5	1.85	4.9
15	3.05	56	a4.2	3.1	.43	2.25	74	*1.46	9.1	3.3	2.55	2.6
16	6.3	13.3	a7.2	2.6	.41	1.98	15.2	3.1	7.2	3.2	2.95	2.45
17	8.9	6.3	a15	1.45	.41	1.78	9.0	4.2	6.3	2.85	3.85	2.0
18	3.05	5.1	5.2	1.62	.58	1.58	7.9	4.1	5.6	2.85	7.0	1.26
19	2.25	4.4	4.1	1.08	8.3	1.51	4.5	57	10.6	2.7	2.25	1.03
20	3.35	3.95	3.5	.89	84	1.38	3.75	29.5	7.8	5.3	1.85	.93
21	8.6	3.65	2.95	.81	5.1	1.26	3.2	6.0	31	10.1	1.71	.84
22	7.9	3.2	2.7	2.95	2.2	1.17	3.05	3.15	28	4.4	1.91	.74
23	20.5	3.05	2.4	3.15	1.51	1.12	2.75	2.25	6.7	3.55	1.51	.71
24	27.5	2.85	2.5	3.45	1.44	1.03	2.5	1.85	7.5	2.7	1.44	2.45
25	29.5	2.7	2.15	1.84	19.6	1.08	2.25	2.4	12.1	2.4	1.38	.98
26	8.5	2.5	2.07	1.08	52	.93	1.98	2.45	192	3.15	3.2	.78
27	18.2	7.4	1.78	.89	23.5	.93	1.85	9.5	130	2.15	4.3	.62
28	23.5	7.5	1.64	.84	9.7	15.7	1.71	24.5	23.5	2.15	1.74	.52
29	7.9	2.35	1.51	6.3	4.8	10.1	1.58	-	11.9	a4.7	1.45	.50
30	6.3	2.25	1.51	1.85	3.5	4.1	1.51	-	9.3	8.4	7.3	.48
31	4.5	2.15	-	1.12	-	16.0	1.38	-	8.4	-	1.64	-
Total	234.77	410.15	157.09	79.35	228.26	206.10	232.39	164.21	1,087.4	164.75	103.08	50.84
Mean:												
mgd	7.57	13.2	5.24	2.56	7.61	6.65	7.50	5.86	35.1	5.49	3.33	1.69
cfs	11.7	20.4	8.11	3.96	11.8	10.3	11.6	9.07	54.3	8.49	5.15	2.61
Ac-ft	720	1,260	482	244	701	633	713	504	3,340	506	316	156

Calendar year 1950: Max 128 Min 0.41 Mean(mgd) 10.3 Mean(cfs) 15.9 Ac-ft 11,510
Fiscal year 1950-51: Max 192 Min 0.41 Mean(mgd) 8.54 Mean(cfs) 13.2 Ac-ft 9,580

Peak discharge (base, 700 mgd).--Aug. 3 (12:30 a.m.) 1,000 mgd (1,550 cfs), 6.57 ft; Nov. 20 (1:30 p.m.) 770 mgd (1,190 cfs), 5.98 ft; Dec. 3 (5:30 p.m.) 805 mgd (1,250 cfs), 6.09 ft; Mar. 5 (5 p.m.) 880 mgd (1,360 cfs), 6.28 ft; Mar. 12 (11 p.m.) 1,040 mgd (1,610 cfs), 6.66 ft; Mar. 26 (9 a.m.) 1,160 mgd (1,790 cfs), 7.00 ft.

* Discharge measurement maed on this day.

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

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 1951.

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

Average discharge.--32 years (1915-24, 1926-32, 1934-51), 7.25 mgd (11.2 cfs).

Extremes.--Maximum discharge during year, 646 mgd (1,000 cfs) Mar. 26 (gage height, 6.87 ft), from rating curve extended above 40 mgd by test on model of station site; minimum, 0.29 mgd (0.45 cfs) Nov. 17.
1913-51: 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 periods of fragmentary or no gage-height record, which are fair.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

2.6	0.29	3.4	14.9
2.7	.79	3.6	24.5
2.8	1.59	4.0	49
3.0	4.1	4.5	88
3.2	8.4	5.1	159

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.23	2.35	1.9	0.99	0.64	2.35	4.3	1.14	f40	6.0	2.75	1.23
2	5.0	23.5	2.1	.99	.59	3.95	2.25	1.06	f68	5.4	3.1	1.41
3	1.59	121	1.6	1.06	.54	39	5.1	1.06	f42	6.4	4.0	.99
4	1.23	26	1.5	.85	.59	4.8	5.0	1.06	f99	5.9	2.0	.85
5	2.45	7.4	1.9	1.59	.92	3.6	3.65	.99	f147	4.3	1.79	.85
6	1.50	6.0	1.5	1.41	.64	15.3	2.85	.85	40	11.2	1.59	1.41
7	1.06	10.1	3.5	1.06	.49	4.4	1.90	.79	21	9.6	1.68	1.68
8	.99	4.1	7.4	.85	.44	3.0	1.68	.74	9.0	10.6	3.0	.85
9	.92	*11.0	2.0	13.3	.55	2.45	1.41	.69	10	15.6	1.50	.79
10	4.1	16.0	10	5.3	.54	7.0	1.32	.69	15	6.0	23.5	.69
11	2.05	5.0	25	1.23	.44	2.85	1.68	.64	48	4.6	3.25	.64
12	1.50	3.7	6.2	.92	.39	2.6	11.7	.64	46	3.95	2.1	.69
13	1.59	3.25	4.2	1.67	.39	2.0	11.1	.59	45	3.7	1.90	7.1
14	1.89	4.3	3.0	.92	.34	1.90	13.8	.54	14	3.25	1.68	2.8
15	1.68	55	2.8	1.44	.39	1.68	32.5	.79	8.0	3.0	5.7	1.32
16	2.7	12	5.0	1.32	.39	1.59	9.3	1.46	6.2	2.85	4.1	1.59
17	3.4	5.0	11	.92	.34	1.50	5.6	1.36	5.5	2.6	2.95	1.14
18	1.68	4.1	3.7	1.32	.54	1.23	6.8	2.45	5.2	2.6	3.2	.85
19	1.32	3.7	2.85	.79	7.3	1.14	3.7	51	10	2.45	1.90	.69
20	1.90	3.3	2.45	.69	56	1.06	3.15	23.5	8.0	3.15	1.50	.64
21	3.75	3.0	2.1	.64	3.95	*.99	2.75	f4.7	30	5.0	1.41	.59
22	2.25	2.8	1.90	1.90	1.59	.92	2.6	f2.75	26	3.0	1.32	.54
23	6.0	2.6	1.68	1.41	1.14	.92	2.35	f2.1	6.5	2.35	1.23	.54
24	11.4	2.5	1.79	1.97	.99	.85	2.1	f1.79	7.0	2.0	1.14	1.41
25	9.6	2.4	1.59	.99	7.6	.85	1.90	1.7	11	1.90	1.06	.79
26	3.15	2.2	1.59	.69	35	.74	1.79	5.0	112	1.79	2.15	.59
27	4.2	6.0	1.32	.64	16.6	.79	1.59	f15.1	85	1.59	2.7	.54
28	9.4	6.5	1.23	.64	7.2	13.5	1.50	f34	22	1.75	1.90	.44
29	3.4	1.9	1.14	3.45	3.5	7.8	1.41	-	11.0	17.9	1.76	.44
30	2.95	1.8	.99	1.19	2.75	3.7	1.32	-	8.7	15.2	6.0	.44
31	2.1	1.7	-	.74	-	12.0	1.23	-	7.9	-	1.50	-
Total	97.98	360.20	114.93	52.88	152.78	146.46	149.33	159.18	1,014.0	165.63	95.36	34.53
Mean:												
mgd	3.16	11.6	3.83	1.71	5.09	4.72	4.82	5.68	32.7	5.52	3.08	1.15
cfs	4.89	17.9	5.93	2.65	7.88	7.30	7.46	8.79	50.6	8.54	4.77	1.78
Ac-ft	301	1,110	353	162	469	449	458	489	3,110	508	293	106

Calendar year 1950: Max 121 Min 0.34 Mean(mgd) 6.84 Mean(cfs) 10.6 Ac-ft 7,670
Fiscal year 1950-51: Max 147 Min 0.34 Mean(mgd) 6.97 Mean(cfs) 10.8 Ac-ft 7,810

Peak discharge (base, 420 mgd).--Aug. 3 (9 a.m.) 578 mgd (894 cfs), 6.68 ft; Dec. 3 (5:30 p.m.) 476 mgd (736 cfs), 6.43 ft; Mar. 5 (11:30 a.m.) 510 mgd (789 cfs), 6.52 ft; Mar. 26 (8 a.m.) 646 mgd (1,000 cfs), 6.87 ft.

* Discharge measurement made on this day.

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

Note.--No gage-height record Aug. 16 to Sept. 17, Feb. 25, 26, Mar. 6-25, 27, 28, 30, 31; discharge estimated on basis of records for stations on 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 1951.

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

Extremes.--1947-51: 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.29	0.34	0.16	0.10	0.08	0.05	0.65	0.06	0.77	0.40	0.14	0.12
2	.34	1.49	.15	.10	.06	.06	.23	.06	.69	.34	.14	.12
3	.26	1.94	.12	.10	.06	1.34	.12	.06	1.08	.34	.12	.09
4	.26	.96	.10	.10	.06	.42	.12	.06	.93	.26	.12	.08
5	.39	.67	.70	.09	.06	.16	.10	.06	2.5	.21	.10	.06
6	.29	.62	.36	.09	.06	.15	.20	.06	1.27	*.26	.09	.05
7	.21	1.19	.69	.09	.06	.16	.09	.06	.72	.18	.09	1.26
8	.21	*.62	1.36	.09	.06	.10	.08	.06	.58	.18	.08	.90
9	.18	.53	.43	.55	.06	.10	.06	*.06	.45	.20	.08	1.28
10	.44	.67	.66	.61	.05	.14	.06	.06	.53	.14	.08	1.90
11	.36	.62	1.03	.16	.05	.12	.05	.05	2.05	.12	.06	1.99
12	.21	.45	.58	.14	.05	.10	.05	.05	.96	.10	.06	2.35
13	.18	.37	.43	.10	.05	.09	.09	.05	2.85	.10	.06	5.4
14	.27	.48	*.35	.09	.05	.08	.34	.05	1.10	.08	.05	5.0
15	.38	2.85	.32	.10	.05	.06	2.6	.05	.82	.08	.05	4.4
16	.66	1.44	.40	.12	.05	.06	1.29	.06	.72	.08	.05	4.2
17	1.12	.82	.79	.09	.05	.06	.48	.06	.67	.08	.06	3.6
18	.34	.67	.32	.10	.05	.05	.40	.40	.45	.08	.22	2.35
19	.26	.53	.26	.08	.06	.05	.26	.82	.43	.08	.05	1.99
20	.18	.45	.21	.08	1.16	.05	.20	1.22	.43	.08	.05	1.82
21	.36	.40	.20	.06	.26	.05	.16	.40	1.13	.09	.05	1.65
22	.37	.37	.18	.47	.05	.05	.15	.18	1.39	.10	.05	1.51
23	.36	.34	.16	.37	.05	.05	.14	.14	.43	.09	.04	1.44
24	1.47	.32	.16	.60	.05	.05	.10	.12	.34	.09	.03	2.95
25	1.17	.26	.15	.24	.15	.05	.09	.10	.37	.09	.08	2.15
26	.45	.24	.14	.10	.08	.05	.09	.12	2.65	.10	.09	.58
27	.88	.72	.14	.08	.28	.05	.09	1.04	2.05	.10	.10	.06
28	1.32	.69	.14	.06	.06	.32	.06	.74	1.03	.12	.06	.06
29	.87	.26	.12	.46	.05	.43	.06	-	.72	.14	.06	.06
30	.58	.21	.12	.15	.05	.16	.06	-	.48	.16	.23	.06
31	.40	.18	-	.09	-	1.13	.06	-	.40	-	.12	-
Total	15.06	21.70	10.93	5.66	3.31	5.79	8.53	6.25	30.99	4.47	2.66	49.48
Mean:												
mgd	0.486	0.700	0.364	0.183	0.110	0.187	0.275	0.223	1.00	0.149	0.086	1.65
cfs	0.752	1.08	0.563	0.283	0.170	0.289	0.425	0.345	1.55	0.231	0.133	2.55
Ac-ft	46	67	34	17	10	18	26	19	95	14	8.2	152

Calendar year 1950: Max 2.85 Min 0 Mean(mgd) 0.258 Mean(cfs) 0.399 Ac-ft 289
Fiscal year 1950-51: Max 5.4 Min 0.03 Mean(mgd) 0.452 Mean(cfs) 0.699 Ac-ft 506

* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 970 ft (from topographic map).

Extremes.--Maximum discharge during year, 3,240 mgd (5,010 cfs) Mar. 26 (gage height, 11.07 ft), from rating curve extended above 120 mgd by test on model of station site; minimum, 0.67 mgd (1.04 cfs) June 23.
1946-51: 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. 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.37	2.0	74
.4	.80	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	4.7	650
1.6	37.5		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	7.7	5.7	3.8	2.8	7.5	26.5	3.8	101	23.5	11.5	4.6
2	13.6	35.5	7.1	3.65	2.35	12.2	10.4	3.85	139	21.5	8.6	4.7
3	6.1	451	5.4	3.8	2.15	247	16.9	3.5	120	24.5	22	4.2
4	4.4	78	5.0	3.25	2.15	31	22.5	3.85	244	23	8.9	*3.15
5	7.8	18.3	9.0	4.7	4.2	13.9	13.4	3.25	632	17.4	7.5	2.9
6	7.8	14.6	6.3	4.7	2.8	47	14.4	2.9	110	*37	6.4	6.7
7	4.1	44	12.5	4.4	2.1	18.8	7.0	2.8	64	29	6.3	9.5
8	3.5	*13.5	26	3.15	1.81	8.9	5.7	2.7	35.5	38	11.3	3.45
9	3.5	23.5	8.0	47	1.72	7.3	5.0	2.45	34.5	53	6.3	2.45
10	9.5	34.5	23.5	32	2.25	21	4.1	2.35	46	23.5	48	1.26
11	10.6	17.8	94	5.9	1.72	10.2	4.1	2.25	253	17.8	14.4	1.12
12	5.0	12.1	25	4.1	1.45	8.8	14.0	*2.15	200	15.3	7.3	1.12
13	4.6	10.0	18.0	4.3	1.38	6.3	32	2.1	177	14.3	6.3	15.0
14	7.6	15.1	*10.9	3.5	1.32	5.4	49	1.90	55	12.8	5.9	5.8
15	9.9	189	10.3	4.6	1.38	5.0	200	2.6	34	11.8	5.5	4.4
16	7.8	48	27	6.6	1.38	4.7	62	6.2	27	11.5	17.1	1.72
17	22.5	17.8	59	4.1	1.38	4.4	24	6.7	23	10.3	7.6	1.54
18	6.8	14.3	13.4	4.6	2.1	3.65	25	18.2	20	10.0	21.5	1.06
19	5.5	11.8	10.0	3.25	1.72	3.4	13.9	171	34.5	*9.4	7.5	.93
20	5.1	10.6	8.6	2.7	228	3.15	11.2	129	35.5	12.5	5.7	.80
21	15.6	9.7	7.5	2.35	21	2.9	9.7	23.5	122	23.5	5.0	.76
22	11.7	8.6	6.6	8.3	5.8	2.8	8.9	11.2	91	15.3	5.0	.71
23	29.5	7.7	6.1	6.9	3.95	2.7	8.4	7.5	25	10.0	4.6	.71
24	49	7.3	5.7	11.3	3.15	2.45	7.0	6.1	27	8.6	4.2	.76
25	52	7.0	5.7	7.8	25	2.6	6.4	5.7	68	7.7	4.1	1.54
26	14.6	6.6	5.4	3.4	98	2.35	5.9	7.8	522	8.6	7.6	1.74
27	22.5	14.8	4.8	2.8	85	2.35	5.5	90	370	7.0	11.3	1.99
28	45	27.5	4.4	2.7	27	41	5.0	119	70	7.0	6.3	1.81
29	18.1	6.6	4.1	12.5	14.3	31.5	4.7	-	39	32	4.7	1.72
30	12.1	5.9	3.8	7.3	9.4	12.0	4.4	-	31.5	57	22.5	1.72
31	8.6	5.7	-	3.25	-	70	3.95	-	28	-	6.5	-
Total	428.8	1,174.5	438.8	222.70	558.76	642.25	630.95	643.95	3,778.5	592.8	317.4	89.86
Mean:												
mgd	13.8	37.9	14.6	7.18	18.6	20.7	20.4	23.0	122	19.8	10.2	3.00
cfs	21.4	58.6	22.6	11.1	28.8	32.0	31.6	35.6	189	30.6	15.8	4.64
Ac-ft	1,320	3,600	1,350	683	1,710	1,970	1,940	1,980	11,600	1,820	974	276

Calendar year 1950: Max 451 Min 1.32 Mean(mgd) 27.5 Mean(cfs) 42.5 Ac-ft 30,790
Fiscal year 1950-51: Max 632 Min 0.71 Mean(mgd) 26.1 Mean(cfs) 40.4 Ac-ft 29,220

Peak discharge (base, 1,500 mgd).--Aug. 3 (1:30 a.m.) 2,230 mgd (3,450 cfs), 8.96 ft; Dec. 3 (7 p.m.) 2,140 mgd (3,310 cfs), 8.84 ft; Mar. 5 (5:30 p.m.) 2,230 mgd (3,450 cfs), 9.02 ft; Mar. 12 (11 p.m.) 2,360 mgd (3,650 cfs), 9.32 ft; Mar. 26 (6 a.m.) 3,240 mgd (5,010 cfs), 11.07 ft.
* Discharge measurement made on this day.

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 1951.

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

Average discharge.--7 years, 7.02 mgd (10.9 cfs).

Extremes.--Maximum discharge during year, 765 mgd (1,180 cfs) Mar. 26 (gage height, 5.86 ft), from rating curve extended above 15 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) June 29, 30.
1944-51: Maximum discharge, that of Mar. 26, 1951; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 1945.

Remarks.--Records good.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.09	0.8	0.95	1.4	19.2
.4	.17	.9	1.33	1.7	38
.5	.30	1.0	2.3	2.1	74
.6	.47	1.1	5.5	2.5	122
.7	.68	1.2	9.8	2.9	176

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.25	*5.4	*2.1	1.25	*0.78	2.45	14.2	*1.01	*9.1	8.5	*2.55	0.53
2	3.55	40	6.2	1.06	.84	4.3	4.9	.92	24.5	*7.4	2.3	.43
3	1.41	80	1.73	1.40	.55	60	9.4	.92	19.6	8.5	4.7	.37
4	1.05	13.1	1.45	.95	.98	7.4	14.7	.89	12.0	7.2	1.56	.34
5	*1.59	6.8	4.1	1.86	1.17	4.7	11.8	.86	109	5.5	1.25	.37
6	1.52	8.9	1.84	3.85	.61	22.5	5.9	.70	21.5	6.4	1.01	.68
7	.86	23.5	6.4	1.62	.49	6.7	2.75	.64	13.0	5.5	4.4	.73
8	.75	6.4	10.8	.92	.45	3.3	2.3	.61	8.5	7.1	6.0	.41
9	.87	5.5	3.6	6.2	.78	2.5	1.84	.57	10.8	11.9	1.44	.34
10	13.6	6.4	24	5.1	.62	12.6	1.45	.53	14.6	6.4	1.47	.41
11	5.6	4.7	13.9	1.19	.41	4.7	1.41	.49	49	4.3	1.21	.48
12	1.63	3.95	3.6	.75	.36	4.7	2.3	.47	43	3.6	.86	.99
13	4.9	3.0	9.7	.64	.32	2.75	3.0	.43	65	3.3	.75	1.12
14	6.2	9.4	4.7	.61	.32	2.05	38.5	.37	16.0	2.75	.70	.74
15	3.1	62	6.4	2.75	.32	1.84	83	.80	10.2	2.75	1.22	.67
16	4.9	15.0	11.6	4.4	.32	1.73	20	5.6	8.5	2.5	1.43	2.75
17	9.4	6.4	11.2	1.10	.31	1.41	8.5	2.45	7.2	2.3	4.6	1.43
18	5.1	4.7	4.3	1.06	.32	1.21	6.8	1.54	6.4	2.3	6.6	.61
19	2.75	3.95	3.0	.68	7.9	1.09	5.1	59	6.8	2.05	2.1	.36
20	4.0	3.6	2.5	.53	68	.98	4.3	35	6.4	4.7	1.01	.28
21	8.8	3.3	2.3	.45	5.0	.92	3.6	7.3	32	4.4	.77	.27
22	17.0	3.0	1.84	1.26	1.44	.83	3.6	3.0	35	3.25	.89	.25
23	14.8	2.75	1.73	6.5	.95	.75	3.3	2.5	6.8	5.1	.75	.23
24	32	2.3	1.63	10.4	.75	.70	2.75	1.84	8.5	2.3	.64	.27
25	28.5	2.3	1.56	2.15	13.7	.89	2.3	1.56	19.8	1.63	.61	.24
26	10.9	2.3	1.41	1.01	65	.73	1.84	1.41	167	2.3	1.03	.19
27	24.5	6.7	1.25	.70	25	.75	1.73	7.9	120	1.41	2.95	.18
28	17.1	4.7	1.13	.64	9.6	24.5	1.45	8.1	30.5	1.21	.84	.17
29	8.5	1.73	1.01	14.7	4.0	11.0	1.33	-	17.3	3.3	.53	.15
30	8.5	1.63	1.01	2.1	2.75	7.2	1.21	-	12.3	15.9	.78	.15
31	5.9	1.73	-	1.05	-	19.7	1.13	-	10.7	-	.64	-
Total	250.53	345.14	147.99	78.88	213.84	216.88	266.39	147.41	921.0	145.75	57.59	16.14
Mean:												
mgd	8.08	11.1	4.93	2.54	7.13	7.00	8.59	5.26	29.7	4.86	1.86	0.538
cfs	12.5	17.2	7.63	3.93	11.0	10.8	13.3	8.14	46.0	7.52	2.88	0.832
Ac-ft	769	1,060	454	242	656	666	818	452	2,830	447	177	50

Calendar year 1950: Max 80 Min 0.31 Mean(mgd) 8.64 Mean(cfs) 13.4 Ac-ft 9,680
Fiscal year 1950-51: Max 167 Min 0.15 Mean(mgd) 7.69 Mean(cfs) 11.9 Ac-ft 8,620

Peak discharge (base, 400 mgd).--Aug. 3 (12 m.) 741 cfs (1,150 cfs), 5.82 ft; Dec. 3 (5:30 p.m.) 493 mgd (763 cfs), 4.70 ft; Mar. 12 (11:30 p.m.) 670 mgd (1,040 cfs), 5.50 ft; Mar. 26 (7 a.m.) 765 mgd (1,180 cfs), 5.86 ft.
* Discharge measurement made on this day.

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.--3.3 sq mi.

Records available.--October 1946 to June 1951.

Gage.--Water-stage recorder and concrete control. Datum of gage is 844.51 ft.

Extremes.--Maximum discharge during year, 960 mgd (1,490 cfs) Aug. 3 (gage height, 7.47 ft), from rating curve extended above 80 mgd by test on model of station site; maximum gage height, 11.10 ft Mar. 26 (backwater from Waihawa Reservoir Dam); minimum discharge, 0.80 mgd (1.24 cfs) June 27, 29, 30.
1946-51: 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 tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 26				Mar. 27 to June 30			
0.4	0.76	1.5	29.5	0.3	0.44	0.8	5.3
.5	1.36	1.9	60	.4	.90	.9	7.2
.6	2.2	2.4	118	.5	1.58	1.1	12.6
.8	4.6	3.0	193	.6	2.55	1.3	20.5
1.0	8.4	4.0	322	.7	3.7		
1.2	14.1	5.0	470				

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	9.7	*3.65	3.25	3.4	3.15	33.5	2.6	*24.5	35.5	8.8	2.85
2	5.6	21.5	8.3	2.9	2.85	4.8	12.1	2.4	36	*35.5	6.4	2.85
3	4.3	165	4.2	2.6	2.5	120	13.7	2.4	58	32	8.1	2.75
4	3.5	28.5	3.65	3.55	3.0	24	27	2.4	30	18.0	6.2	2.75
5	3.5	13.2	11.5	3.95	4.0	14.1	19.7	2.4	e180	15.3	5.0	2.75
6	5.4	12.2	10.6	6.8	2.6	29	17.0	1.94	72	17.9	5.0	2.85
7	3.05	44	20	5.3	2.3	20	12.6	1.78	44	14.5	5.7	2.85
8	2.6	13.5	29	3.8	2.1	10.0	11.6	1.86	34.5	14.9	9.8	2.85
9	2.7	*10.1	18.7	6.4	2.0	8.7	11.3	1.61	33	20.5	5.4	2.75
10	17.3	8.9	42	18.0	2.2	18.3	6.7	1.53	40	17.2	4.7	3.05
11	17.8	8.4	35.5	4.7	1.61	9.7	4.0	1.44	e130	12.0	5.0	2.95
12	5.3	7.1	18.4	4.5	1.36	6.5	4.5	1.44	e65	10.6	4.0	3.55
13	7.2	6.3	21	2.85	*1.27	4.5	4.8	1.24	e200	9.0	4.0	3.2
14	6.1	11.8	*18.4	2.7	1.24	3.65	48	1.12	68	8.5	3.7	2.95
15	10.7	116	12.0	3.5	1.24	3.4	e130	1.59	43	8.2	3.3	2.85
16	9.9	53	13.5	8.4	1.24	3.15	e60	7.2	36	7.7	4.6	4.5
17	25	32.5	18.8	4.2	1.24	3.05	29	4.2	32.5	7.5	6.5	4.9
18	8.9	18.6	8.4	2.55	1.24	2.3	24	5.4	30	7.2	18.4	3.05
19	7.3	11.9	5.4	1.61	1.18	1.94	20	73	21.5	6.4	7.1	2.65
20	4.3	10.7	4.9	1.36	97	1.78	17.8	78	13.4	7.0	5.0	2.55
21	12.2	9.7	4.4	1.30	16.7	1.61	17.0	34	61	7.0	3.85	2.55
22	22.5	7.6	3.65	2.0	3.4	1.69	14.2	10.4	100	9.2	3.45	2.55
23	30	5.4	3.9	12.2	2.4	1.44	9.2	7.6	19.7	7.1	3.45	2.55
24	49	4.9	3.9	29.5	1.78	1.44	8.0	6.3	17.0	7.1	3.2	2.55
25	69	4.8	3.55	18.4	11.9	1.69	7.6	5.8	21.5	5.9	3.2	1.92
26	34	4.9	2.95	13.4	59	1.78	7.1	5.6	e225	7.2	3.9	.90
27	56	12.0	3.65	8.4	47	1.61	6.7	64	e190	5.9	7.3	.90
28	51	13.3	3.05	8.2	9.9	25.5	6.5	25	76	5.3	4.0	.96
29	37.5	4.9	2.4	28	7.5	23.5	4.6	-	50	7.8	2.95	.90
30	32.5	4.0	2.85	11.3	3.8	9.2	2.95	-	47	20	3.65	.80
31	22.5	4.2	-	4.0	-	65	2.7	-	39	-	3.2	-
Total	570.45	678.6	342.20	229.62	298.95	426.48	593.85	354.25	2,037.6	387.9	168.85	78.03
Mean:												
mgd	18.4	21.9	11.4	7.41	9.96	13.8	19.2	12.7	65.7	12.9	5.45	2.60
cfs	28.5	33.9	17.6	11.5	15.4	21.4	29.7	19.6	102	20.0	8.43	4.02
Ac-ft	1,750	2,080	1,050	705	917	1,310	1,820	1,090	6,250	1,190	518	239

Calendar year 1950: Max 354 Min 1.18 Mean(mgd) 18.7 Mean(cfs) 28.9 Ac-ft 20,920
Fiscal year 1950-51: Max 225 Min 0.80 Mean(mgd) 16.9 Mean(cfs) 26.1 Ac-ft 18,920

* Discharge measurement made on this day.
e Stage-discharge relation indefinitie; discharge estimated on basis of records for station near Wahiawa.

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 1951.

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

Extremes.--Maximum discharge during year, 550 mgd (851 cfs) Mar. 26 (gage height, 3.97 ft), from rating curve extended above 10 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Dec. 5, 6.

1947-51: 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 for periods of 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.0	0	0.7	3.6
.1	.03	.8	5.2
.2	.14	1.0	9.8
.3	.37	1.2	16.2
.4	.76	1.5	31.5
.5	1.44	2.1	85
.6	2.45		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.71	0.82	0.94	0.70	0.26	0.28	7.1	0.71	47	7.0	3.0	0.94
2	2.3	5.1	.88	.69	.24	.26	2.55	.66	43	6.4	2.45	.82
3	1.13	54	.82	.72	.21	9.8	3.0	.62	51	6.8	2.9	.76
4	.71	13.4	.82	.63	.21	.02	4.6	.71	56	6.2	2.0	*.66
5	.71	3.75	.88	1.0	.40	.02	2.55	.66	76	4.7	1.71	.62
6	.88	2.9	.82	.90	.26	5.8	2.4	.54	39	*18.6	1.53	.82
7	.62	6.9	1.79	.75	.19	5.0	1.28	.50	22.5	7.3	1.36	.94
8	.54	*2.45	3.8	.55	.17	2.45	1.06	.46	13.0	7.0	2.65	.62
9	.46	5.3	1.28	2.0	.19	1.91	.94	*.46	10.6	15.9	1.53	.54
10	1.53	10.1	2.55	7.0	.17	5.0	.76	.43	16.7	7.1	10.5	.54
11	2.5	3.1	12.8	1.1	.14	2.7	.82	.40	45	5.4	4.1	.46
12	.88	2.25	7.3	.55	.13	1.91	6.6	.40	26.5	4.5	1.71	.46
13	.82	1.81	2.0	.80	.12	1.44	6.3	.37	43	4.0	1.44	3.5
14	.66	2.45	*1.44	.55	.11	1.20	10.1	.31	18.0	3.6	1.36	1.42
15	.71	29.5	1.3	.76	.11	1.06	16.4	.43	11.2	3.35	1.28	.76
16	1.20	13.6	4.5	.75	.11	1.00	10.3	1.18	9.3	3.25	5.4	.71
17	2.75	4.5	12.7	.55	.12	1.13	4.0	.92	7.7	3.1	2.05	.71
18	1.20	3.25	3.8	.70	.79	.82	4.7	5.8	6.8	3.25	4.7	.54
19	.94	2.8	2.4	.47	1.43	.76	2.8	18.0	15.5	3.1	1.71	.43
20	.58	2.35	1.8	.38	31	.66	2.1	11.5	19.0	3.25	1.28	.37
21	2.2	2.1	1.5	.33	6.0	.62	1.81	6.8	26.5	2.9	1.13	.37
22	1.56	1.81	1.3	2.7	1.60	.54	1.81	3.45	26.5	3.25	1.06	.34
23	3.05	1.62	1.1	2.2	1.00	.46	1.71	2.25	9.0	2.85	.94	.31
24	5.4	1.44	1.1	2.8	.76	.43	1.36	1.62	10.4	2.45	.94	.34
25	6.9	1.44	.92	1.0	3.65	.46	1.20	1.36	15.9	2.1	.88	.50
26	1.81	1.28	.86	.35	3.7	.43	1.06	3.3	76	2.0	1.06	.37
27	2.6	1.84	.80	.33	.62	.46	1.00	11.8	48	1.81	2.05	.28
28	4.5	5.4	.76	.32	.46	9.5	.94	23.5	20.5	1.81	2.1	.26
29	1.67	1.28	.72	1.4	.40	8.1	.88	-	12.4	10.5	1.49	.24
30	1.37	1.06	.70	.70	.31	4.2	.82	-	9.8	12.1	5.2	.24
31	1.00	1.00	-	.30	-	6.8	.71	-	8.5	-	1.41	-
Total	53.89	190.60	74.38	33.98	54.86	75.22	103.66	98.94	840.3	165.37	72.92	19.87
Mean:												
mgd	1.74	6.15	2.48	1.10	1.83	2.43	3.34	3.53	27.1	5.51	2.35	0.662
cfs	2.69	9.52	3.84	1.70	2.83	3.76	5.17	5.46	41.9	8.53	3.64	1.02
Ac-ft	165	585	228	104	168	231	318	304	2,580	508	224	61

Calendar year 1950: Max 54 Min 0.02 Mean(mgd) 3.36 Mean(cfs) 5.20 Ac-ft 3,760
Fiscal year 1950-51: Max 76 Min 0.02 Mean(mgd) 4.89 Mean(cfs) 7.57 Ac-ft 5,480

Peak discharge (base, 130 mgd).--Aug. 3 (10 a.m.) 248 mgd (384 cfs), 3.05 ft; Dec. 3 (6 p.m.) 195 mgd (302 cfs), 2.79 ft; Mar. 4 (12 m.) 137 mgd (212 cfs), 2.50 ft; Mar. 11 (6 a.m.) 225 mgd (348 cfs), 2.95 ft; Mar. 26 (8 a.m.) 550 mgd (851 cfs), 3.97 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 15, 16, Sept. 18 to Oct. 9, Oct. 11-21, Oct. 24 to Nov. 12; discharge estimated on basis of records for stations on 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 1951.

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

Average discharge.--17 years (1931-34, 1937-51), 12.0 mgd (18.6 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-51: 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 except those for period of no gage-height record, which are fair. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.7	12.7	11.3	12.3	12.7	13.5	14.7	13.1	13.5	15.1	15.5	15.1
2	12.7	12.7	13.1	12.7	12.7	13.5	14.7	13.1	13.5	15.1	15.1	15.1
3	13.1	12.7	13.1	12.7	12.7	13.9	14.7	13.1	13.1	15.1	15.1	15.1
4	13.1	10.0	13.5	12.7	12.7	13.9	14.7	13.1	13.1	15.1	15.1	15.1
5	13.1	11.1	13.5	12.7	13.1	14.3	14.7	13.1	13.5	15.5	15.1	15.1
6	13.1	12.4	13.5	12.7	13.1	14.3	14.7	13.1	13.1	15.5	15.5	15.1
7	12.7	10.2	10.2	12.7	13.1	14.3	15.1	13.1	13.1	15.5	15.5	12.0
8	12.7	12.7	10.2	12.7	*13.1	14.3	14.7	*13.1	13.1	15.9	15.5	12.0
9	12.7	12.7	11.6	12.7	13.1	14.7	15.1	13.1	*13.5	15.9	15.1	13.9
10	12.7	12.7	13.1	12.7	13.1	15.1	15.1	13.1	13.5	15.5	15.1	14.7
11	12.7	12.7	11.6	9.8	13.5	15.1	15.1	13.1	13.9	15.5	15.1	10.9
12	12.7	12.7	13.5	*10.3	13.1	15.1	15.1	13.5	13.9	15.5	14.7	11.3
13	12.7	12.7	13.1	9.5	13.1	15.5	14.7	13.1	13.9	15.9	14.7	11.3
14	12.7	13.1	13.1	10.9	13.1	15.5	14.7	13.1	12.7	15.9	15.1	10.6
15	12.7	13.1	*13.5	12.7	11.3	15.5	14.3	13.1	12.7	15.5	14.7	10.6
16	12.7	11.6	13.5	12.3	11.6	15.5	14.3	13.1	13.1	15.5	15.1	10.6
17	12.7	12.7	13.5	12.3	11.3	15.5	14.3	13.1	13.1	15.5	15.1	10.9
18	12.7	12.7	13.5	12.3	11.6	15.1	14.3	13.5	13.5	15.5	15.1	12.0
19	12.7	12.7	13.5	12.3	13.5	15.1	14.3	13.5	13.9	15.5	15.1	12.7
20	12.7	12.7	13.1	12.3	11.6	13.1	14.3	13.1	13.9	15.5	15.1	13.1
21	12.7	12.7	12.7	12.3	12.3	11.6	14.7	13.1	13.9	15.5	15.1	14.7
22	12.7	12.7	13.1	12.7	13.1	11.3	14.7	13.1	13.9	15.5	15.1	12.0
23	12.7	12.7	13.1	12.3	13.5	12.0	14.7	13.5	13.9	15.5	15.1	14.3
24	12.7	12.3	13.1	9.8	13.1	14.3	14.7	13.5	13.9	14.3	14.7	14.7
25	12.7	12.7	13.1	9.2	13.5	14.7	14.3	13.1	14.3	13.9	*15.1	14.7
26	12.7	12.7	13.1	9.2	13.5	13.1	14.3	13.1	14.3	13.5	15.1	14.3
27	12.7	12.7	10.2	9.5	13.5	13.1	13.9	13.1	14.3	13.5	15.5	14.3
28	12.7	12.7	9.8	11.3	13.5	13.1	13.5	13.5	13.5	15.1	15.5	14.3
29	12.7	12.7	9.8	12.7	13.9	14.3	13.5	-	13.5	15.5	15.1	13.1
30	12.7	9.8	11.3	9.8	13.5	14.3	13.1	-	13.5	15.1	15.5	13.5
31	12.7	9.8	-	12.3	-	14.3	13.1	-	13.9	-	15.1	-
Total	395.3	380.1	374.3	362.4	386.5	438.9	448.1	369.2	420.5	457.4	469.3	397.1
Mean:												
mgd	12.8	12.3	12.5	11.7	12.9	14.2	14.5	13.2	13.6	15.2	15.1	13.2
cfs	19.8	19.0	19.3	18.1	20.0	22.0	22.4	20.4	21.0	23.5	23.4	20.4
Ac-ft	1,210	1,170	1,150	1,110	1,190	1,350	1,380	1,130	1,290	1,400	1,440	1,220

Calendar year 1950: Max 17.1 Min 9.2 Mean(mgd) 13.3 Mean(cfs) 20.6 Ac-ft 14,860
Fiscal year 1950-51: Max 15.9 Min 9.2 Mean(mgd) 13.4 Mean(cfs) 20.7 Ac-ft 15,040

* Discharge measurement made on this day.

Note.--No gage-height record July 8 to Aug. 6; discharge estimated on basis of probable flow of springs and record of pumpage.

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.'s pump 6, 1.1 miles west of Aiea, and 7.6 miles northwest of Honolulu.

Records available.--March 1931 to June 1951.

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

Average discharge.--20 years, 15.9 mgd (24.6 cfs), unadjusted for pumpage.

Extremes.--1931-51: 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 good. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.9	14.2	18.5	15.4	13.3	14.6	19.8	16.3	19.8	21.5	17.2	19.4
2	18.0	14.2	18.5	13.8	15.4	16.3	19.8	16.7	19.8	21.5	17.6	19.4
3	19.0	14.2	19.0	15.4	16.3	19.0	14.2	19.8	19.8	18.5	18.5	21.5
4	19.0	15.4	19.0	15.9	18.0	19.4	15.4	17.6	19.8	18.5	22	17.2
5	12.9	15.4	14.6	12.9	18.5	19.4	16.3	17.2	20.5	19.4	21	16.7
6	13.3	18.5	14.2	12.9	15.0	19.4	19.4	16.7	19.8	19.4	21.5	15.9
7	13.3	17.6	14.2	14.6	18.5	19.4	19.8	14.2	19.8	22.5	14.6	15.0
8	15.4	15.4	14.2	15.9	12.9	19.4	16.3	*14.2	19.8	23	15.9	16.3
9	19.0	15.4	15.9	12.5	14.2	19.8	19.4	16.3	19.8	19.8	16.3	19.0
10	12.9	15.4	16.7	15.0	16.3	19.8	15.9	19.4	19.8	21	16.3	21
11	12.9	16.3	12.1	15.0	15.9	19.8	14.6	17.2	20.5	23	15.9	14.2
12	12.9	19.0	14.2	*15.4	18.5	19.8	16.7	13.3	21	23	19.4	15.9
13	15.4	17.2	14.2	15.0	12.9	19.8	19.8	14.6	21	23	22.5	15.9
14	15.4	12.5	14.2	18.0	14.2	19.4	17.6	13.3	21	23	19.0	15.9
15	18.0	19.0	14.6	18.5	14.2	17.6	14.6	14.6	21	23	18.5	19.0
16	18.5	19.4	18.5	18.0	14.6	19.8	19.4	15.9	21	23	22	19.8
17	12.5	19.4	18.5	12.5	15.4	19.8	17.6	19.0	21	23	21	21
18	13.8	19.4	14.2	16.3	17.2	15.4	13.3	19.4	21	21.5	15.0	14.2
19	13.3	17.6	13.3	17.6	16.7	14.2	17.2	19.4	21	19.8	19.0	15.9
20	13.3	17.2	15.0	15.4	12.1	14.6	19.8	19.4	21	21.5	21.5	15.9
21	14.2	13.3	13.8	18.0	13.8	15.9	19.8	19.4	21	22.5	15.4	15.9
22	18.0	14.2	15.0	16.3	*15.9	15.0	17.6	19.4	21	22	15.9	18.5
23	18.5	14.2	16.3	11.3	18.5	16.7	19.8	19.4	21	15.9	15.9	18.5
24	14.2	14.2	15.9	12.9	14.2	19.4	16.7	19.8	21	21	16.3	21
25	15.0	13.8	13.3	12.5	15.0	17.2	15.4	19.8	21	16.7	*15.9	15.0
26	14.2	15.9	13.8	12.5	18.5	14.6	17.6	19.8	21.5	17.2	18.5	15.9
27	13.8	16.7	14.6	12.9	19.0	15.4	19.8	19.8	21.5	18.0	20.5	15.9
28	13.8	12.5	14.2	18.0	16.7	14.6	18.0	19.8	21.5	19.4	15.0	15.9
29	15.4	13.8	15.0	18.5	14.6	13.8	14.2	-	21.5	21.5	16.7	15.9
30	16.3	13.8	16.3	15.0	15.9	16.7	15.4	-	21.5	15.4	16.7	18.0
31	12.5	15.4	-	14.2	-	19.4	15.9	-	21.5	-	19.0	-
Total	467.6	490.5	461.8	468.1	472.2	545.4	537.1	491.7	642.2	618.5	560.5	519.6
Mean:												
mgd	15.1	15.8	15.4	15.1	15.7	17.6	17.3	17.6	20.7	20.6	18.1	17.3
cfs	23.4	24.4	23.8	23.4	24.3	27.2	26.8	27.2	32.0	31.9	28.0	26.8
Ac-ft	1,440	1,510	1,420	1,440	1,450	1,670	1,650	1,510	1,970	1,900	1,720	1,590

Calendar year 1950: Max 22 Min 11.3 Mean(mgd) 17.8 Mean(cfs) 27.5 Ac-ft 9,930
Fiscal year 1950-51: Max 23 Min 11.3 Mean(mgd) 17.2 Mean(cfs) 26.6 Ac-ft 19,270

* Discharge measurement made on this day.

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 1951.

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.--25 years, 2.14 mgd (3.31 cfs).

Extremes.--Maximum discharge during year, 1,290 mgd (2,000 cfs) Dec. 3 (gage height, 8.24 ft), from rating curve extended above 71 mgd by test on model of station site; no flow for most of year.
1926-51: 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 except those for period of no gage-height record, which are fair. Continuous records of rainfall are obtained at station.

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

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

-0.2	0	0.8	5.4
-.1	.01	1.0	9.6
0.0	.02	1.2	15.4
.1	.08	1.6	31.8
.2	.23	2.0	55
.3	.53	2.5	91
.4	1.01	3.0	144
.5	1.72	3.5	212
.6	2.65		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		a0	0	0	0	0.93	7.4	0	1.58	2.1	0.84	
2		a15	0	0	0	1.53	2.15	0	1.82	1.65	.15	
3		a10	0	0	0	60	1.84	0	2.25	1.36	.02	
4		*a1.0	0	0	0	8.7	4.1	0	2.10	1.01	.02	
5		.02	0	0	0	5.1	1.29	0	42	.82	.02	
6		0	0	0	0	17.0	.72	0	11.1	1.40	.01	
7		.09	0	0	0	3.95	.35	0	5.7	.67	0	
8		.02	0	0	0	1.97	.14	0	3.0	.86	0	
9		0	0	0	0	1.00	.05	0	1.60	2.45	0	
10		0	.46	1.05	0	2.85	.03	0	6.3	17.8	0	
11		0	4.3	0	0	.97	.02	0	66	4.9	0	
12		0	.12	0	0	.41	.02	0	36	2.05	0	
13		0	.01	0	0	.17	.02	0	57	*1.15	0	
14		0	0	0	0	.04	.64	0	12.9	.63	0	
15		10.6	0	0	0	.02	3.45	0	6.2	.41	0	
16		.95	0	0	0	.01	*7.3	0	3.55	.26	0	
17		.11	3.4	0	0	0	2.05	0	2.35	.17	0	
18		.02	.26	0	0	0	1.40	0	1.58	.08	0	
19		0	.02	0	0	0	.69	*5.1	1.15	.06	0	
20		0	0	0	14.1	0	.32	12.9	6.6	.03	0	
21		0	0	0	1.16	0	.14	6.5	39	.02	0	
22		0	0	0	.02	0	.14	2.35	21.5	.02	0	
23		0	0	0	0	0	.08	.98	6.0	.02	0	
24		0	0	0	0	0	.06	.50	3.5	.02	0	
25		0	0	0	0	0	.04	.26	2.9	.02	0	
26		0	0	0	16.1	0	.03	.16	208	.01	0	
27		0	0	0	14.8	0	.02	3.05	110	0	0	
28		0	0	0	4.5	.81	.02	2.35	*14.9	0	0	
29		0	0	0	1.48	.12	.01	-	7.8	0	0	
30		0	0	0	2.2	.18	0	-	4.6	2.65	0	
31		0	-	0	-	10.7	0	-	3.15	-	0	
Total	0	37.81	8.57	1.05	54.36	116.46	34.52	34.15	692.13	42.62	1.06	0
Mean:												
mgd	0	1.22	0.286	0.034	1.81	3.76	1.11	1.22	22.3	1.42	0.034	0
cfs	0	1.89	0.443	0.053	2.80	5.82	1.72	1.89	34.5	2.20	0.053	0
Ac-ft	0	116	26	3.2	167	357	106	105	2,120	131	3.3	0

Calendar year 1950: Max 60 Min 0 Mean(mgd) 1.65 Mean(cfs) 2.55 Ac-ft 1,850
Fiscal year 1950-51: Max 208 Min 0 Mean(mgd) 2.80 Mean(cfs) 4.33 Ac-ft 3,130

Peak discharge (base, 150 mgd).--Dec. 3 (5 p.m.) 1,290 mgd (2,000 cfs), 8.24 ft; Mar. 12 (10:30 p.m.) 610 mgd (944 cfs), 6.10 ft; Mar. 21 (8 p.m.) 385 mgd (596 cfs), 4.73 ft; Mar. 26 (8 a.m.) 1,210 mgd (1,870 cfs), 8.02 ft.

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and record for Kalihi Stream.

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 1951.

Gage.--Water-stage recorder and concrete control. 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.--34 years (1916-20, 1921-51), 4.70 mgd (7.27 cfs).

Extremes.--Maximum discharge during year, 1,600 mgd (2,480 cfs) Mar. 26 (gage height, 10.75 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 0.18 mgd (0.28 cfs) June 27.
1913-51: 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 doubtful or no gage-height record, which are fair. Water for domestic use diverted from stream above station.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

2.1	0.39	3.0	18.5
2.2	1.05	3.5	37.5
2.3	2.15	4.0	63
2.4	3.75	4.5	95
2.6	7.8	5.0	134
2.8	12.7	5.7	203

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.15	0.90	1.15	0.82	0.68	6.2	7.2	1.43	3.05	7.2	2.7	a1.00
2	1.43	34.5	1.15	.82	.55	6.3	*3.85	1.33	2.7	6.5	2.15	a1.00
3	1.15	20.5	1.15	.75	.50	89	9.8	1.33	3.2	6.1	1.88	a.95
4	1.05	*4.2	1.15	.68	.55	13.8	14.9	1.43	2.85	5.3	1.76	a.90
5	1.33	2.3	1.05	.90	.50	9.0	6.3	1.33	29	5.1	1.65	a.85
6	1.15	2.0	.98	1.23	*.50	24.5	5.1	1.33	9.1	7.1	1.54	*a.80
7	.98	7.7	1.33	.82	.50	8.0	3.95	1.33	5.7	4.9	1.88	.82
8	.90	2.7	1.05	.75	.44	5.9	3.35	1.23	4.3	5.1	1.88	.75
9	.90	2.4	1.23	1.04	2.4	4 9	2.85	1.15	3.55	7.8	1.54	.75
10	1.05	2.0	2.55	1.46	.68	5.5	2.55	1.05	5.9	26	1.76	.68
11	1.15	1.76	4.2	.82	.55	4.1	2.4	1.05	87	7.4	1.54	.75
12	.90	1.54	2.3	.75	.50	3.55	2.55	1.05	25	5.3	1.43	.75
13	.90	1.43	*1.65	.68	.50	3.2	2.4	.98	*87	*4.7	1.43	.90
14	.90	2.35	1.43	.61	.44	2.85	5.2	.98	16.6	3.75	1.33	.75
15	.82	26	1.33	.61	d.55	2.7	10.3	1.15	9.6	3.55	1.54	.75
16	.90	5.3	1.33	.75	d.50	2.55	8.3	1.43	7.4	3.35	1.43	.90
17	1.15	3.35	5.8	.68	d.55	2.3	4.1	1.15	6.5	3.05	1.76	.75
18	1.23	2.7	1.76	.68	d.44	2.15	3.95	1.52	5.7	2.85	2.3	.68
19	.90	2.3	1.43	.55	d.75	2.0	3.05	8.6	5.5	2.7	1.54	.68
20	.98	2.0	1.33	.55	19.9	1.88	2.7	11.4	5.5	2.85	1.33	.61
21	1.23	1.88	1.43	.50	4.1	1.88	2.4	6.3	34.5	2.55	1.33	.55
22	1.15	1.65	1.15	.55	1.88	1.76	3.2	3.75	20.5	2.4	1.23	.55
23	.98	1.54	.98	.90	1.33	1.65	2.55	2.85	7.6	2.15	1.15	.50
24	1.43	1.54	.98	.90	1.15	1.54	2.3	2.4	6.3	2.0	1.15	.55
25	2.7	1.43	.98	.68	2.3	1.88	2.15	1.88	7.4	2.0	1.15	.50
26	1.54	1.33	.98	.55	30.5	1.54	1.88	2.15	202	2.15	1.15	.50
27	2.0	1.43	.90	.55	26	1.54	1.76	4.1	156	2.0	a1.15	.50
28	1.54	1.23	.90	.55	7.0	7.8	1.76	3.55	22	1.88	a1.10	.50
29	1.23	1.23	.82	2.95	4.9	3.2	1.65	-	13.3	2.85	a1.05	.50
30	1.05	1.33	.75	1.05	11.1	3.75	1.54	-	9.9	3.75	a1.00	.55
31	.98	1.23	-	.82	-	10.7	1.43	-	8.3	-	a1.00	-
Total	36.75	143.75	45.22	25.95	122.24	237.62	127.42	69.23	812.95	144.33	46.83	21.22
Mean:												
mgd	1.19	4.64	1.51	0.837	4.07	7.67	4.11	2.47	26.2	4.81	1.51	0.707
cfs	1.84	7.18	2.34	1.30	6.30	11.9	6.36	3.82	40.5	7.44	2.34	1.09
Ac-ft	113	441	139	80	375	729	391	212	2,490	443	144	65

Calendar year 1950: Max 89 Min 0.44 Mean(mgd) 4.25 Mean(cfs) 6.58 Ac-ft 4,760
Fiscal year 1950-51: Max 202 Min 0.44 Mean(mgd) 5.02 Mean(cfs) 7.77 Ac-ft 5,620

Peak discharge (base, 400 mgd).--Aug. 2 (11 p.m.) 550 mgd (851 cfs), 7.82 ft; Dec. 3 (5 p.m.) 1,550 mgd (2,400 cfs), 10.73 ft; Mar. 11 (7:30 a.m.) 985 mgd (1,520 cfs), 9.31 ft; Mar. 26 (7:30 a.m.) 1,600 mgd (2,480 cfs), 10.75 ft.

* Discharge measurement made on this day.

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

d Doubtful gage-height record; discharge computed from reconstructed gage-height graph based on records for nearby streams.

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 1951.

Gage.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level. Prior to Sept. 7, 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.--32 years (1917-20, 1922-51), 5.02 mgd (7.77 cfs).

Extremes.--Maximum discharge during year, 870 mgd (1,350 cfs) Mar. 26 (gage height, 5.92 ft), from rating curve extended above 300 mgd by test on model of station site; minimum, 0.94 mgd (1.45 cfs) Nov. 11, 13.

1913-51: 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 except those affected by debris, which are fair. 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.90	1.2	6.5
.5	1.25	1.3	8.8
.6	1.65	1.5	14.9
.7	2.1	1.7	23
.8	2.6	2.1	43
.9	3.1	2.5	68
1.0	3.65	3.0	105
1.1	4.6	4.0	195

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.15	1.92	1.65	1.49	1.11	4.6	5.8	3.0	3.25	15.8	7.4	3.5
2	2.35	4.9	1.57	1.41	1.08	4.4	3.9	2.95	3.65	14.6	7.0	3.3
3	2.25	*6.5	1.57	1.37	1.08	49	4.8	2.9	4.1	14.2	6.5	3.25
4	2.2	2.2	1.65	1.33	1.22	8.5	5.9	2.95	3.7	13.2	6.3	3.2
5	2.45	1.83	1.70	1.49	1.08	5.9	5.1	2.85	23.5	12.6	6.3	3.2
6	2.45	2.0	1.70	1.57	1.04	14.0	5.1	2.75	9.0	14.7	6.1	3.2
7	2.0	3.65	1.83	1.37	1.00	c6.1	4.1	2.55	5.9	12.8	6.3	3.2
8	2.0	2.0	1.83	1.33	1.00	c5.0	3.85	2.55	4.8	12.4	6.1	3.1
9	2.0	2.35	1.70	1.76	1.24	c4.8	3.55	2.55	4.5	*21	5.9	3.05
10	2.25	2.25	2.35	2.1	1.00	c6.5	3.45	2.55	4.4	36.5	7.0	3.0
11	2.15	1.96	*3.5	1.60	.97	c5.0	3.4	2.5	58	16.2	5.9	c3.0
12	2.05	1.88	2.2	1.63	.87	c4.5	3.8	2.5	12.6	11.6	5.8	c2.95
13	2.1	1.74	1.96	1.41	.97	c4.3	3.75	2.35	73	10.8	5.6	c3.05
14	2.0	2.45	1.65	1.22	.97	c4.1	6.4	2.3	c16.2	10.2	5.4	c2.85
15	1.92	16.4	1.65	1.25	1.15	c4.0	10.3	2.55	c9.6	9.9	5.5	c2.85
16	2.15	3.3	1.78	1.56	1.04	c3.95	8.1	2.7	c8.6	9.9	5.2	c2.95
17	2.0	2.5	4.7	1.22	1.11	c3.85	5.0	2.6	8.1	9.4	6.1	c2.8
18	2.0	2.4	1.83	1.22	.97	c3.75	4.8	3.4	7.4	9.1	5.6	c2.8
19	1.88	2.15	1.78	1.18	1.15	c3.6	4.3	7.4	7.4	8.8	5.0	c2.8
20	1.92	2.1	1.70	1.18	9.5	c3.45	4.1	7.4	7.0	8.8	4.8	c2.8
21	1.96	2.0	1.70	1.11	2.05	c3.3	3.85	4.8	18.8	8.6	4.8	c2.7
22	2.0	1.92	1.61	1.14	1.41	3.2	5.1	3.5	17.4	8.1	4.5	c2.65
23	1.96	1.88	1.57	1.33	1.29	3.15	3.95	3.1	8.3	7.6	4.4	c2.65
24	2.2	1.92	1.57	1.44	1.33	3.1	3.6	3.0	8.1	7.4	4.3	c2.65
25	2.3	1.83	1.57	1.22	2.2	3.4	3.5	2.85	11.1	7.4	4.2	c2.6
26	1.96	1.83	1.57	1.14	14.9	3.0	3.4	2.85	145	7.2	4.2	c2.55
27	2.05	1.96	1.53	1.11	15.0	3.0	3.3	4.5	190	7.0	3.95	c2.5
28	1.96	1.83	1.53	1.14	3.95	6.4	3.2	4.0	45	7.0	3.85	c2.4
29	1.83	1.75	1.37	2.05	2.95	3.55	3.35	-	26.5	7.9	3.65	2.35
30	1.78	2.2	1.49	1.33	8.8	4.2	3.1	-	21	9.0	*3.6	2.55
31	1.74	1.94	-	1.18	-	7.5	3.0	-	17.8	-	3.55	-
Total	64.01	87.54	55.81	42.88	83.53	192.90	138.85	91.90	783.70	349.7	164.60	86.45
Mean:												
mgd	2.06	2.82	1.86	1.38	2.78	6.22	4.48	3.28	25.3	11.7	5.31	2.88
cfs	3.19	4.36	2.88	2.14	4.30	9.62	6.93	5.07	39.1	18.1	8.22	4.46
Ac-ft	196	269	171	132	256	592	426	282	2,410	1,070	505	265

Calendar year 1950: Max 49 Min 0.90 Mean(mgd) 3.57 Mean(cfs) 5.52 Ac-ft 4,000
Fiscal year 1950-51: Max 190 Min 0.97 Mean(mgd) 5.87 Mean(cfs) 9.08 Ac-ft 6,570

Peak discharge (base, 150 mgd).--Dec. 3 (5 p.m.) 517 mgd (800 cfs), 5.17 ft; Mar. 11 (8 a.m.) 476 mgd (736 cfs), 5.08 ft; Mar. 26 (7:30 a.m.) 870 mgd (1,350 cfs), 5.92 ft.

* Discharge measurement made on this day.

c Backwater from debris.

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 1951.

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.--32 years (1913-20, 1926-51), 3.10 mgd (4.80 cfs).

Extremes.--Maximum discharge during year, 565 mgd (874 cfs) Mar. 26 (gage height, 4.46 ft), from rating curve extended above 21 mgd by test on model of station site; minimum, 1.04 mgd (1.61 cfs) Nov. 10, 14, 15, 18, 19.
1913-21, 1925-51: 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 26				Mar. 26 to June 30			
0.3	0.98	1.2	9.9	0.3	1.15	1.1	11.4
.4	1.57	1.5	18.0	.4	1.85	1.5	23.5
.6	3.1	2.0	45	.6	3.55	2.0	49
.9	6.0			.8	5.7	2.5	91

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.57	1.93	1.91	1.57	1.57	3.55	5.2	1.85	1.85	3.35	3.1	2.25
2	1.57	2.75	2.4	1.51	1.45	3.25	2.5	1.71	1.71	3.45	2.9	2.1
3	1.51	2.25	1.71	1.45	1.45	26	7.2	1.78	1.71	3.7	2.75	2.1
4	1.45	*1.92	1.71	1.45	2.5	3.9	8.7	1.67	1.57	3.0	2.65	2.25
5	2.7	1.71	1.71	1.86	1.39	4.1	4.9	1.51	8.8	2.85	2.65	2.15
6	1.64	3.0	1.57	1.87	1.28	10.0	4.5	1.45	3.45	6.2	2.55	2.25
7	1.45	5.3	2.25	1.57	*1.22	3.35	2.85	1.45	2.95	3.95	3.95	2.1
8	1.45	2.15	1.78	1.45	1.16	2.75	2.45	1.39	2.15	3.35	3.4	2.1
9	1.39	2.3	1.89	2.15	1.38	2.45	2.3	1.39	2.0	9.8	2.75	2.1
10	1.60	2.05	3.35	3.65	1.16	3.9	2.15	1.39	3.0	11.6	3.3	2.15
11	1.51	1.85	3.55	1.57	1.10	2.85	2.15	1.39	18.0	*4.2	2.75	2.35
12	1.51	1.78	2.05	1.45	1.10	3.35	2.05	1.45	3.8	3.65	2.75	2.15
13	1.64	1.71	*2.1	1.39	1.10	2.85	2.15	1.36	30	3.45	2.65	2.55
14	1.45	2.35	1.64	1.39	1.04	2.5	4.3	1.39	5.8	3.3	2.65	2.0
15	1.39	*15.4	1.71	1.86	1.26	2.7	4.3	1.64	3.55	3.2	2.85	2.25
16	1.65	3.05	2.15	1.81	1.16	2.35	3.8	2.55	2.95	3.3	2.65	2.65
17	1.65	2.3	4.8	1.71	1.10	2.2	2.6	2.1	2.7	3.1	4.7	2.25
18	2.7	2.85	2.0	1.57	1.04	2.3	2.6	3.35	2.45	3.0	3.9	2.1
19	1.51	2.05	1.85	1.51	1.68	2.2	2.15	7.1	2.35	2.9	3.0	1.93
20	2.35	1.92	1.71	1.51	13.7	2.3	2.05	5.8	2.35	3.1	2.75	1.93
21	2.5	1.85	1.94	1.45	2.15	2.2	2.05	3.35	8.2	2.85	2.85	1.85
22	2.05	1.92	1.64	1.45	1.51	2.15	3.3	2.3	5.9	2.85	2.75	1.85
23	2.95	2.0	1.57	1.97	1.33	2.15	2.15	1.92	2.7	2.85	2.65	1.78
24	4.3	2.0	1.57	1.94	1.56	2.2	2.0	1.92	2.9	2.75	2.55	1.78
25	4.5	1.92	1.57	1.57	3.95	3.2	1.92	1.71	4.5	2.85	2.5	1.78
26	2.85	1.92	1.57	1.51	34.5	2.7	1.92	1.71	83	2.75	2.4	1.78
27	4.2	2.0	1.51	1.51	18.4	2.7	1.85	2.0	*58	2.65	2.5	1.78
28	2.45	1.92	1.45	1.57	4.3	5.9	1.85	2.05	8.1	2.65	2.4	1.78
29	2.05	1.92	1.45	3.65	2.85	2.15	1.85	-	5.0	4.1	2.25	1.78
30	1.92	2.0	1.57	2.05	7.9	2.55	1.85	-	4.1	4.4	2.25	1.93
31	1.85	1.78	-	1.78	-	5.9	1.85	-	3.95	-	2.25	-
Total	65.31	81.85	59.68	54.75	117.29	122.65	93.49	60.68	269.29	115.15	88.00	61.80
Mean:												
mgd	2.11	2.64	1.99	1.77	3.91	3.96	3.02	2.17	8.69	3.84	2.84	2.06
cfs	3.26	4.08	3.08	2.74	6.05	6.13	4.67	3.36	13.4	5.94	4.39	3.19
Ac-ft	200	251	183	168	360	376	287	186	826	353	270	190

Calendar year 1950: Max 34.5 Min 0.98 Mean(mgd) 2.90 Mean(cfs) 4.49 Ac-ft 3,240
Fiscal year 1950-51: Max 63 Min 1.04 Mean(mgd) 3.26 Mean(cfs) 5.04 Ac-ft 3,650

Peak discharge (base, 200 mgd).--Dec. 3 (5 p.m.) 272 mgd (421 cfs), 3.57 ft; Mar. 11 (8 a.m.) 335 mgd (518 cfs), 3.78 ft; Mar. 26 (7:30 a.m.) 565 mgd (874 cfs), 4.46 ft.
* Discharge measurement made on this day.

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 1951.

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.--32 years (1913-20, 1926-51), 2.57 mgd (3.98 cfs).

Extremes.--Maximum discharge during year, 550 mgd (851 cfs) Mar. 26 (gage height, 4.64 ft), from rating curve extended above 33 mgd by test on model of station site; minimum, 0.20 mgd (0.31 cfs) June 28, 29.
1913-21, 1925-51: 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 except those for periods when obstructions were on control, which are fair. Small quantity of water is diverted occasionally for irrigation.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 4-6, Sept. 8, 9, Oct. 9, 11-29, Nov. 11-15, Jan. 20 to Feb. 13, Mar. 29 to Apr. 2, Apr. 24 to May 29, June 10-30)

0.0	0	0.8	6.5
.1	.25	1.0	11.4
.2	.62	1.2	18.7
.3	1.11	1.5	34
.4	1.78	2.0	71
.6	3.5		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.47	0.98	0.60	0.47	0.58	2.35	4.2	0.72	0.86	2.95	0.96	0.47
2	.51	2.45	.86	.47	.51	1.86	1.58	.72	.82	2.45	.96	.44
3	.47	2.2	.51	.44	.47	26	2.7	.72	.82	2.65	.82	.40
4	.44	*1.24	.55	.40	1.39	4.9	4.0	.67	.72	1.94	.72	.40
5	2.6	.91	.55	.82	.58	3.55	2.85	.67	9.4	1.71	.62	.40
6	.67	2.55	.47	.91	.51	6.7	3.15	.55	4.3	4.4	.58	.40
7	.47	5.6	.86	.62	*.40	2.35	1.65	.51	2.4	2.65	1.26	.36
8	.44	1.65	.59	.51	.36	1.71	1.31	.47	1.44	2.25	1.14	.32
9	.44	2.65	1.27	1.61	.49	1.51	1.11	.44	1.18	8.8	.72	.29
10	.68	1.42	3.25	2.5	.36	3.6	1.01	.40	1.77	7.8	1.45	.25
11	.57	1.06	3.15	.65	.31	1.65	.91	.40	17.2	*2.9	.86	.32
12	.53	.96	1.24	.55	.29	1.94	.96	.44	3.9	2.2	.77	.40
13	.53	.82	*1.13	.51	.40	1.38	1.01	*.32	26	1.71	.67	.69
14	.44	1.20	.77	.55	.36	1.18	5.6	.25	7.4	1.44	.62	.36
15	.40	*16.4	.72	1.17	.65	1.24	9.5	.52	3.9	1.38	1.00	.36
16	.92	2.95	1.23	.79	.40	1.06	6.2	1.35	2.8	1.44	.82	.81
17	1.06	1.65	5.5	.73	.44	.91	2.7	1.00	2.35	1.18	3.4	.47
18	2.05	1.64	1.18	.76	.36	.86	2.2	2.7	1.94	1.11	2.1	.36
19	.91	1.18	.91	.58	.61	.82	1.58	6.7	1.71	1.01	1.11	.32
20	1.66	1.01	.77	.58	12.2	.77	1.38	4.9	1.58	1.06	.82	.32
21	1.67	.96	1.06	.55	2.35	.72	1.31	2.95	4.7	.96	.72	.29
22	1.34	.86	.67	.51	1.01	.67	4.6	1.77	6.3	.96	.62	.29
23	1.82	.77	.58	1.06	.77	.62	2.1	1.19	2.25	.96	.55	.25
24	4.4	.72	.55	.98	.69	.58	1.58	1.09	2.2	.77	.51	.29
25	4.9	.67	.47	.58	2.35	1.34	1.38	.82	3.75	.82	.47	.29
26	2.75	.67	.51	.51	16.3	.72	1.24	.77	66	.77	.47	.25
27	4.4	.72	.44	.47	15.9	.67	1.06	1.31	*63	.72	.55	.22
28	2.3	.62	.44	.51	3.5	3.85	.96	1.01	10.9	.62	.47	.20
29	1.38	.55	.44	2.65	1.94	1.31	.86	-	6.5	1.18	.44	.20
30	1.01	.59	.47	1.14	6.5	1.27	.82	-	4.7	1.93	.44	.32
31	.91	.61	-	.77	-	4.6	.77	-	3.5	-	.44	-
Total	43.14	58.26	31.74	25.35	72.98	82.69	72.28	35.36	266.29	62.72	27.08	10.74
Mean:												
mgd	1.39	1.88	1.06	0.818	2.43	2.67	2.33	1.26	8.59	2.09	0.874	0.358
cfs	2.15	2.91	1.64	1.27	3.76	4.13	3.61	1.95	13.3	3.23	1.35	0.554
Ac-ft	132	179	97	78	224	254	222	109	817	192	83	33

Calendar year 1950 : Max 37.5 Min 0.29 Mean(mgd) 2.28 Mean(cfs) 3.53 Ac-ft 2,560
Fiscal year 1950-51 : Max 66 Min 0.20 Mean(mgd) 2.16 Mean(cfs) 3.34 Ac-ft 2,420

Peak discharge (base, 200 mgd).--Dec. 3 (6 p.m.) 430 mgd (665 cfs), 4.16 ft; Mar. 11 (9:30 a.m.) 350 mgd (542 cfs), 3.85 ft; Mar. 26 (10:30 a.m.) 550 mgd (851 cfs), 4.64 ft.
* Discharge measurement made on this day.

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 1951.

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.--25 years (1926-51), 1.30 mgd (2.01 cfs).

Extremes.--Maximum discharge during year, 880 mgd (1,360 cfs) Mar. 26 (gage height, 6.15 ft), from rating curve extended above 36 mgd by test on model of station site; minimum daily, 0.16 mgd (0.25 cfs) June 27-29.
1912-13, 1926-51: 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 good except those for periods of doubtful or no gage-height record, which are poor. A 2-inch pipe diverts water from stream above station.

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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.40	0.43	0.40	0.30	0.20	1.75	4.7	0.74	d0.70	a1.9	0.59	0.34
2	.40	.43	.40	.30	.18	1.33	*1.34	.69	d.66	a1.7	.64	.34
3	.40	*.43	.38	.30	.18	32	3.65	.64	d.64	a1.8	.59	.34
4	.40	.43	.36	.30	.18	4.1	5.5	.59	d.62	a1.5	.59	.34
5	.40	.43	.33	.30	.18	2.35	d2.3	.54	d4.5	a1.3	.59	.34
6	.43	.43	.30	.28	*.18	6.4	d1.5	.54	d2.0	a3.0	.59	.34
7	.40	.67	.33	.28	.18	2.3	d1.2	.48	d1.4	a2.1	.64	.34
8	.38	.40	.33	.26	.18	1.39	d1.05	.46	d1.1	a1.7	.59	.34
9	.38	.40	.33	.26	.18	1.27	d1.0	.46	d.90	a4.5	.49	.31
10	.58	.43	.36	.36	.18	1.72	d.95	.45	d1.5	a5.0	.77	.28
11	.43	.43	*.45	.26	.18	1.27	d.90	.43	d13.0	1.79	.49	.25
12	a.36	.43	.37	.26	.18	1.21	d.85	.46	2.9	d1.4	.49	.25
13	a.36	.40	.33	.26	.18	1.15	d.80	.40	38	d1.25	.49	.25
14	a.36	.57	.33	.26	.18	1.15	1.31	.40	6.3	d1.15	.49	.25
15	a.36	7.0	.36	.26	.18	1.09	2.6	.40	2.25	d1.1	.49	.25
16	a.36	1.20	.36	.26	.18	1.03	2.5	d.90	1.71	d1.05	.49	.25
17	.36	.64	.46	.26	.18	.91	1.24	d.60	1.63	d.95	.49	.25
18	.38	.72	.36	.26	.18	.85	d1.1	d1.2	1.56	d.90	.46	.25
19	.38	.68	.36	.26	.18	.77	d1.0	d3.0	1.50	d.85	.46	.22
20	.36	.64	.36	.23	3.1	.72	d.95	d4.5	1.44	d.85	.43	.22
21	.33	.64	.36	.23	.45	.68	d.90	d2.5	4.8	d.80	.46	.19
22	.33	.64	.36	.23	.36	.64	d2.3	d1.2	7.9	d.80	.43	.19
23	.33	.60	.36	.23	d.33	.60	d1.1	d1.0	1.79	d.80	.43	.19
24	.36	.56	.36	.26	d.29	.56	d1.0	d.90	2.2	.78	.43	.19
25	.47	.47	.36	.23	d.68	.56	d.95	d.75	3.0	.74	.40	.19
26	.36	.43	.36	.23	d13.5	.51	d.95	d.70	85	.74	.40	.19
27	.68	.43	.36	.23	12.7	.47	d.90	d.85	78	.69	.40	.18
28	.43	.40	.33	.23	2.1	1.56	d.85	d.75	5.2	.69	.40	.16
29	.43	.38	.30	.26	1.03	.58	.83	-	*3.35	.64	.40	.16
30	.43	.40	.30	.23	3.8	.92	.78	-	2.5	.64	.40	.18
31	.43	.40	-	.20	-	4.2	.74	-	a2.1	-	*.37	-
Total	12.46	22.54	10.71	8.07	41.78	76.04	47.74	26.53	280.15	43.11	15.38	7.57
Mean:												
mgd	0.402	0.727	0.357	0.260	1.39	2.45	1.54	0.948	9.04	1.44	0.496	0.252
cfs	0.622	1.12	0.552	0.402	2.15	3.79	2.38	1.47	14.0	2.23	0.767	0.390
Ac-ft	38	69	33	25	128	233	147	81	860	132	47	23

Calendar year 1950 : Max 32 Min 0.18 Mean(mgd) 1.23 Mean(cfs) 1.90 Ac-ft 1,370
Fiscal year 1950-51 : Max 85 Min 0.16 Mean(mgd) 1.62 Mean(cfs) 2.51 Ac-ft 1,820

Peak discharge (base, 90 mgd).--Nov. 26 (9 p.m.) 100 mgd (155 cfs), 3.52 ft; Dec. 3 (5:30 p.m.) 380 mgd (588 cfs), 5.04 ft; Mar. 11 (7 a.m.) 280 mgd (433 cfs), 4.45 ft; Mar. 26 (7:30 a.m.) 880 mgd (1,360 cfs), 6.15 ft.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for nearby streams.
d Doubtful gage-height record; 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 1951.

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.--25 years (1926-51), 1.18 mgd (1.83 cfs).

Extremes.--Maximum discharge during year, 505 mgd (781 cfs) Mar. 26 (gage height, 5.25 ft), from rating curve extended above 45 mgd by test on model of station site; no flow for many days.
1911-12, 1926-51: 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 26

0.91	0	1.7	3.85
1.0	.01	1.9	7.2
1.1	.08	2.2	15.9
1.2	.28	2.5	29.2
1.3	.63	3.0	56
1.4	1.13	3.5	90
1.5	1.81		

Mar. 27 to June 30

0.84	0	1.4	1.30
1.0	.03	1.5	2.0
1.1	.12	1.7	4.0
1.2	.36	1.9	7.2
1.3	.74		

Note.--Same as preceding table above 1.9 ft.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.06	0.10	0.10	0.01	0.12	2.8	9.2	0.05	0.34	1.02	0.64	0.03
2	.04	.13	.37	.01	.06	2.65	2.1	.05	.28	.91	.46	.03
3	.04	*.36	.12	0	.03	33	5.6	.05	.28	.91	.25	.01
4	.02	.18	.08	0	.24	6.8	6.9	.04	.22	.61	.16	.03
5	.31	.10	.07	.19	.09	5.0	3.3	.03	5.1	.70	.12	a.03
6	.20	.10	.09	.51	*.04	12.5	2.15	.01	2.35	1.91	.11	a.02
7	.06	1.10	.09	.12	.04	3.1	1.08	.01	1.59	.80	.30	a.01
8	.04	.32	.08	.05	.02	1.59	.71	.01	.87	.66	.51	a.01
9	.02	.22	.08	.04	.06	1.03	.51	.01	.55	1.54	.20	a.01
10	.62	.25	.81	.55	.03	1.89	.37	0	1.00	5.8	.88	a.01
11	.79	.18	*1.45	.16	.01	1.03	.28	0	17.7	1.73	.30	a.01
12	.20	.14	.40	.06	.01	1.03	.28	.01	4.0	1.17	.23	a.02
13	.14	.09	.20	.04	.01	.67	.28	.01	56	.70	.18	a.06
14	.09	.34	.10	.02	0	.47	1.21	.01	7.4	.42	.14	a.03
15	.07	11.2	.10	.04	.68	.47	2.1	.02	2.25	.36	.12	a.03
16	.07	2.05	.18	.10	.28	.40	2.35	.75	1.27	.36	.14	a.10
17	.23	.76	2.2	.06	.14	.28	.92	.40	.92	.28	a.25	a.04
18	.58	1.48	.30	.08	.07	.20	.71	.98	.63	.25	a.20	a.02
19	.20	.70	.18	.04	.11	.14	.51	4.2	.51	.28	a.14	a.01
20	.21	.34	.12	.01	8.3	.12	.34	6.4	.51	.30	a.12	a0
21	.36	.22	.12	.01	1.35	.10	.28	3.05	5.7	.28	a.11	a0
22	.22	.16	.10	0	.55	.09	1.19	1.45	9.9	.18	a.10	0
23	.37	.18	.06	.05	.28	.08	.59	.92	1.59	.18	a.09	0
24	.90	.12	.04	.16	.18	.06	.31	.76	2.75	.16	.08	0
25	1.02	.10	.04	.08	1.44	.22	.20	.55	3.75	.16	.07	0
26	.60	.08	.05	.03	24.5	.12	.16	.43	89	.12	.07	0
27	1.53	.07	.03	.01	24.5	.09	.12	.40	83	.11	.05	0
28	.55	.06	.02	.01	4.3	2.2	.09	.43	5.6	.09	.03	0
29	.28	.04	.01	.40	1.92	1.14	.08	-	*2.65	.43	.03	0
30	.18	.06	.01	.32	6.0	1.55	.07	-	1.80	.78	.02	0
31	.14	.11	-	.27	-	9.1	.05	-	1.44	-	.02	-
Total	10.14	21.34	7.60	3.43	75.36	89.92	44.04	21.03	310.95	23.20	6.12	0.51
Mean:												
mgd	0.327	0.688	0.253	0.111	2.51	2.90	1.42	0.751	10.0	0.773	0.197	0.017
cfs	0.506	1.06	0.391	0.172	3.88	4.49	2.20	1.16	15.5	1.20	0.305	0.026
Ac-ft	31	65	23	11	231	276	135	65	954	71	19	1.6

Calendar year 1950 : Max 33 Min 0 Mean(mgd) 1.21 Mean(cfs) 1.87 Ac-ft 1,350
Fiscal year 1950-51 : Max 89 Min 0 Mean(mgd) 1.68 Mean(cfs) 2.60 Ac-ft 1,880

Peak discharge (base, 70 mgd).--Nov. 26 (10:30 p.m.) 102 mgd (158 cfs), 3.65 ft; Dec. 3 (6:30 p.m.) 210 mgd (325 cfs), 4.49 ft; Mar. 11 (8:30 a.m.) 135 mgd (209 cfs), 3.97 ft; Mar. 13 (2 a.m.) 125 mgd (193 cfs), 3.92 ft; Mar. 26 (8 a.m.) 505 mgd (781 cfs), 5.25 ft.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for stations on nearby streams.

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 1951.

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.--17 years, 2.23 mgd (3.45 cfs).

Extremes.--Maximum discharge during year, 1,150 mgd (1,780 cfs) Mar. 26 (gage height, 5.39 ft), from rating curve extended above 13 mgd by test on model of station site; minimum, 0.62 mgd (0.96 cfs) Oct. 8, Nov. 3, 5.
1914-19, 1939-51: Maximum discharge, that of Mar. 26, 1951; 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.93	0.78	0.83	0.70	0.70	1.9	1.35	0.90	0.88	1.73	1.41	0.98
2	.98	1.65	.83	.70	.70	2.5	1.1	.90	.88	1.66	1.28	.93
3	.93	11.4	.78	.70	.66	20	1.25	.90	.88	*1.66	1.23	.93
4	.93	1.13	.78	.66	.66	3.3	1.3	.90	.88	1.66	1.18	.93
5	.93	.88	.78	.70	.66	2.5	1.1	.90	1.75	1.66	1.18	.88
6	.88	.78	.78	.66	.66	4.5	1.0	.88	1.41	1.60	1.18	.83
7	.88	.78	.78	.66	.70	1.8	.98	.88	1.13	1.66	1.28	.83
8	.88	.88	.88	.66	.70	1.3	.95	.88	1.03	1.66	1.28	.78
9	.88	.88	.83	.66	.78	1.1	.93	.88	.98	2.15	1.23	.78
10	.88	.88	1.24	.74	.70	1.2	.92	.88	2.15	21	1.28	.78
11	.83	.88	1.08	.70	.70	1.1	.92	.88	21.5	3.1	1.23	.78
12	.83	.88	*.98	.70	.70	1.08	.92	.88	4.1	2.25	1.23	.78
13	.83	.83	.88	.66	.70	1.06	.92	.88	25	1.60	1.23	.83
14	.78	.78	.88	.66	.70	1.05	1.0	.88	3.55	1.66	1.18	.83
15	.78	4.1	.83	.66	.70	1.04	1.0	.88	1.86	1.60	1.18	.83
16	.78	1.34	.78	.70	.74	1.03	.92	.93	1.47	1.60	1.13	.83
17	.78	.98	1.34	.70	.90	1.03	.92	.88	1.28	1.54	1.08	.83
18	.78	.93	.93	.70	.77	1.03	.92	.88	1.23	1.54	1.08	.83
19	.78	.88	.83	.70	.84	1.03	.92	1.67	1.13	1.54	1.08	.88
20	.74	.88	.78	.70	3.0	1.03	.92	2.75	1.13	1.92	1.08	.88
21	.74	.88	.78	.70	1.4	1.03	.92	1.72	12.5	1.54	1.08	.88
22	.74	.88	.78	.70	.90	1.03	1.0	1.18	4.8	1.47	1.08	.88
23	.74	.88	.74	.70	.80	1.03	.92	1.03	1.92	1.41	1.08	.88
24	.74	.88	.74	.70	.78	1.03	.92	.98	1.73	1.34	1.08	.88
25	.78	.88	.74	.70	.77	1.03	.92	.98	1.75	1.34	*1.03	.88
26	.78	.83	.74	.70	2.2	.98	.92	.93	92	1.34	.98	.88
27	*.83	.88	.70	.70	4.0	.98	.90	.93	50	1.28	.98	.88
28	.83	.83	.70	.70	1.5	1.03	.90	.88	5.2	1.28	.98	.88
29	.78	.78	.70	.74	1.2	.98	.90	-	3.15	1.34	.98	.88
30	.78	.88	.70	.74	1.2	.98	.90	-	2.4	1.71	.98	.88
31	.78	.88	-	.70	-	1.8	.90	-	2.0	-	.98	-
Total	25.53	42.00	25.14	21.50	31.42	62.48	30.34	29.04	251.67	68.84	35.26	25.75
Mean:												
mgd	0.824	1.35	0.838	0.694	1.05	2.02	0.979	1.04	8.12	2.29	1.14	0.858
cfs	1.27	2.09	1.30	1.07	1.62	3.13	1.51	1.61	12.6	3.54	1.76	1.33
Ac-ft	78	129	77	66	96	192	93	89	772	211	108	79

Calendar year 1950. Max 21 Min 0.66 Mean(mgd) 1.34 Mean(cfs) 2.07 Ac-ft 1,500
Fiscal year 1950-51: Max 92 Min 0.66 Mean(mgd) 1.78 Mean(cfs) 2.75 Ac-ft 1,990

Peak discharge (base, 100 mgd).--Aug. 3 (12:30 a.m.) 136 mgd (210 cfs), 2.88 ft; Dec. 3 (5:30 p.m.) 115 mgd (178 cfs), 2.75 ft (estimated); Mar. 12 (12 p.m.) 365 mgd (565 cfs), 3.68 ft; Mar. 21 (8 p.m.) 172 mgd (266 cfs), 3.11 ft; Mar. 26 (4 a.m.) 1,150 mgd (1,780 cfs), 5.39 ft; Apr. 10 (11 a.m.) 330 mgd (511 cfs), 3.60 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 17 to Dec. 19, Dec. 31 to Feb. 7; discharge estimated on basis of records for stations on 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 1951.

Gage.--Water-stage recorder and concrete control. Datum of gage is 320 ± 1.0 ft above mean sea level (transit levels by U. S. Navy).

Average discharge.--10 years (1940-42, 1943-51), 0.350 mgd (0.542 cfs).

Extremes.--Maximum discharge during year, 32.5 mgd (50.3 cfs) Dec. 3 (gage height, 1.91 ft), from rating curve extended above 4.0 mgd as explained below; minimum, 0.18 mgd (0.28 cfs) July 1, 8, 9.
1940-51: 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 period of no gage-height record, which are poor.

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

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.18	1.0	2.9
.6	.35	1.2	5.9
.7	.68	1.4	10.5
.8	1.20	1.6	17.0
.9	1.92		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.20	0.21	0.25	0.23	0.23	0.89	0.59	0.25	0.26	0.52	0.42	0.35
2	.21	*.25	.23	.23	.23	1.18	.38	.25	.25	.45	.42	.35
3	.20	2.4	.23	.21	*.23	4.7	.53	.25	.25	*.45	.42	.35
4	.20	.45	.23	.21	.23	1.58	.57	.25	.25	.45	.42	.35
5	.21	.30	.25	.25	.23	1.10	.38	.25	.90	.48	.38	.35
6	.20	.25	.23	.25	.23	2.4	.33	.23	.38	.45	.38	.35
7	.20	.25	.27	.23	.23	.84	.32	.23	.35	.42	.45	.35
8	.20	.23	.44	.23	.21	.48	.30	.23	.32	.42	.42	.38
9	.20	.21	.28	.25	.35	.35	.28	.23	.30	.83	.42	.38
10	.21	.21	.47	.27	.23	.40	.26	.23	1.0	3.1	.42	.38
11	.21	.21	.39	.23	.23	.32	.26	.21	3.9	1.26	.42	.35
12	.20	.21	*.28	.23	.23	.30	.26	.21	1.4	.94	.42	.38
13	.21	.21	.26	.21	.23	.30	.26	.21	4.1	.65	.42	.38
14	.21	.23	.25	.21	.23	.28	.28	.21	1.2	.58	.42	.38
15	.21	1.85	.25	.23	.23	.28	.28	.23	.60	.52	.42	.38
16	.21	.55	.25	.21	.35	.26	.26	.25	.45	.52	.38	.38
17	.21	.35	.37	.21	.54	.26	.26	.23	.40	.52	.42	.38
18	.21	.32	.25	.23	.28	.26	.26	.25	.38	.52	.42	.38
19	.21	.28	.23	.21	.36	.26	.26	1.24	.35	.52	.42	.38
20	.21	.28	.23	.21	1.42	.26	.26	1.45	.35	.60	.42	.38
21	.21	.26	.23	.21	.64	.26	.26	.84	3.9	.48	.42	.38
22	.21	.26	.23	.21	.42	.26	.28	.52	1.6	.48	.42	.38
23	.23	.26	.23	.25	.32	.26	.26	*.35	.56	.48	.42	.38
24	.26	.26	.23	.23	.30	.26	.26	.32	.50	.48	*.38	.42
25	.30	.26	.23	.23	.28	.26	.26	.30	.50	.45	.35	.38
26	.25	.26	.23	.23	1.04	.25	.26	.28	14	.45	.35	.38
27	.25	.26	.23	.23	2.0	.26	.25	.26	8.0	.45	.35	.38
28	.21	.25	.23	.23	.76	.32	.25	.26	1.49	.45	.35	.38
29	.21	.25	.23	.34	.45	.28	.25	-	.89	.48	.35	.35
30	.21	.32	.23	.25	.40	.28	.25	-	.68	.65	.35	.38
31	.21	.26	-	.23	-	.92	.25	-	.58	-	.35	-
Total	6.67	12.15	7.94	7.18	13.11	20.31	9.41	10.02	50.09	19.05	12.40	11.17
Mean:												
mgd	0.215	0.392	0.265	0.232	0.437	0.655	0.304	0.358	1.62	0.635	0.400	0.372
cfs	0.333	0.607	0.410	0.359	0.676	1.01	0.470	0.554	2.51	0.982	0.619	0.576
Ac-ft	20	37	24	22	40	62	29	31	154	58	38	34

Calendar year 1950, Max 4.7 Min 0.18 Mean(mgd) 0.363 Mean(cfs) 0.562 Ac-ft 405
Fiscal year 1950-51: Max 14 Min 0.20 Mean(mgd) 0.492 Mean(cfs) 0.761 Ac-ft 549

Peak discharge (base, 15 mgd).--Dec. 3 (6 p.m.) 32.5 mgd (50.3 cfs), 1.91 ft; Mar. 26 (time unknown) about 30 mgd (46 cfs).
* Discharge measurement made on this day.
Note.--No gage-height record Mar. 11-27; discharge estimated on basis of records for nearby stations.

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 1951.

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.--15 years (1936-51), 2.40 mgd (3.71 cfs).

Extremes.--Maximum discharge during year, 65 mgd (101 cfs) Mar. 26 (gage height, 2.95 ft), from rating curve extended above 9 mgd by test on model of station site; minimum, 0.16 mgd (0.25 cfs) Sept. 4.

1935-51: 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 table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.14	0.7	4.3
.2	.42	1.0	8.3
.3	.90	1.3	13.6
.5	2.35		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.32	0.26	0.20	0.26	0.42	0.60	0.75	0.70	0.90	1.14	1.14	0.80
2	.32	*.79	.20	.26	.38	1.04	.55	.70	.90	1.14	1.08	.75
3	.29	3.0	.20	.26	.38	3.95	.60	.70	.90	1.14	1.08	.75
4	.29	.26	.20	.26	.38	.63	1.10	.70	.90	1.20	1.08	.75
5	.29	.23	.20	.29	.38	.69	.65	.75	1.94	1.20	1.02	.75
6	.29	.23	.22	.29	.38	2.05	.60	.75	.96	1.20	1.02	.75
7	.29	.29	.30	.29	.38	.50	.55	.80	.90	1.20	1.02	.75
8	.26	.23	.26	.29	.38	.46	.55	.75	.90	1.20	1.02	.70
9	.26	.23	.23	.44	.42	.42	.55	.75	.90	1.52	1.02	.70
10	.26	.23	.38	.35	.38	.42	.55	.75	1.05	2.3	1.02	.70
11	.26	.23	.32	.32	.38	.42	.55	.70	3.75	1.20	.96	.70
12	.26	.23	.29	.32	.38	.42	.55	.70	3.3	1.14	.96	.75
13	.26	.23	.29	.32	.38	.42	.55	.70	3.05	1.14	.96	.70
14	.26	.23	.29	.32	.42	.42	.65	.70	1.08	1.14	.90	.65
15	.26	1.56	.29	.32	.38	.42	.65	.70	.90	1.20	.96	.65
16	.26	.35	.32	.32	.42	.46	.65	.70	.85	1.20	.90	.65
17	.26	.29	.35	.32	.42	.46	.65	.75	.85	1.20	.90	.65
18	.26	.29	.29	.32	.42	.46	.65	.75	.85	1.20	.90	.65
19	.26	.26	.29	.32	.72	.46	.65	2.25	.85	1.20	.90	.65
20	.26	.26	.26	.32	2.7	.46	.65	*2.25	1.11	1.20	.90	.65
21	.26	.26	.26	.32	.55	.46	.65	1.20	3.65	1.20	.85	.70
22	.26	.23	.26	.32	.38	.46	.70	.96	2.75	1.14	.85	.65
23	.23	.23	.26	.35	.38	.46	.70	.96	1.20	1.14	.85	.65
24	.23	.23	.26	.35	.38	.50	.70	.90	1.20	1.14	*.80	.65
25	.26	.23	.26	.35	.42	.55	.70	.90	1.26	1.14	.97	.65
26	.26	.23	.26	.35	2.45	.55	.70	.90	12.8	1.14	.90	.65
27	.26	.23	.26	.35	1.72	.55	.70	.96	6.4	1.14	.90	.65
28	.23	.23	.26	.35	.70	.65	.65	.90	1.41	1.14	.85	.65
29	.23	.20	.26	.60	.46	.50	.65	-	1.20	1.14	.85	.60
30	.23	.20	.26	.42	.55	.50	.65	-	*1.14	1.14	.85	.65
31	.23	.23	-	.42	-	1.47	.70	-	1.26	-	.85	-
Total	8.15	12.18	7.98	10.37	18.49	21.81	20.15	25.23	61.11	36.52	29.26	20.60
Mean:												
mgd	0.263	0.393	0.266	0.335	0.616	0.704	0.650	0.901	1.97	1.22	0.944	0.687
cfs	0.407	0.608	0.412	0.518	0.953	1.09	1.01	1.39	3.05	1.89	1.46	1.06
Ac-ft	25	37	24	32	57	67	62	77	188	112	90	63

Calendar year 1950: Max 5.7 Min 0.20 Mean(mgd) 0.490 Mean(cfs) 0.758 Ac-ft 549
Fiscal year 1950-51: Max 12.8 Min 0.20 Mean(mgd) 0.745 Mean(cfs) 1.15 Ac-ft 834

Peak discharge (base, 30 mgd).--Aug. 3 (12:30 a.m.) 30.5 mgd (47 cfs), 2.02 ft; Nov. 20 (3 p.m.) 33.5 mgd (52 cfs), 2.11 ft; Dec. 3 (4 p.m.) 61 mgd (94 cfs), 2.92 ft; Mar. 12 (8:30 p.m.) 47 mgd (73 cfs), 2.52 ft; Mar. 21 (9 p.m.) 50 mgd (77 cfs), 2.60 ft; Mar. 26 (2 a.m.) 65 mgd (101 cfs), 2.95 ft.

* Discharge measurement made on this day.

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 1951.

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

Average discharge.--15 years (1936-51), 6.35 mgd (9.82 cfs).

Extremes.--Maximum discharge during year, at least 200 mgd (309 cfs) Mar. 26 or 27 (gage height, at least 4.70 ft, from high-water mark), from rating curve extended above 50 mgd by test on model of station site; minimum, 3.9 mgd (6.0 cfs) Nov. 3.
1935-51: 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 period of doubtful gage-height record, which are poor. A 2-inch pipeline diverts water above station for domestic use.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.7	3.55	1.6	21.5
.9	6.2	2.0	35
1.2	11.6	3.3	93

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.9	4.7	4.8	4.2	4.2	5.6	6.2	4.9	5.1	7.3	6.7	6.1
2	4.9	*5.0	4.8	4.2	4.0	7.5	4.8	4.9	5.1	7.0	6.4	6.1
3	4.9	14.1	4.9	4.2	4.0	22	6.4	4.9	5.1	6.7	6.4	6.1
4	4.9	5.2	4.9	4.2	4.2	10.2	9.8	4.9	4.9	6.5	6.4	6.1
5	4.9	4.8	4.9	4.3	4.0	8.0	6.4	4.8	9.2	6.5	6.4	6.1
6	4.8	4.9	4.9	4.2	4.0	11.7	5.6	4.8	6.1	6.4	6.4	6.1
7	4.8	5.1	5.1	4.2	4.0	7.0	5.5	4.8	5.5	6.2	6.5	6.1
8	4.8	4.8	5.1	4.2	4.0	6.2	5.2	4.8	5.1	6.1	6.4	6.1
9	4.7	4.7	4.9	5.0	4.3	5.8	5.1	4.8	4.9	6.7	6.4	6.1
10	4.7	4.7	5.1	5.7	4.3	5.9	4.9	4.8	5.1	10.8	6.2	6.1
11	4.6	4.8	5.2	4.4	4.2	5.5	4.9	4.8	16.1	7.5	6.4	6.1
12	4.6	4.8	*4.8	4.4	4.3	5.4	4.9	4.8	9.6	7.0	6.4	6.2
13	4.7	4.8	4.8	4.3	4.3	5.2	4.9	4.8	29	6.5	6.2	6.2
14	4.6	4.8	4.8	4.3	4.3	5.2	5.2	4.8	10.0	6.5	6.2	6.2
15	4.6	10.3	4.7	4.2	4.3	5.1	5.2	4.8	7.3	6.4	6.2	6.2
16	4.7	5.6	4.7	4.2	4.3	5.2	5.1	4.8	6.5	6.4	6.4	6.4
17	4.6	5.2	5.1	4.2	4.3	5.1	4.9	4.8	6.1	6.4	6.4	6.4
18	4.6	4.9	4.7	4.2	4.3	5.1	5.1	4.8	5.9	6.5	6.4	6.2
19	4.6	4.9	4.6	4.2	5.1	*5.1	4.9	10.6	5.6	6.2	6.4	6.2
20	4.6	4.8	4.6	4.2	16.8	4.9	4.9	11.2	6.1	6.2	6.4	6.2
21	4.6	4.8	4.4	4.2	6.8	4.8	4.9	7.3	13.1	6.2	6.4	6.2
22	4.7	4.8	4.4	4.2	5.2	4.8	5.4	5.9	20	6.2	6.2	6.2
23	4.7	4.8	4.4	4.2	4.8	4.8	4.9	5.5	7.8	6.2	6.2	6.2
24	4.7	4.8	4.4	4.3	4.7	4.8	4.9	5.4	7.0	6.2	*6.2	6.2
25	4.7	4.8	4.3	4.2	4.6	4.8	4.9	5.6	7.0	6.2	6.2	6.2
26	4.7	4.8	4.3	4.2	12.0	4.7	5.1	5.4	d90	6.1	6.2	6.2
27	4.6	4.8	4.3	4.2	12.8	4.7	5.1	5.2	d50	6.2	6.1	6.2
28	4.6	4.8	4.3	4.2	7.6	5.1	5.1	5.1	11.8	6.2	6.1	6.2
29	4.6	4.8	4.2	5.3	6.1	4.8	5.1	-	9.1	6.5	6.1	6.4
30	4.7	4.9	4.2	4.3	5.9	4.8	4.9	-	*8.0	6.5	6.1	6.4
31	4.7	4.8	-	4.2	-	8.8	4.9	-	8.3	-	6.1	-
Total	145.8	165.8	140.6	134.5	167.7	198.6	165.1	154.0	390.4	198.3	195.5	185.7
Mean:												
mgd	4.70	5.35	4.69	4.34	5.59	6.41	5.33	5.50	12.6	6.61	6.31	6.19
cfs	7.27	8.28	7.25	6.71	8.65	9.92	8.25	8.51	19.5	10.2	9.76	9.58
Ac-ft	447	509	431	413	515	609	507	473	1,200	609	600	570

Calendar year 1950: Max 24 Min 3.85 Mean(mgd) 5.55 Mean(cfs) 8.59 Ac-ft 6,220
Fiscal year 1950-51: Max 90 Min 4.0 Mean(mgd) 6.14 Mean(cfs) 9.50 Ac-ft 6,880

Peak discharge (base, 90 mgd).--Dec. 3 (5 p.m.) 150 mgd (232 cfs), 4.25 ft; Mar. 11 (9 a.m.) 93 mgd (144 cfs), 3.34 ft; Mar. 13 (12 p.m.) about 129 mgd (about 200 cfs); Mar. 21 or 22 (time unknown) about 123 mgd (about 190 cfs); Mar. 26 or 27 (time unknown) 200 mgd (309 cfs), 4.70 ft.

* Discharge measurement made on this day.

d Doubtful gage-height record; discharge estimated on basis of records for stations on nearby streams.

Waiahole tunnel at Waianu, near Waiahole

Location.--Lat 21°29'05", long. 157°53'15", on left bank in Waiahole tunnel at intake No. 29, and 2.1 miles southwest of Waiahole.

Records available.--December 1950 to June 1951 in reports of Geological Survey. June 1916 to November 1950 in files of Waiahole Water Co.

Gage.--Water-stage recorder and 4-foot concrete Parshall flume.

Extremes.--Maximum daily discharge for the period, 60 mgd (93 cfs) Mar. 26; minimum daily, 21 mgd (32 cfs) Dec. 15, 16, Feb. 10-15, 17, 18.

Remarks.--Records good. Water may be diverted at various intakes above station.

Discharge, in million gallons a day, December 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1						-	25.5	22	22	26.5	26.5	24.5
2						-	25.5	22	24.5	25.5	26.5	25.5
3						-	33	22	23.5	25.5	26.5	25.5
4						-	36	22	26	25.5	26.5	25.5
5						-	28	22	51	25.5	26.5	24.5
6						-	24.5	22	29	25.5	25.5	24.5
7						-	23.5	22	28	28	26.5	24.5
8						-	22	22	23.5	29	26.5	24.5
9						-	22	22	24.5	32.5	25.5	24.5
10						-	22	21	27	29	26.5	24.5
11						-	22	21	47	28	25.5	24.5
12						-	22	21	29	28	25.5	24.5
13						-	22	21	42	26.5	25.5	25.5
14						-	27.5	21	26.5	26.5	25.5	24.5
15						*21	34	21	23.5	26.5	25.5	24.5
16						21	25.5	22	23.5	26.5	25.5	24.5
17						22	23.5	21	23.5	26.5	25.5	24.5
18						23.5	23.5	21	22	26.5	25.5	24.5
19						22	23.5	41	23.5	26.5	25.5	24.5
20						22	22	37.5	23.5	26.5	25.5	24.5
21						22	22	25.5	32.5	26.5	25.5	24.5
22						22	22	23.5	42	26.5	25.5	24.5
23						22	22	22	24.5	26.5	25.5	24.5
24						22	22	22	24.5	26.5	25.5	24.5
25						22	22	22	26.5	26.5	25.5	24.5
26						22	22	22	60	26.5	25.5	24.5
27						22	22	22	47	25.5	25.5	24.5
28						28	22	22	31.5	25.5	25.5	24.5
29						23.5	22	-	26.5	30.5	25.5	23.5
30						23.5	22	-	25.5	33	25.5	23.5
31						28.5	22	-	25.5	-	24.5	-
Total						-	749.5	647.5	929.0	814.0	797.5	737.0
Mean:												
mgd						-	24.2	23.1	30.0	27.1	25.7	24.6
cfs						-	37.4	35.7	46.4	41.9	39.8	38.1
Ac-ft						-	2,300	1,990	2,850	2,500	2,450	2,260

Calendar year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft
Fiscal year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft

* Discharge measurement made on this day.

Waiahole tunnel wasteway at intake 31, near Waiahole

Location.--Lat 21°28'30", long. 157°53'15", on left bank 150 ft below the wasteway gates of intake No. 31 of Waiahole tunnel and 2.2 miles southwest of Waiahole.

Records available.--January to June 1951.

Gage.--Water-stage recorder and 4-foot concrete Parshall flume.

Extremes.--Maximum daily discharge during period, 29 mgd (45 cfs) Mar. 26; no flow for most of time.

Remarks.--Records fair. Station measures releases from Waiahole tunnel.

Discharge, in million gallons a day, January to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1							-		0			
2							-		0			
3							-		0			
4							-		0			
5							-		6.8			
6							-		13.1			
7							-		12.2			
8							-		3.5			
9							-		0			
10							-		0			
11							-		12.6			
12							-		*13.1			
13							-		18.0			
14							-		12.2			
15							-		11.4			
16							-		11.4			
17							-		11.4			
18							0		11.4			
19							0		11.4			
20							0		3.3			
21							0		0			
22							11.9		5.1			
23							*16.0		12.2			
24							*16.0		12.2			
25							16.0		13.1			
26							4.0		29			
27							0		23.			
28							0		14.0			
29							0		13.1			
30							0		12.2			
31							0		3.55			
Total							-	0	289.25	0	0	0
Mean:												
mgd							-	0	9.33	0	0	0
cfs							-	0	14.4	0	0	0
Ac-ft							-	0	888	0	0	0

Calendar year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft
Fiscal year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft

* Discharge measurement made on this day.

Waiahole tunnel at north portal, near Waiahole

Location.--Lat 21°28'15", long. 157°53'30", on right bank in Waiahole tunnel at the boundary of Territorial and private lands and 2.6 miles southwest of Waiahole.

Records available.--January to June 1951 in reports of Geological Survey. May 1916 to December 1950 in files of Waiahole Water Co.

Gage.--Water-stage recorder and 4-foot concrete Parshall flume.

Extremes.--Maximum daily discharge for period, 48 mgd (74 cfs) Mar. 5; minimum daily, 7.0 mgd (10.8 cfs) Jan. 24, 25.

Remarks.--Records good. Numerous intakes can divert water above station.

Discharge, in million gallons a day, January to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1							-	24.5	23.5	28	29	29
2							-	24.5	25.5	28	29	28
3							-	24.5	25.5	28	31.5	27
4							-	24.5	27	28	29	28
5							-	24.5	48	28	29	28
6							25.5	24.5	17.0	28	29	28
7							24.5	24.5	17.0	29	29	28
8							24.5	24.5	21	31.5	29	28
9							24.5	24.5	25.5	34	29	28
10							23.5	24.5	28.5	31.5	31.5	28
11							23.5	24.5	37.5	29	29	28
12							23.5	24.5	17.8	29	29	28
13							23.5	24.5	24.5	28	29	28
14							29	24.5	16.0	28	29	28
15							34	24.5	14.1	28	29	28
16							27	24.5	14.1	28	29	28
17							24.5	24.5	13.2	28	29	28
18							24.5	24.5	13.2	28	29	28
19							24.5	46	13.2	28	29	28
20							24.5	42	22	29	29	28
21							24.5	25.5	35.5	29	29	27
22							12.0	24.5	41	29	29	27
23							7.3	23.5	15.0	29	29	27
24							7.0	23.5	15.0	29	29	28
25							7.0	23.5	17.0	29	29	27
26							20.5	23.5	37.5	29	29	27
27							24.5	23.5	27.5	29	29	27
28							24.5	23.5	18.0	29	29	27
29							24.5	-	17.0	31	29	27
30							24.5	-	15.0	36.5	29	27
31							24.5	-	24.5	-	29	-
Total							-	720.0	707.1	876.5	904.0	831
Mean:												
mgd							-	25.7	22.8	29.2	29.2	27.7
cfs							-	39.8	35.3	45.2	45.2	42.9
Ac-ft							-	2,210	2,170	2,690	2,770	2,550

Calendar year	. Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft
Fiscal year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft

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 1950 to June 1951

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Sept.14	Makaha tunnel..	Farm land.....	At mouth in Makaha Valley, near Waianae	1.15	0.743
Mar. 22	....do.....	....do.....	....do.....	1.01	.651
Nov. 10	Makaha mauka ditch.	....do.....	At 4-ft Parshall flume about 2,000 ft below tunnel in Makaha Valley, near Waianae.	1.05	.679
Mar. 22	....do.....	....do.....	....do.....	1.07	.692
Aug. 14	Tunnel 19.....	Kanewai Stream	At weir 28, near Waianae.....	1.39	.898
Sept.13	....do.....	....do.....	....do.....	1.25	.808
Nov. 9	....do.....	....do.....	....do.....	1.21	.782
Mar. 21	....do.....	....do.....	....do.....	1.11	.717
Aug. 14	Tunnel 2.....	....do.....	At weir 8, near Waianae.....	-	Trickle
Sept.13	....do.....	....do.....	....do.....	-	Dry
Mar. 21	....do.....	....do.....	....do.....	-	Dry
Aug. 14	Tunnel 6.....	....do.....	At weir 7, near Waianae.....	.218	.141
Sept.13	....do.....	....do.....	....do.....	.207	.134
Nov. 9	....do.....	....do.....	....do.....	.189	.122
Mar. 21	....do.....	....do.....	....do.....	.184	.119
Aug. 14	Tunnel 6-A.....	....do.....	At weir 20, near Waianae.....	.028	.018
Sept.13	....do.....	....do.....	....do.....	.019	.012
Nov. 9	....do.....	....do.....	....do.....	.022	.014
Mar. 21	....do.....	....do.....	....do.....	.070	.045
Aug. 14	Tunnel 7.....	....do.....	At weir 21, near Waianae.....	.087	.056
Sept.13	....do.....	....do.....	....do.....	.077	.050
Nov. 9	....do.....	....do.....	....do.....	.079	.051
Mar. 21	....do.....	....do.....	....do.....	.076	.049
Aug. 14	Tunnel 8.....	....do.....	At weir 22, near Waianae.....	.022	.014
Sept.13	....do.....	....do.....	....do.....	.006	.004
Mar. 21	....do.....	....do.....	....do.....	-	Dry
Aug. 14	Tunnel 9.....	....do.....	At weir 23, near Waianae.....	.066	.043
Sept.13	....do.....	....do.....	....do.....	.057	.037
Nov. 9	....do.....	....do.....	....do.....	.063	.041
Mar. 21	....do.....	....do.....	....do.....	.063	.041
Aug. 14	Kanewai.....	Honua Stream..	Above flume entrance, near Waianae...	1.89	1.22
Sept.13	....do.....	....do.....	....do.....	1.95	1.26
Nov. 9	....do.....	....do.....	....do.....	1.38	.892
Mar. 21	....do.....	....do.....	....do.....	2.18	1.41
Sept.13	Coffee House Springs.	Kukaki Stream.	At weir 4, near Waianae.....	-	Dry
Mar. 21	....do.....	....do.....	....do.....	-	Dry
Aug. 14	Tunnel 1.....	Kanemimi Stream.	At weir 1-A, near Waianae.....	.002	.001
Sept.13	....do.....	....do.....	....do.....	-	Dry
Mar. 21	....do.....	....do.....	....do.....	-	Dry
Sept.13	Kanemimi.....	Honua Stream..	At weir 3, near Waianae.....	-	Dry
Mar. 21	....do.....	....do.....	....do.....	-	Dry
Aug. 22	Honua.....	Pacific Ocean.	At weir 2 above flume intake, near Waianae.	.036	.023
Sept.13	....do.....	....do.....	....do.....	-	Dry
Mar. 21	....do.....	....do.....	....do.....	.381	.246
Aug. 22	Right Branch of West Fork Kalalula.	West Fork Kalalula Stream.	At weir 25, above tunnel 14, near Waianae.	.104	.067
Sept.12	....do.....	....do.....	....do.....	.153	.099
Nov. 8	....do.....	....do.....	....do.....	.101	.065
Mar. 21	....do.....	....do.....	....do.....	.114	.074
Aug. 22	Tunnel 14.....	Right Branch of West Fork Kalalula Stream.	At weir 24, near Waianae.....	.111	.072
Sept.12	....do.....	....do.....	....do.....	.111	.072
Nov. 8	....do.....	....do.....	....do.....	.104	.067
Mar. 21	....do.....	....do.....	....do.....	.124	.080
Aug. 22	Right Branch of West Fork Kalalula.	West Fork Kalalula Stream.	At weir 10, near Waianae.....	.214	.138
Sept.12	....do.....	....do.....	....do.....	.232	.150
Nov. 8	....do.....	....do.....	....do.....	.227	.147
Mar. 21	....do.....	....do.....	....do.....	.289	.187
Aug. 22	Left Branch of West Fork Kalalula.	....do.....	At weir 9, below tunnel 11, near Waianae.	.099	.064
Sept.12	....do.....	....do.....	....do.....	.073	.047
Nov. 8	....do.....	....do.....	....do.....	.068	.044
Mar. 21	....do.....	....do.....	....do.....	.189	.122
Aug. 22	Tunnel 15.....	....do.....	At weir 13, near Waianae.....	.340	.220
Sept.12	....do.....	....do.....	....do.....	.351	.227
Nov. 8	....do.....	....do.....	....do.....	.257	.166
Mar. 21	....do.....	....do.....	....do.....	.353	.228
Aug. 22	West Fork Kalalula.	Kalalula Stream.	At weir 14, below tunnel 15, above pipe-line diversion, near Waianae.	.608	.393
Sept.12	....do.....	....do.....	....do.....	.591	.382
Nov. 8	....do.....	....do.....	....do.....	.606	.392
Mar. 21	....do.....	....do.....	....do.....	.876	.566
Aug. 22	East Fork Kalalula.	....do.....	At weir 30, near Waianae.....	.009	.006
Sept.12	....do.....	....do.....	....do.....	.002	.001
Mar. 21	....do.....	....do.....	....do.....	.114	.074
Aug. 22	Kalalula.....	Honua Stream..	At weir 15, near Waianae.....	.017	.011
Sept.12	....do.....	....do.....	....do.....	.012	.008
Nov. 8	....do.....	....do.....	....do.....	.009	.006
Mar. 20	....do.....	....do.....	....do.....	.051	.033
Aug. 22	Hiu.....	....do.....	At weir 26 above flume outlet, near Waianae.	.054	.035

MISCELLANEOUS DISCHARGE MEASUREMENTS

Miscellaneous discharge measurements on Oahu during fiscal year July 1950 to June 1951--Continued

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Sept.14	Hiu.....	Honua Stream..	At weir 26 above flume outlet, near Waianae.	0.040	0.026
Nov. 10	....do.....	....do.....	....do.....	.040	.026
Mar. 22	....do.....	....do.....	....do.....	2.26	1.46
Aug. 22	....do.....	....do.....	At weir 17, near Waianae.....	.613	.396
Sept.14	....do.....	....do.....	....do.....	.127	.082
Nov. 10	....do.....	....do.....	....do.....	.073	.047
Mar. 22	....do.....	....do.....	....do.....	1.46	.944
Aug. 22	Kumaipo.....	....do.....	At weir 11, below tunnel 16, near Waianae.	.468	.302
Sept.14	....do.....	....do.....	....do.....	.084	.054
Nov. 10	....do.....	....do.....	....do.....	.060	.039
Mar. 22	....do.....	....do.....	....do.....	23.9	15.4
Aug. 17	....do.....	....do.....	At weir 12 above diversion flume to Hiu Stream, near Waianae.	.850	.549
Sept.14	....do.....	....do.....	....do.....	.104	.067
Nov. 10	....do.....	....do.....	....do.....	.053	.034
Mar. 22	....do.....	....do.....	....do.....	30.5	19.7
Aug. 22	Punanaula.....	....do.....	At weir 16, below tunnel 17, near Waianae.	.025	.016
Sept.14	....do.....	....do.....	....do.....	.029	.019
Nov. 10	....do.....	....do.....	....do.....	.029	.019
Mar. 22	....do.....	....do.....	....do.....	.170	.110
Aug. 17	City and County of Honolulu tunnel.	....do.....	At 9-inch Parshall flume just below mouth of tunnel, near Waianae.	4.21	2.72
Sept.12	....do.....	....do.....	....do.....	4.64	3.00
Nov. 8	....do.....	....do.....	....do.....	6.31	4.08
Mar. 20	....do.....	....do.....	....do.....	5.36	3.46
Sept.12	Honua Stream diversion ditch.	Puea mauka ditch.	At weir just above Puea Powerplant, near Waianae.	2.34	1.51
Nov. 8	....do.....	....do.....	....do.....	2.92	1.89
Mar. 20	....do.....	....do.....	....do.....	.127	.082
Aug. 17	Puea mauka ditch.	Farm land.....	At 2-foot Parshall flume below powerplant, near Waianae.	1.70	1.10
Sept.14	....do.....	....do.....	....do.....	2.49	1.61
Mar. 20	....do.....	....do.....	....do.....	1.15	.741

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 1951.

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.--21 years (1920-28, 1938-51), 22.6 mgd (35.0 cfs).

Extremes.--Maximum discharge during year, 3,210 mgd (4,970 cfs) Dec. 3 (gage height, 9.82 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 4.4 mgd (6.8 cfs) Oct. 3, 4, 21-23.
1919-28, 1937-51: Maximum discharge, 5,970 mgd (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).

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

Revisions (fiscal years).--W 1189: 1938-48(M).

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.1	14.0	10	5	7.5	114	18.6	7.1	22.5	34.5	19.0	5.1
2	7.5	14.5	9.5	*6	6.4	*73	15.0	6.7	19.4	23.5	12.3	4.9
3	7.1	16.0	9	4.7	5.8	222	15.3	6.7	16.7	21.5	13.8	4.7
4	6.9	20	9	4.7	8.4	105	13.0	8.6	13.3	30	9.4	4.7
5	14.9	*12.5	9	12.6	6.2	64	13.0	8.6	63	25.5	8.4	4.5
6	9.7	27	11.3	22.5	5.4	83	15.3	6.7	36.5	24	7.7	5.1
7	6.7	39	10.8	7.1	5.2	70	12	6.0	23.5	19.0	7.9	5.1
8	6.4	18.2	15.5	6.0	5.1	50	11	6.4	16.7	17.8	15.2	4.9
9	6.2	15.0	16.5	12.0	19.0	34.5	10.5	5.6	14.7	17.0	7.9	5.1
10	12.9	17.1	16.5	8.4	20.5	46	10	5.4	*17.7	21	19.2	12.3
11	11.6	16.8	18	12.5	10.3	37	10	5.2	13.3	15.2	9.4	9.0
12	7.1	18.9	11	7.5	10.2	33.5	11	10.1	15.0	21	8.1	12.8
13	16.0	19.4	10	6.0	7.1	26	11	9.6	509	13.8	7.2	14.0
14	7.5	302	8.5	5.4	7.3	21.5	31.5	6.0	362	11.7	7.4	10.1
15	6.9	542	9	8.2	654	18.6	42	14.5	42	10.8	8.2	8.6
16	8.8	57	11	8.5	415	16.4	*28.5	24	26.5	10.8	*7.2	8.1
17	12.9	59	10	5.4	91	15.0	16.0	9.9	19.4	9.7	13.1	7.6
18	11.8	31.5	8.5	5.6	55	13.6	20.5	23	16.0	9.7	14.2	5.4
19	13.2	23.5	7	5.2	56	13.0	12.1	48	15.6	8.6	8.1	5.1
20	25.5	20	6	4.7	72	12	10.8	38.5	12.6	9.2	8.4	4.9
21	30	17.8	6	4.6	37	12	9.9	122	14.2	8.1	8.9	4.7
22	42	15.7	5.5	4.6	27	12	32.5	65	155	7.4	6.8	4.5
23	27.5	14.3	5	13.6	21.5	11	22	27	31	10.2	6.2	4.4
24	50	13.0	5	14.3	20.5	11	14.7	28.5	46	7.9	5.9	5.7
25	49	11.8	5	11.8	139	11	11.4	22	417	8.1	6.1	4.5
26	32	10	4.5	7.1	169	15	10.5	16.7	505	7.7	8.0	4.2
27	48	11.8	4.5	11.1	193	24	9.4	28.5	929	6.6	6.8	4.0
28	29.5	10	4.3	6.7	76	54	8.8	18.6	220	8.3	5.8	4.0
29	21.5	10	4.3	13.2	43	87	8.3	-	56	29	5.4	*3.9
30	19.7	11.8	4.5	21.5	338	72	7.5	-	38.5	26	5.6	4.0
31	15.7	10	-	10.8	-	26	7.3	-	31	-	5.2	-
Total	571.6	1,419.6	264.7	277.3	2,531.4	1,403.1	469.4	584.9	3,718.1	473.6	282.8	158.9
Means:												
mgd	18.4	45.8	8.82	8.95	84.4	45.3	15.1	20.9	120	15.8	9.12	6.20
cfs	28.5	70.9	13.6	13.8	131	70.1	23.4	32.3	186	24.4	14.1	9.59
Ac-ft	1,750	4,360	812	851	7,770	4,310	1,440	1,790	11,410	1,450	868	571

Calendar year 1950: Max 654 Min 4.3 Mean(mgd) 31.2 Mean(cfs) 48.3 Ac-ft 35,000
Fiscal year 1950-51: Max 929 Min 3.9 Mean(mgd) 33.4 Mean(cfs) 51.7 Ac-ft 37,380

Peak discharge (base, 1,800 mgd).--Nov. 15 (1:30 p.m.) 2,150 mgd (3,330 cfs), 8.08 ft; Dec. 3 (9 p.m.) 3,210 mgd (4,970 cfs), 9.82 ft; Mar. 13 (4 p.m.) 2,400 mgd (3,710 cfs), 8.55 ft; Mar. 27 (7 a.m.) 2,010 mgd (3,110 cfs), 7.85 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 26, 28, 29, Aug. 31 to Sept. 5, Sept. 9 to Oct. 2, Dec. 20-26, Jan. 7-13; discharge estimated on basis of records for nearby streams.

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 1951.

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

Average discharge.--21 years (1920-29, 1938-47, 1948-51), 9.68 mgd (15.0 cfs).

Extremes.--Maximum discharge during year, 1,270 mgd (1,960 cfs) Nov. 26 (gage height, 5.76 ft), from rating curve extended above 35 mgd by logarithmic plotting; minimum, 2.2 mgd (3.4 cfs) June 29.

1919-29, 1937-51: 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 good except those for periods of no gage-height record and those above 50 mgd, which are fair. No diversions.

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 13				Mar. 14 to June 30			
0.2	1.38	1.0	20.5	0.1	1.68	1.0	22.9
.3	2.5	1.5	44	.2	2.35	1.5	49
.4	3.95	2.0	82	.3	3.35	2.0	87
.6	8.0	2.5	140	.5	7.0	2.5	143
.8	13.4	3.0	215	.7	12.3	3.1	240

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	5.4	5.1	2.75	3.5	28.5	8.5	4.5	13.0	14	10	2.7
2	4.1	5.4	4.7	3.3	3.05	16.6	7.8	4.5	9.5	9.5	6.5	2.6
3	4.1	5.1	4.5	2.25	2.65	56	7.8	4.3	9.8	9.0	7.0	2.6
4	3.65	*7.1	4.7	2.5	3.95	22.5	6.9	7.4	7.8	12	4.5	2.55
5	9.3	4.3	5.1	5.6	2.75	37	7.1	5.2	25	10	4.0	2.55
6	5.4	10.6	6.2	6.5	2.35	78	7.1	4.3	12.6	9.5	*3.35	2.7
7	4.1	15.6	5.4	3.2	2.35	39.5	6.2	4.1	*8.5	7.0	3.85	2.7
8	4.1	6.2	7.0	3.1	2.25	20.5	6.0	3.95	7.1	7.0	6.2	2.6
9	4.0	5.6	7.6	5.6	29.5	12.2	5.8	3.95	6.2	6.0	3.5	2.95
10	5.9	8.3	7.4	3.8	14.4	25	5.4	3.8	6.7	7.0	6.5	6.0
11	5.4	8.1	8.3	4.0	7.3	15.8	5.2	3.65	5.4	6.0	4.0	6.1
12	4.1	6.4	5.2	3.05	7.7	14.2	5.6	8.1	6.2	7.0	3.35	8.6
13	5.5	21	5.2	2.65	3.35	10.8	6.0	8.8	135	6.0	3.25	8.2
14	3.8	116	4.3	2.5	2.9	8.8	21.5	5.4	33	5.0	3.15	5.1
15	3.8	159	4.9	3.2	124	8.5	27	7.6	10.3	4.5	3.35	5.0
16	4.7	24	5.6	3.35	84	7.8	16.2	12.5	9.0	4.5	3.15	5.8
17	5.7	17.1	5.4	2.5	17.3	7.1	8.8	7.3	8.0	4.0	9.7	4.9
18	5.7	12.8	3.8	2.65	15.6	6.9	9.3	12.9	7.0	4.0	6.6	4.1
19	6.0	11.1	3.5	2.35	19.9	6.5	7.3	13.1	7.0	3.5	3.95	3.15
20	12.2	10.0	3.2	2.1	28	6.2	6.7	13.4	5.0	4.0	4.3	2.9
21	8.9	9.0	2.9	2.0	9.8	6.0	6.2	25.5	6.0	3.5	4.1	2.7
22	21	7.8	2.75	2.25	6.9	5.8	6.9	14.9	50	3.5	3.35	2.7
23	9.5	7.1	2.65	6.6	5.6	5.6	9.5	8.2	12	4.5	3.15	*2.55
24	20.5	6.9	2.65	8.1	6.7	5.4	7.1	7.6	17	3.5	3.15	2.8
25	16.1	6.5	2.5	5.7	130	5.8	6.0	7.1	130	3.5	3.3	2.45
26	10.9	6.0	2.5	3.5	150	8.0	5.8	6.9	150	3.5	3.45	2.35
27	16.7	6.5	2.35	4.1	130	33.5	5.4	13.1	240	3.0	3.25	2.35
28	9.5	5.4	*2.35	3.05	20	35	5.1	8.3	70	3.5	3.0	2.25
29	7.1	5.4	2.35	10.9	*9.8	46	4.9	-	21	15	3.2	2.25
30	7.3	6.5	2.5	10.0	130	32	4.7	-	15	13	3.0	2.25
31	5.8	5.1	-	4.8	-	10.8	4.5	-	12	-	2.9	-
Total	239.35	531.3	132.60	127.95	975.60	622.3	248.3	230.35	1,055.1	196.0	136.05	108.45
Mean:												
mgd	7.72	17.1	4.42	4.13	32.5	20.1	8.01	8.23	34.0	6.53	4.39	3.62
cfs	11.9	26.5	6.84	6.39	50.3	31.1	12.4	12.7	52.6	10.1	6.79	5.60
Ac-ft	735	1,630	407	393	2,990	1,910	762	707	3,240	602	418	333

Calendar year 1950: Max 159 Min 2.0 Mean(mgd) 12.4 Mean(cfs) 19.2 Ac-ft 13,870
Fiscal year 1950-51: Max 240 Min 2.0 Mean(mgd) 12.6 Mean(cfs) 19.5 Ac-ft 14,130

Peak discharge (base, 300 mgd).--Aug. 15 (12:30 a.m.) 810 mgd (1,250 cfs), 4.87 ft; Nov. 16 (3 p.m.) 1,270 mgd (1,960 cfs), 5.75 ft; Nov. 26 (6 p.m.) 1,270 mgd (1,960 cfs), 5.76 ft; Nov. 30 (4 p.m.) 1,150 mgd (1,780 cfs), 5.61 ft; Dec. 3 (8:30 p.m.) 950 mgd (1,470 cfs), 5.24 ft; Dec. 27 (7 p.m.) 400 mgd (619 cfs), 3.83 ft; Mar. 13 (3 p.m.) 850 mgd (1,320 cfs), 4.99 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 25-28, Mar. 16 to May 5, May 9-11; discharge estimated on basis of records for nearby streams.

Waikolu Stream below pipeline 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 1951. Prior to November 1930, published as Waikolu Stream at pipeline 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 present site at datum 0.49 ft higher.

Average discharge.--21 years (1919-29, 1938-47, 1949-51), 11.9 mgd (18.4 cfs).

Extremes.--Maximum discharge during year, 1,850 mgd (2,860 cfs) Dec. 3 (gage height, 7.73 ft), from rating curve extended above 25 mgd as explained below; minimum, 4.7 mgd (7.3 cfs) Sept. 5, 6, Oct. 5, 6.
1919-32, 1937-51: 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 poor. Kalaupapa water-supply system diverts water above station.

Revisions (fiscal years).--W 1155: 1932, 1938-48(M).

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Dec. 3				Dec. 4 to June 30			
1.9	4.3	2.6	45	2.0	7.2	2.5	35
2.0	6.2	2.8	68	2.1	10.3	2.8	68
2.1	9.0	3.0	95	2.2	14.3	3.2	124
2.2	13.0	3.3	140	2.3	19.5	3.7	220
2.3	18.2	3.7	220				
2.4	25.5						

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.6	5.6	5.6	5.1	5.4	32	15.9	10.7	24.5	14	12	8.1
2	5.6	5.6	5.4	5.1	5.2	22.5	13.5	10.3	19.5	13	10	8.1
3	5.6	*5.4	5.4	5.1	5.1	86	13.1	10.3	28	12	10	8.1
4	5.6	5.6	5.2	5.1	5.1	31	12.7	11.5	12.7	12	10	7.8
5	6.9	5.6	5.4	4.9	5.1	46	12.7	12.3	38	12	9.8	7.8
6	9.0	8.4	5.6	6.9	4.9	97	12.3	11.1	20.5	21	9.4	7.8
7	6.0	11.2	5.4	6.0	4.9	46	12.3	10.3	11.5	12	9.4	7.8
8	5.6	6.2	5.6	5.4	4.9	29	12.3	10.3	*10.3	11	9.4	7.8
9	5.6	5.6	5.4	5.4	23	17.4	11.9	10.0	10	11	9.4	7.8
10	5.6	5.6	5.4	5.4	27	33	11.9	10.0	10	13	*9.1	8.1
11	5.8	6.0	6.8	6.1	7.3	22.5	11.9	10.0	11	12	9.4	8.4
12	5.8	6.8	5.4	5.4	8.4	17.4	11.9	15.2	10	13	9.1	9.4
13	6.0	14.1	5.2	5.1	5.8	16.4	12.3	32.5	100	11	9.1	10.7
14	5.8	110	5.2	5.1	5.6	13.9	34.5	11.9	85	11	9.1	9.1
15	5.6	201	5.2	5.1	108	13.5	49	13.4	20	11	9.1	8.8
16	5.6	13.1	5.2	5.1	104	13.1	47	25	15	11	8.8	9.4
17	6.0	16.5	5.2	5.1	24	12.3	14.8	13.1	12	11	9.4	9.7
18	6.2	7.3	5.2	5.1	42	12.3	*18.7	15.0	11	12	13.1	8.4
19	7.6	6.8	5.2	5.1	41	12.3	13.1	23.5	12	11	9.7	8.1
20	9.1	6.0	5.2	5.1	68	11.9	12.3	22.5	11	11	9.4	7.8
21	8.9	5.8	5.2	5.1	11.5	11.9	11.9	62	10	11	9.4	7.5
22	16.9	5.8	5.1	5.1	8.2	11.9	12.7	27.5	35	10	9.1	*7.5
23	9.2	5.6	5.1	5.4	7.0	11.5	27.5	12.7	14	10	8.8	7.5
24	11.3	5.6	5.1	7.5	6.8	11.5	15.3	12.4	60	12	9.1	7.5
25	13.2	5.6	5.1	8.6	151	11.5	12.7	12.3	170	10	9.1	7.5
26	7.9	5.6	5.1	5.6	176	19.0	11.9	11.1	140	10	8.8	7.5
27	10.6	5.6	5.1	5.6	80	78	11.5	19.6	200	10	8.8	7.5
28	7.9	5.4	5.1	5.4	*18.0	73	11.5	12.3	45	10	8.8	7.5
29	6.0	5.4	*5.1	5.9	12.2	67	11.1	-	20	11	8.1	7.5
30	5.8	5.6	5.1	13.1	149	49	11.1	-	16	13	7.8	7.5
31	5.6	5.4	-	6.2	-	27.5	10.7	-	14	-	8.1	-
Total	227.9	513.8	159.3	180.2	1,124.4	957.3	502.0	458.8	1,196.0	343	290.6	244.0
Mean:												
mgd	7.35	16.6	5.31	5.81	37.5	30.9	16.2	16.4	38.6	11.4	9.37	8.13
cfs	11.4	25.7	8.22	8.99	58.0	47.8	25.1	25.4	59.7	17.6	14.5	12.6
Ac-ft	699	1,580	489	553	3,450	2,940	1,540	1,410	3,670	1,050	892	749

Calendar year 1950: Max 201 Min 4.9 Mean(mgd) 15.1 Mean(cfs) 23.4 Ac-ft 16,980
Fiscal year 1950-51: Max 201 Min 4.9 Mean(mgd) 17.0 Mean(cfs) 26.3 Ac-ft 19,020

Peak discharge (base, 450 mgd).--Aug. 15 (2:30 a.m.) 800 mgd (1,240 cfs), 5.57 ft; Nov. 16 (7 a.m.) 502 mgd (775 cfs), 4.77 ft; Nov. 26 (1 p.m.) 715 mgd (1,110 cfs), 5.45 ft; Nov. 30 (3:30 p.m.) 1,030 mgd (1,590 cfs), 6.12 ft; Dec. 3 (8:30 p.m.) 1,850 mgd (2,860 cfs), 7.73 ft.
* Discharge measurement made on this day.
Note.--No gage-height record Mar. 9 to May 9; 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 1951.

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

Average discharge.--10 years (1941-51), 0.018 mgd (0.028 cfs).

Extremes.--1940-51: 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 good. Maui County Water Works diverts entire flow for domestic supply, from tail bay at station.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.018	0.018	0.018	0.017	0.015	0.019	0.006	0.029	0.023	0.010	0.020	0.015
2	.018	.016	.018	.017	.014	.017	.005	.029	.023	.010	.020	.015
3	.018	.016	.017	.017	.014	.018	.005	.029	.023	.009	.020	.015
4	.018	.016	.017	.017	.014	.016	.005	.029	.023	.009	.020	.015
5	.018	.016	.017	.017	.014	.015	.005	.029	.023	.009	.019	.015
6	.018	.016	.017	.017	.014	.015	.005	.028	.023	.009	.019	.015
7	.018	.016	.017	.017	.013	.015	.005	.028	.023	.008	.019	.015
8	.018	.016	.017	.017	.013	.015	.014	.028	.023	.008	.019	.015
9	.018	.016	.017	.017	.013	.015	.027	.028	.023	.008	.019	.014
10	.018	.016	.017	.017	.013	.015	.034	.028	.023	.008	.019	.014
11	.018	.016	.016	.017	.013	.015	.034	.028	.023	.008	.019	.014
12	.018	.015	.014	.017	.013	.015	.034	.028	.023	.008	.019	.014
13	.018	.015	.014	.017	.013	.015	.034	.027	.020	.008	.019	.014
14	.018	.015	.014	.017	.013	.015	.034	.024	.014	.008	.019	.014
15	.018	.019	.014	.017	.016	.015	.034	.024	.013	.007	.018	.014
16	.018	.019	.014	.017	.020	.015	.033	.024	.013	.007	.018	.013
17	.018	.018	.014	.017	.019	.015	.030	.024	.012	.017	.018	.013
18	.018	.018	.014	.017	.018	.015	.030	.024	.012	.020	.017	.013
19	.018	.018	.014	.017	.013	.015	.030	.024	.011	.020	.017	.013
20	.018	.018	.014	.017	.017	.015	.030	.024	.017	.020	.017	.013
21	.018	.018	.014	.017	.014	.015	.030	.024	.023	.020	.017	.015
22	.018	.018	.014	.017	.013	.015	.030	.024	.023	.020	.017	.015
23	.018	.018	.014	.017	.011	.015	.030	.023	.023	.020	.017	.015
24	.018	.018	.014	.016	.010	.015	.030	.023	.023	.020	.017	.014
25	.018	.018	.013	.016	.012	.015	.030	.024	.022	.020	.017	.014
26	.018	.018	.014	.016	.015	.015	.029	.023	.012	.020	.016	.014
27	.018	.018	.017	.016	.020	.013	.029	.023	.011	.020	.016	.014
28	.018	.018	.017	.015	.020	.009	.029	.023	.011	.020	.016	.016
29	.018	.018	.017	.015	.019	.008	.029	-	.011	.020	.016	.016
30	.018	.018	.017	.015	.019	.008	.029	-	.011	.020	.016	.015
31	.018	.018	-	.015	-	.006	.029	-	.011	-	.016	-
Total	0.558	0.531	0.465	0.515	0.445	0.444	0.758	0.723	0.569	0.411	0.556	0.431
Mean:												
mgd	0.018	0.017	0.016	0.017	0.015	0.014	0.024	0.026	0.018	0.014	0.018	0.014
cfs	0.028	0.026	0.025	0.026	0.023	0.022	0.037	0.040	0.028	0.022	0.028	0.022
Ac-ft	1.7	1.6	1.4	1.6	1.4	1.4	2.3	2.2	1.7	1.3	1.7	1.3

Calendar year 1950: Max 0.021 Min 0.005 Mean(mgd) 0.015 Mean(cfs) 0.023 Ac-ft 16
Fiscal year 1950-51: Max 0.034 Min 0.005 Mean(mgd) 0.018 Mean(cfs) 0.028 Ac-ft 20

Kaunakakai Stream at Kaunakakai

Location.--Lat 21°06'10", long. 157°00'50", on left bank 0.6 mile upstream from Molokai Ranch pipeline crossing, 1.3 miles northeast of Kaunakakai Post Office, and 1.7 miles upstream from mouth.

Drainage area.--6.48 sq mi.

Records available.--December 1949 to June 1951.

Gage.--Water-stage recorder. Altitude of gage is 240 ft (from topographic map).

Extremes.--1949-50: Maximum discharge during period December to June, 532 mgd (823 cfs) Jan. 23 (gage height, 4.36 ft), from rating curve extended above 60 mgd as explained below; no flow for most of the time.
1950-51: Maximum discharge during fiscal year, 2,340 mgd (3,620 cfs) Mar. 13 (gage height, 7.10 ft), from rating curve extended above 60 mgd by test on model of station site; no flow for most of the time.

Remarks.--Records good except those for period of no gage-height record and those above 60 mgd, which are fair.

Rating tables, Dec. 16, 1949, to June 30, 1951 (gage height, in feet, and discharge, in million gallons a day)

Dec. 16, 1949, to Dec. 3, 1950				Dec. 4, 1950, to June 30, 1951			
1.1	0	2.2	11.7	1.2	0	2.4	10.2
1.2	.4	2.5	20.5	1.3	.33	2.6	15.4
1.4	1.40	2.8	35	1.4	.69	2.9	28
1.6	2.65	3.1	58	1.6	1.49	3.2	54
1.8	4.6	3.4	104	1.8	2.45	3.5	110
2.0	7.5	3.7	200	2.0	4.1	3.9	290
				2.2	6.6		

Discharge, in million gallons a day, December 1949 to June 1950

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1						-	0	0	0	0		
2						-	0	0	0	0		
3						-	0	0	0	0		
4						-	0	0	0	0		
5						-	0	0	0	0		
6						-	0	0	0	0		
7						-	0	0	0	0		
8						-	0	0	0	0		
9						-	0	0	0	0		
10						-	11.8	0	0	0		
11						-	110	0	0	0		
12						-	10.7	0	0	0		
13						-	1.31	0	0	0		
14						-	0	0	0	0		
15						-	0	0	0	0		
16						0	0	0	0	2.25		
17						0	0	0	0	15.8		
18						0	0	0	0	1.65		
19						0	0	0	0	14.8		
20						0	0	0	0	.85		
21						0	0	0	.25	0		
22						0	0	.56	0	0		
23						0	*69	0	0	10.8		
24						0	9.2	0	0	.27		
25						0	.61	0	0	0		
26						0	0	0	0	0		
27						0	0	0	0	0		
28						0	0	0	0	4.2		
29						0	0	-	10.4	1.39		
30						0	0	-	2.85	0		
31						0	0	-	0	-		
Total						-	212.62	0.56	13.50	52.01	0	0
Mean:												
mgd						-	6.86	0.020	0.435	1.73	0	0
cfs						-	10.6	0.031	0.673	2.68	0	0
Ac-ft						-	653	1.7	41	160	0	0

Calendar year	. Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft
Fiscal year	: Max	Min	Mean(mgd)	Mean(cfs)	Ac-ft

* Discharge measurement made on this day.

Kaunakakai Stream at Kaunakakai--Continued

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		0			0	a30	4.9	0	0	0.18		
2		0			0	a8	1.11	0	0	0		
3		0			0	a40	0	0	0	0		
4		0			0	*a12.5	0	0	0	0		
5		0			0	3.9	0	0	0	0		
6		0			0	6.4	0	0	.19	0		
7		0			0	7.1	0	0	0	0		
8		0			0	3.55	0	0	0	0		
9		0			0	1.47	0	0	0	0		
10		0			0	0	0	0	0	0		
11		0			0	0	0	0	0	0		
12		0			0	0	0	0	0	0		
13		0			0	0	0	0	263	0		
14		43			0	0	0	0	*62	0		
15		166			39	0	2.9	0	5.5	0		
16		2.8			96	0	9.2	0	1.50	0		
17		.78			14.4	0	.59	0	0	0		
18		.65			11.0	0	0	0	0	0		
19		0			7.7	0	0	0	0	0		
20		0			5.2	0	0	0	0	0		
21		0			1.60	0	0	16.9	0	0		
22		0			0	0	0	10.1	7.4	0		
23		0			0	0	0	1.01	1.22	0		
24		0			a0	0	0	0	10.2	0		
25		0			a90	0	0	0	244	0		
26		0			a100	0	0	0	166	0		
27		0			a50	0	0	0	132	0		
28		0			a10	16.7	0	0	44	0		
29		0			a0	24.5	0	-	8.0	0		
30		0			a200	30.5	0	-	3.75	0		
31		0			-	8.1	0	-	1.49	-		
Total	0	213.23	0	0	624.90	192.72	18.70	28.01	950.25	0.18	0	0
Mean:												
mgd	0	6.88	0	0	20.8	6.22	0.603	1.00	30.7	0.006	0	0
cfs	0	10.6	0	0	32.2	9.62	0.933	1.55	47.5	0.009	0	0
Ac-ft	0	654	0	0	1,920	591	57	86	2,920	0.6	0	0

Calendar year 1950. Max 200 Min 0 Mean(mgd) 3.59 Mean(cfs) 5.55 Ac-ft 4,020
Fiscal year 1950-51: Max 263 Min 0 Mean(mgd) 5.56 Mean(cfs) 8.60 Ac-ft 6,230

Peak discharge (base, 500 mgd).--Aug. 15 (2 a.m.) 1,150 mgd (1,780 cfs), 5.45 ft; Nov. 17 (7:30 p.m.) 730 mgd (1,130 cfs), 4.72 ft; Nov. 30 (time unknown) 1,970 mgd (3,050 cfs), 6.46 ft; Mar. 13 (4:30 p.m.) 2,340 mgd (3,620 cfs), 7.10 ft; Mar. 25 (9 p.m.) 1,290 mgd (2,000 cfs), 5.63 ft.

* Discharge measurement made on this day.

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

Right Branch of East Fork Kawela Stream near Kamalo

Location.--Lat 21°06'50", long. 156°54'30", on left bank at Molokai Ranch pipeline 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 1951.

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, 238 mgd (368 cfs) Nov. 30 (gage height, 5.13 ft), from rating curve extended above 2.1 mgd as explained below; no flow many times. 1946-51: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 2.1 mgd by test on model of station site; no flow for many days.

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

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

2.28	0	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	3.8	54
2.8	1.18		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	0	0.03	4.4	1.00	0	3.5	1.76	2.4	0
2	0	0	0	0	0	2.55	.26	0	2.5	1.02	*.50	0
3	0	0	0	0	0	10.2	.02	0	4.0	1.46	.13	0
4	0	.06	0	0	0	2.9	0	0	.12	.43	.04	0
5	1.64	0	0	.69	0	2.45	0	0	5.0	.32	0	0
6	1.55	1.19	0	2.8	0	6.8	0	0	1.0	.32	0	0
7	.11	3.35	.06	.88	0	5.6	0	0	.20	.59	0	0
8	0	.10	.44	.05	0	4.8	0	0	.10	.69	.02	0
9	0	0	.34	.30	.55	1.48	.01	0	0	.20	0	0
10	.25	.44	.51	.06	2.9	5.4	0	0	0	.01	.44	2.05
11	.80	.81	.12	.56	.87	1.98	0	0	0	0	.17	1.58
12	.06	1.56	0	.44	1.08	1.72	.15	0	0	.62	0	1.62
13	1.12	3.35	0	0	.10	.64	.73	4.0	30	.51	0	2.15
14	.03	52	0	0	0	.29	9.2	1.31	8.0	.02	0	.92
15	0	34	0	0	29.5	.12	8.4	1.94	1.38	0	0	.96
16	0	1.81	0	.34	24.5	.03	*6.1	3.5	*.48	0	0	1.35
17	1.71	4.7	.20	.01	3.55	.02	1.10	1.6	.13	0	2.2	.96
18	1.22	.55	0	0	4.1	0	2.55	2.1	.01	0	2.6	.05
19	1.38	.08	0	0	5.3	0	.29	3.3	0	0	.48	0
20	1.84	0	0	0	4.2	0	.02	2.0	0	0	.34	0
21	1.66	0	0	0	.64	0	0	6.0	.01	0	.54	0
22	5.0	0	0	0	.08	0	.96	2.2	12.7	0	.03	0
23	1.25	0	0	1.85	0	0	2.2	.70	.57	0	0	0
24	2.5	0	0	3.2	.08	0	.5	.30	8.5	.14	0	0
25	2.7	0	0	2.15	24.5	0	.04	.15	38.5	0	0	0
26	1.60	0	0	.42	9.3	2.1	0	.11	29	0	0	0
27	3.15	0	0	1.27	9.6	5.1	0	3.0	43	0	0	0
28	1.07	0	0	.24	1.62	12.5	0	.35	8.9	0	0	0
29	.11	0	0	1.31	.66	22	0	-	1.07	.70	0	0
30	0	0	0	2.2	33	9.0	0	-	.43	2.6	.02	0
31	0	0	-	.78	-	1.46	0	-	.38	-	0	-
Total	30.75	104.00	1.67	19.55	156.16	103.54	33.53	32.56	199.48	11.39	9.91	11.64
Mean:												
mgd	0.992	3.35	0.056	0.631	5.21	3.34	1.08	1.16	6.43	0.380	0.320	0.388
cfs	1.53	5.18	0.087	0.976	8.06	5.17	1.67	1.79	9.95	0.588	0.495	0.600
Ac-ft	94	319	5.1	60	479	318	103	100	612	35	30	36

Calendar year 1950: Max 52 Min 0 Mean(mgd) 1.99 Mean(cfs) 3.08 Ac-ft 2,230
Fiscal year 1950-51: Max 52 Min 0 Mean(mgd) 1.96 Mean(cfs) 3.03 Ac-ft 2,190

Peak discharge (base, 100 mgd).--Aug. 15 (12 p.m.) 135 mgd (209 cfs), 4.43 ft; Nov. 15 (6 a.m.) 128 mgd (198 cfs), 4.42 ft; Nov. 30 (3 p.m.) 238 mgd (368 cfs), 5.13 ft; Dec. 3 (9:15 p.m.) 181 mgd (280 cfs), 4.74 ft; Mar. 13 (time unknown) 135 mgd (209 cfs), 4.47 ft; Mar. 25 (5:15 p.m.) 128 mgd (198 cfs), 4.40 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 24-29, Feb. 16 to Mar. 14, Apr. 21 to May 2; discharge estimated on basis of recorded range in stage and records for nearby stations.

Punaula Stream near Pukoo

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

Drainage area.--0.4 sq mi.

Records available.--March 1947 to June 1951.

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

Extremes.--Maximum discharge during year, 271 mgd (419 cfs) Dec. 3 (gage height, 5.37 ft), from rating curve extended above 2 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) Oct. 22.
1947-51: 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 except those above 2 mgd, which are fair.

Rating table, fiscal year 1950-51 (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	1.9	24

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.07	0.18	0.07	0.06	0.11	2.15	0.61	0.08	0.56	0.56	1.88	0.04
2	.08	.14	.14	.61	.06	2.05	.26	.09	.36	.36	.36	.04
3	.07	.20	.07	*.06	.04	10.1	1.56	.09	.22	.63	.22	.03
4	.08	.56	.06	.03	.06	2.4	.67	.10	.14	1.74	.20	.04
5	.60	.20	.05	.39	.04	1.53	1.32	.10	2.9	1.02	.11	.03
6	.33	1.31	.18	1.86	.03	5.4	1.75	.07	1.04	1.23	.07	.04
7	.11	1.66	.07	.24	.08	3.65	.30	.05	.83	.36	.16	.04
8	.07	.26	.14	.09	.04	1.88	.30	.05	.26	.28	1.82	.04
9	.06	*.14	1.02	.08	.06	.68	.39	.04	.16	.22	.26	.03
10	.26	.17	.72	.18	.51	3.55	.22	.04	.12	.63	1.45	.07
11	.26	.31	1.37	.11	.07	1.53	.16	.04	*.10	2.4	.30	.11
12	.08	.61	.24	.11	.22	.78	.51	.20	.10	1.11	.12	.49
13	.92	.49	.11	.06	.11	.52	.36	.16	22.5	.44	1.37	.62
14	.20	16.5	.07	.04	.07	.39	1.14	.06	5.6	.22	*2.55	.36
15	.09	9.7	.11	.05	19.6	.28	1.37	.26	.42	.16	.24	.29
16	.09	1.06	.30	.09	14.7	.24	1.14	1.13	.22	.18	.16	.36
17	.63	3.2	.40	.04	.94	.20	*.30	.26	.20	.14	.23	.49
18	1.10	.52	.11	.04	.60	.16	11.0	1.84	.12	.38	.52	.12
19	.79	.26	.08	.05	.97	.14	.28	4.3	.18	.16	.28	.07
20	2.4	.20	.05	.03	4.4	.12	.22	.78	.16	.18	.18	.05
21	1.08	.14	.04	.02	.50	.11	.16	6.8	.16	.10	.26	.04
22	1.75	.11	.04	.02	.22	.10	11.7	1.10	14.3	.08	.12	.04
23	1.70	.10	.03	.18	.16	.09	1.44	.39	.46	.12	.10	.03
24	1.85	.09	.03	.54	.11	.09	.39	1.84	1.22	.16	.08	.30
25	1.74	.09	.03	.37	10.4	.10	.20	.41	17.4	.12	.07	.23
26	.72	.07	.03	.16	12.1	.15	.16	.26	7.8	.10	.10	.18
27	2.35	.09	.04	.20	8.1	.95	.11	.82	13.9	.07	.23	.06
28	.65	.07	.03	.11	1.11	3.9	.09	.41	4.9	.07	.11	.04
29	.26	.06	.02	.61	.60	5.7	.09	-	.79	.94	.07	.04
30	.35	.19	.03	1.48	10.8	3.6	.08	-	.74	2.55	.05	.03
31	.22	.17	-	.47	-	.45	.08	-	.36	-	.04	-
Total	20.96	38.85	5.68	8.38	86.81	52.99	38.36	21.77	98.22	16.71	13.71	4.35
Mean:												
mgd	0.676	1.25	0.189	0.270	2.89	1.71	1.24	0.778	3.17	0.557	0.442	0.145
cfs	1.05	1.93	0.292	0.418	4.47	2.65	1.92	1.20	4.90	0.862	0.684	0.224
Ac-ft	64	119	17	26	266	163	118	67	301	51	42	13

Calendar year 1950. Max 19.6 Min 0.02 Mean(mgd) 0.966 Mean(cfs) 1.49 Ac-ft 1,080
Fiscal year 1950-51: Max 22.5 Min 0.02 Mean(mgd) 1.11 Mean(cfs) 1.72 Ac-ft 1,250

Peak discharge (base, 70 mgd).--Aug. 15 (1 a.m.) 102 mgd (158 cfs), 3.42 ft; Nov. 15 (2 p.m.) 135 mgd (209 cfs), 3.85 ft; Nov. 27 (2 p.m.) 118 mgd (183 cfs), 3.58 ft; Dec. 3 (9 p.m.) 271 mgd (419 cfs), 5.37 ft; Jan. 22 (1 p.m.) 135 mgd (209 cfs), 3.78 ft; Mar. 13 (4 p.m.) 242 mgd (374 cfs), 5.02 ft; Mar. 22 (3:30 a.m.) 95 mgd (147 cfs), 3.30 ft; Mar. 25 (5:30 p.m.) 82 mgd (127 cfs), 3.08 ft.
* Discharge measurement made on this day.

Iao Stream at Wailuku

Location.--Lat 20°53'35", long. 156°30'30", on right bank 560 ft upstream from Market Street Bridge at Wailuku and 1.9 miles upstream from mouth.
Drainage area.--8.4 sq mi.
Records available.--February 1950 to June 1951.
Gage.--Water-stage recorder and concrete masonry control. Altitude of gage is 250 ft (from topographic map).
Extremes.--1950: Maximum discharge during period February to June, 1,450 mgd (2,240 cfs) Apr. 18, 28 (gage height, 2.85 ft), from rating curve based on model study of station site; no flow many times.
1950-51: Maximum discharge during fiscal year, 4,870 mgd (7,540 cfs) Dec. 3 (gage height, 6.21 ft), from rating curve based on model study of station site; no flow for many days.
Remarks.--Records fair except those below 10 mgd, which are poor.

Discharge, in million gallons a day, 1950-51

1950

Day	Feb.	Mar.	Apr.	May	June	Day	Feb.	Mar.	Apr.	May	June
1	-	0	47	35	0	16	-	-	-	5.1	0
2	-	0	14.0	15.7	0	17	-	-	-	11.0	0
3	-	0	4.5	1.25	0	18	181	-	-	108	0
4	-	-	-	5.9	0	19	8.6	-	267	21.5	0
5	-	-	-	2.15	0	20	1.06	-	90	38	0
6	-	-	-	2.95	0	21	0	-	55	37.5	2.6
7	-	-	-	44	0	22	0	-	78	7.8	0
8	-	-	-	46	26.5	23	.11	-	80	13.7	0
9	-	-	-	5.6	.71	24	0	-	153	13.4	0
10	-	-	-	10.8	0	25	0	-	85	5.9	.10
11	-	-	-	25	4.8	26	0	-	110	17.4	.50
12	-	-	-	3.4	.04	27	0	-	292	25	.06
13	-	-	-	1.64	0	28	.13	-	336	11.9	0
14	-	-	-	8.2	0	29	-	-	75	4.8	0
15	-	-	-	2.65	0	30	-	-	45	0	0
						31	-	33	-	0	-
Total							-	-	-	531.24	35.31
Mean:											
mgd							-	-	-	17.1	1.18
cfs							-	-	-	26.5	1.83
Ac-ft							-	-	-	1,630	108

Note.--No gage-height record Mar. 4-30, Apr. 4-18; data insufficient to estimate discharge.

1950-51

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	0	0	413	24.5	0	9.6	20.5	0	0
2	0	47	0	0	0	98	11.1	0	3.65	27	0	0
3	0	.56	0	0	0	267	7.3	0	.27	15.4	0	0
4	0	7.7	0	0	0	103	3.05	0	0	10.5	0	0
5	.73	0	0	0	0	39	.15	0	.38	8.0	0	0
6	0	3.45	0	0	0	109	3.15	0	2.3	6.5	1.60	0
7	0	8.3	0	0	0	131	0	0	1.79	4.6	.05	0
8	0	0	0	0	0	80	0	0	0	6.5	0	0
9	0	0	0	24.5	0	40	0	0	0	3.25	0	0
10	9.0	.02	0	3.15	0	94	0	0	0	.36	0	1.06
11	1.48	0	1.29	0	0	55	0	0	0	.13	0	0
12	0	0	0	0	0	77	0	0	0	0	0	10.6
13	0	9.2	0	0	0	36	0	.03	181	0	0	9.6
14	0	248	0	0	0	28	20.5	0	187	0	0	.27
15	0	753	0	0	354	23	20	0	28	0	0	0
16	0	310	0	0	451	17.7	27	0	23	0	0	0
17	0	76	0	0	87	12.2	2.7	0	17.4	0	0	0
18	0	29.5	0	0	33.5	10.2	0	4.0	15.3	0	0	0
19	.26	20	0	0	24	10.2	0	18.9	36.5	0	0	0
20	74	11.5	0	0	23	7.5	0	0	13.6	0	0	0
21	22	6.5	0	0	11.6	5.2	0	168	9.1	0	0	0
22	9.3	1.59	0	0	7.0	1.62	3.2	201	271	0	0	0
23	21	0	0	0	3.95	0	0	29.5	33	0	0	0
24	43	0	0	0	2.3	0	0	17.7	20.5	0	0	0
25	27	0	0	0	276	1.17	0	12.8	17.3	0	0	0
26	6.5	0	0	0	443	3.5	0	13.9	73	0	0	0
27	7.4	0	0	0	203	50	0	12.2	147	0	0	0
28	.17	0	0	0	82	109	0	12.8	138	0	0	0
29	0	0	0	.07	35.5	191	0	-	38.5	0	0	0
30	0	0	0	14.3	335	85	0	-	23.5	0	0	0
31	0	0	-	.77	-	39	0	-	18.6	-	0	-
Total	221.84	1,532.32	1.29	42.79	2,371.85	2,136.29	122.65	490.83	1,309.29	102.74	1.65	21.13
Mean:												
mgd	7.16	49.4	0.043	1.38	79.1	68.9	3.96	17.5	42.2	3.42	0.053	0.704
cfs	11.1	76.4	0.066	2.14	122	107	6.13	27.1	65.3	5.29	0.082	1.09
Ac-ft	681	4,700	4.0	131	7,280	6,560	376	1,510	4,020	315	5.1	65

Calendar year 1950. Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
Fiscal year 1950-51: Max 753 Min 0 Mean(mgd) 22.9 Mean(cfs) 35.4 Ac-ft 25,650

Peak discharge (base, 1,000 mgd).--Aug. 2 (5 p.m.) 1,500 mgd (2,320 cfs), 2.88 ft; Aug. 15 (2:30 a.m.) 3,490 mgd (5,400 cfs), 5.25 ft; Nov. 15 (12:30 a.m.) 1,780 mgd (2,750 cfs), 3.44 ft; Nov. 26 (10:30 p.m.) 1,450 mgd (2,240 cfs), 2.76 ft; Nov. 30 (6 p.m.) 2,390 mgd (3,700 cfs), 4.20 ft; Dec. 3 (10 p.m.) 4,870 mgd (7,540 cfs), 6.21 ft; Feb. 22 (1 a.m.) 1,380 mgd (2,140 cfs), 2.72 ft; Mar. 13 (11 p.m.) 1,720 mgd (2,660 cfs), 3.28 ft; Mar. 22 (7 a.m.) 1,840 mgd (2,850 cfs), 3.46 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 1951.

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

Average discharge.--12 years, 1.90 mgd (2.94 cfs).

Extremes.--Maximum discharge during year, 174 mgd (269 cfs) Nov. 30 (gage height, 3.76 ft), from rating curve extended above 20 mgd as explained below; minimum, 0.55 mgd (0.85 cfs) Oct. 18-24.
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 1950-51 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Sept. 10 to Oct. 3)

1.1	0.48	1.8	3.9
1.2	.56	1.9	5.9
1.3	.66	2.0	8.8
1.4	.76	2.1	12.0
1.5	1.09	2.3	26
1.6	1.68	2.6	47
1.7	2.6		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.17	1.17	1.46	0.67	0.74	13.4	1.56	1.21	1.38	1.46	0.80	0.61
2	1.23	12.1	1.04	.66	.69	14.1	3.7	1.71	1.33	*1.72	.78	.60
3	.99	4.3	.94	*.64	.66	15.8	4.1	1.86	1.27	1.27	1.23	.60
4	.94	1.86	.90	.62	.78	10.8	2.8	1.37	1.27	1.44	.90	.59
5	1.21	1.56	.86	.90	.67	16.1	2.05	1.38	1.56	1.40	.82	.61
6	.99	3.15	.86	.80	.62	47	1.96	1.21	1.54	1.27	1.91	.62
7	.90	2.65	.86	.71	.61	17.5	1.56	1.15	1.27	1.09	1.70	.62
8	.90	1.62	.86	.73	.60	6.1	1.50	1.09	1.15	1.04	.99	.62
9	.86	1.44	2.55	.69	2.75	3.5	1.44	1.09	1.09	.94	.82	.61
10	2.1	1.38	1.46	.71	9.5	4.4	1.33	1.04	1.09	.94	.78	.61
11	1.32	1.33	1.11	.96	8.2	3.3	1.21	1.09	1.09	1.09	.76	.61
12	.94	1.33	.75	.74	6.9	3.3	1.21	1.15	1.09	2.65	.74	.89
13	.99	1.83	.74	.63	1.98	2.3	1.15	1.26	14.4	1.04	.72	.99
14	.86	6.9	.73	.60	*1.40	2.25	4.5	1.09	10.9	.94	.70	.76
15	.84	6.9	.71	.62	7.5	2.05	3.8	1.15	1.77	.86	.93	.75
16	.82	2.15	.70	.59	12.5	1.96	2.75	1.27	3.2	.86	.75	.67
17	.82	1.62	.69	.58	3.05	1.77	1.68	1.38	1.82	.86	.99	.63
18	.78	1.50	.69	.57	2.6	1.62	1.56	3.4	3.55	1.04	1.12	.59
19	1.85	1.38	.69	.56	3.45	1.56	1.50	6.5	2.5	.90	.82	.89
20	12.3	1.33	.68	.55	11.7	1.50	6.5	2.4	1.56	.94	.71	.91
21	2.55	1.27	.68	.57	2.7	1.50	1.96	11.9	1.44	.94	.70	.62
22	3.0	1.21	.68	.57	1.86	1.44	3.0	13.7	8.5	.86	.72	.59
23	4.8	1.15	.68	.65	1.56	1.38	3.05	2.25	1.62	.86	.67	.58
24	1.96	1.15	.67	1.29	1.38	1.33	2.25	1.86	2.6	.86	.65	1.07
25	2.3	1.09	.67	.79	10.9	1.27	1.77	1.62	3.5	.84	.63	.70
26	1.96	1.04	.67	.72	32	1.33	1.68	1.56	2.6	.84	.64	.62
27	1.96	1.04	.66	.75	15.7	2.45	1.56	1.44	1.86	.82	.63	.60
28	1.50	1.04	.65	.64	6.4	3.35	1.44	1.38	1.56	.86	.62	.61
29	1.33	1.09	.66	1.00	3.3	3.0	1.38	-	1.38	.90	.63	.60
30	1.33	2.05	.67	2.7	26.5	3.1	1.33	-	1.27	.99	.62	.58
31	1.21	1.92	-	.95	-	2.25	1.27	-	1.21	-	.63	-
Total	56.71	71.55	25.97	24.16	179.20	192.71	68.55	69.51	82.37	32.52	26.11	20.35
Mean:												
mgd	1.83	2.31	0.866	0.779	5.97	6.22	2.21	2.48	2.66	1.08	0.842	0.678
cfs	2.83	3.57	1.34	1.21	9.24	9.62	3.42	3.84	4.12	1.67	1.30	1.05
Ac-ft	174	220	80	74	550	591	210	213	253	100	80	62

Calendar year 1950. Max 47 Min 0.55 Mean(mgd) 2.80 Mean(cfs) 4.33 Ac-ft 3,130
Fiscal year 1950-51: Max 47 Min 0.55 Mean(mgd) 2.33 Mean(cfs) 3.61 Ac-ft 2,610

Peak discharge (base, 90 mgd).--Aug. 2 (7 p.m.) 126 mgd (195 cfs), 3.40 ft; Nov. 30 (8:30 p.m.) 174 mgd (269 cfs), 3.76 ft; Dec. 3 (10:30 p.m.) 167 mgd (258 cfs), 3.70 ft; Mar. 13 (11 p.m.) 160 mgd (248 cfs), 3.66 ft.
* Discharge measurement made on this day.

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 1915 (fragmentary), July 1939 to August 1943, September 1947 to June 1951.

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.--6 years (1940-43, 1948-51), 12.7 mgd (19.6 cfs).

Extremes.--Maximum discharge during year, 680 mgd (1,050 cfs) Dec. 3 (gage height, 6.75 ft), from rating curve extended above 30 mgd on basis of slope-area determination at gage height 8.35 ft; minimum, 3.05 mgd (4.72 cfs) June 29, 30.
1939-43, 1947-51: 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, 2.5 mgd (3.9 cfs) Oct. 31, 1949.

Remarks.--Records good except those above 30 mgd and those for periods of no gage-height record, which are poor.

Rating table, fiscal year 1950-51 (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	4.3	81
3.4	13.3	4.6	123

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.0	10.2	7.0	3.85	4.5	49	8.0	6.0	6.3	7.0	4.4	3.35
2	7.6	93	5.0	4.2	4.0	35	21.5	6.8	6.3	11.3	4.2	3.5
3	4.9	18.7	4.7	*3.7	3.85	45	21	10.0	6.4	6.7	4.8	3.35
4	4.9	12.8	4.6	3.7	6.0	36.5	14.8	6.5	6.0	7.4	4.7	3.5
5	7.0	7.0	4.5	5.9	4.4	49	10.2	6.5	8.3	7.2	4.5	3.2
6	6.0	18.1	4.4	6.0	3.7	118	11.6	6.0	8.8	7.9	15.9	3.7
7	4.7	20	4.4	5.1	3.7	76	8.3	5.8	6.0	6.0	11.9	4.0
8	4.7	7.0	4.4	5.4	3.5	30.5	7.5	5.6	5.6	5.8	7.2	3.5
9	4.7	6.3	13.7	7.4	7.9	14.9	7.7	5.6	5.4	9.0	4.7	3.2
10	16.8	6.3	13.2	6.2	58	30	7.0	5.4	5.1	6.7	4.9	3.7
11	*9.3	5.6	18.8	4.4	42	19.3	6.5	5.4	5.1	5.8	4.5	3.5
12	5.6	5.2	5.8	4.7	35	22	6.3	5.4	5.4	6.8	4.4	10.4
13	5.1	8.0	5.1	4.0	10	10.9	6.5	7.7	56	5.6	4.2	14.2
14	4.7	50	5.8	3.85	6.5	10.2	28	6.0	45	4.9	4.0	5.4
15	4.5	50	4.7	4.0	26	9.4	28	6.1	8.0	4.7	4.9	4.7
16	4.5	13	4.5	3.85	48	8.3	19.1	7.7	10.2	4.7	4.9	3.85
17	5.0	7.0	4.4	3.85	13.9	7.5	8.0	11.3	8.8	4.9	7.7	4.0
18	4.5	6.0	4.4	3.7	11.4	7.0	7.2	27.5	11.4	6.7	8.9	3.5
19	14.6	5.5	4.2	3.7	17.4	6.7	6.7	32.5	18.5	4.9	4.9	4.6
20	68	5.2	4.2	3.5	46	6.5	19.7	9.2	6.7	5.9	4.4	7.3
21	16.1	5.0	4.0	3.7	11.2	6.5	9.4	53	6.3	4.7	4.4	3.7
22	19.6	5.0	4.0	3.7	6.7	6.3	14.3	48	30.5	4.5	4.4	3.35
23	34.5	5.0	4.0	4.7	5.8	6.0	14.6	9.4	7.6	4.5	4.0	3.2
24	19.2	5.0	4.0	11.1	5.1	6.0	10.9	7.2	11.4	4.5	3.85	7.2
25	17.3	4.8	4.0	6.5	67	6.3	8.0	6.7	19.6	4.5	3.85	4.8
26	14.1	4.8	4.0	4.7	121	5.9	7.5	6.5	16.9	4.5	3.7	3.5
27	13.0	4.8	3.85	5.9	56	*22.5	7.2	6.3	9.6	4.4	3.7	3.35
28	8.0	4.8	3.85	4.0	23.5	27.5	6.5	6.0	8.4	4.4	3.5	3.2
29	6.3	5.2	3.7	6.9	12.2	24	6.3	-	6.5	5.2	3.5	3.2
30	9.4	13	4.0	26	90	21.5	6.0	-	6.3	5.4	3.5	3.05
31	6.0	12	-	7.6	-	10.5	6.0	-	6.0	-	3.5	-
Total	358.6	424.3	167.20	175.80	754.25	734.7	350.3	326.1	368.4	176.5	162.90	135.00
Mean:												
mgd	11.6	13.7	5.57	5.67	25.1	23.7	11.3	11.6	11.9	5.88	5.25	4.50
cfs	17.9	21.2	8.62	8.77	38.8	36.7	17.5	17.9	18.4	9.10	8.12	6.96
Ac-ft	1,100	1,300	513	540	2,310	2,250	1,080	1,000	1,130	542	500	414

Calendar year 1950. Max 121 Min 3.2 Mean(mgd) 13.4 Mean(cfs) 20.7 Ac-ft 15,040
Fiscal year 1950-51: Max 121 Min 3.05 Mean(mgd) 11.3 Mean(cfs) 17.5 Ac-ft 12,680

Peak discharge (base, 400 mgd).--Aug. 2 (4 p.m.) 605 mgd (936 cfs), 6.48 ft; Nov. 30 (8 p.m.) 580 mgd (897 cfs), 6.42 ft; Dec. 3 (11 p.m.) 680 mgd (1,050 cfs), 6.75 ft; Mar. 13 (10:30 p.m.) 580 mgd (897 cfs), 6.40 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 11 to Sept. 7, Nov. 10-14; discharge estimated on basis of records for nearby streams.

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 1951.

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

Average discharge.--33 years (1916-20, 1922-51), 25.4 mgd (39.3 cfs).

Extremes.--Maximum discharge during year, 1,370 mgd (2,120 cfs) Dec. 3 (gage height, 6.80 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 8.2 mgd (12.7 cfs) June 30.
1913-20, 1922-51: 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 above 120 mgd, which are fair.

Rating table, fiscal year 1950-51 (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	3.5	147
2.3	20	4.0	250
2.5	31		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	20.5	18.9	18.8	14.4	11.8	66	16	12.4	23	21.5	10.6	9.6
2	20	87	17.8	16.6	11.2	26.5	25	13.1	16.7	25	10.9	10.6
3	15.9	27	15.6	12.8	10.9	93	*26	13.4	19.6	*14.4	17.8	9.4
4	15.9	40	14.8	*12.4	17.9	37.5	17.1	12.8	14.5	21.5	11.5	9.2
5	27.5	17.1	14.8	27.5	12.7	32	16.0	12.4	19.4	19.7	10.9	9.7
6	18.4	41	14.8	25	10.9	106	26	12.4	15.6	15.9	25.5	12.1
7	15.2	52	14.5	15.2	10.9	84	17.1	12.1	14.8	19.1	21.5	18.4
8	16.6	18.9	17.8	15.7	10.6	44	17.1	12.1	12.1	13.1	18.8	10.0
9	16.6	20.5	34	100	13.2	14.8	17.5	12.1	11.8	18.7	11.8	9.4
10	80	22	22.5	16.3	39	95	15.2	11.8	11.5	13.1	13.4	18.9
11	35	21.5	53	13.1	31	33	14.8	11.8	11.5	13.1	12.1	17.7
12	16.7	22.5	15.9	12.8	19.9	68	17.1	15.0	11.8	12.4	10.9	65
13	16.7	37.5	17.3	12.1	12.4	18.0	15.6	37	89	12.1	10.3	49
14	15.2	143	19.0	11.8	12.1	15.6	92	19.6	83	11.2	10.0	13.8
15	14.8	110	14.8	17.7	77	12.8	82	17.8	15.2	10.9	10.9	11.2
16	15.6	48	19.2	13.8	97	11.8	55	22.5	18.0	11.5	11.0	10.3
17	26	19.2	15.9	12.1	18.2	10.9	15.9	29	14.6	11.5	32	15.4
18	16.3	17.1	14.2	11.8	19.8	10.3	15.9	94	20.5	11.8	26	9.7
19	43	15.9	13.8	11.5	30	9.7	14.2	50	55	10.9	11.8	9.7
20	130	17.5	13.8	11.2	36	9.4	15.5	18.8	16.4	13.0	11.5	9.7
21	47	16.7	13.4	11.2	14.2	9.4	14.2	120	12.4	11.5	11.8	8.9
22	51	15.6	13.4	11.5	12.1	9.4	27	75	63	12.1	11.8	8.9
23	74	15.6	13.4	19.2	11.5	9.2	22	15.9	13.4	11.2	10.3	8.6
24	104	15.2	13.1	27.5	11.2	9.2	16.3	13.8	14.5	12.8	9.7	12.1
25	62	15.2	13.1	24	165	19.0	14.2	13.1	25.5	12.4	9.4	9.4
26	32.5	14.8	13.1	17.1	194	20	13.8	18.8	44	11.8	9.7	8.6
27	43	18.2	12.8	17.5	57	100	13.4	26.5	32.5	11.8	12.0	8.4
28	23.5	15.2	12.8	11.8	20	69	13.1	17.2	20.5	13.3	10.6	8.4
29	19.6	15.6	12.8	36	14.8	89	13.1	-	12.4	18.4	10.0	8.4
30	31.5	26	13.1	68	136	31	12.8	-	12.4	11.8	10.3	8.4
31	20.5	15.9	-	16.8	-	23	12.8	-	13.4	-	9.4	-
Total	1,084.5	980.6	513.3	644.4	1,138.3	1,186.5	703.7	740.4	758.0	427.5	414.2	418.9
Mean:												
mgd	35.0	31.6	17.1	20.8	37.9	38.3	22.7	26.4	24.5	14.2	13.4	14.0
cfs	54.2	48.9	26.5	32.2	58.6	59.3	35.1	40.8	37.9	22.0	20.7	21.7
Ac-ft	3,330	3,010	1,580	1,980	3,490	3,640	2,160	2,270	2,330	1,310	1,270	1,290

Calendar year 1950. Max 244 Min 8.6 Mean(mgd) 33.2 Mean(cfs) 51.4 Ac-ft 37,150
Fiscal year 1950-51: Max 194 Min 8.4 Mean(mgd) 24.7 Mean(cfs) 38.2 Ac-ft 27,660

Peak discharge (base, 700 mgd).--Oct. 9 (6 p.m.) 800 mgd (1,240 cfs), 5.57 ft; Nov. 16 (10:30 a.m.) 720 mgd (1,110 cfs), 5.37 ft; Nov. 30 (4:30 p.m.) 975 mgd (1,510 cfs), 5.95 ft; Dec. 3 (8:30 p.m.) 1,370 mgd (2,120 cfs), 6.80 ft.
* Discharge measurement made on this day.

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 1951.

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.--32 years (1919-51), 5.96 mgd (9.22 cfs).

Extremes.--1912-51: 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.1	8.3	9.2	6.3	5.6	12.8	7.4	5.4	9.2	6.2	5.9	6.0
2	5.8	7.8	9.0	6.0	5.4	10.1	6.1	5.4	7.4	5.8	5.8	6.0
3	4.7	8.0	9.6	6.0	5.2	8.3	5.8	5.4	9.2	5.8	6.0	6.0
4	4.4	9.4	9.4	5.8	5.2	7.0	5.8	5.4	7.1	5.2	6.0	6.0
5	4.7	6.6	9.2	13.7	5.6	5.8	5.8	5.5	5.8	5.2	5.8	6.0
6	6.6	16.0	9.2	10.8	5.6	15.5	6.1	5.4	5.2	5.2	6.1	6.0
7	5.2	14.0	9.2	7.6	5.2	13.7	6.3	5.2	5.8	5.8	7.6	9.5
8	4.7	9.6	8.8	6.6	5.2	13.0	5.8	5.2	5.8	4.9	7.7	6.1
9	4.1	8.1	9.0	9.0	5.2	5.8	7.4	5.1	5.2	4.9	6.5	6.1
10	18.2	8.5	9.2	6.1	5.2	6.6	6.6	5.1	5.4	5.0	6.0	9.5
11	10.4	9.0	8.3	7.1	5.8	11.0	6.6	5.1	5.1	5.0	6.0	8.0
12	6.6	8.2	8.1	5.8	9.2	15.0	7.4	5.1	5.1	5.1	6.0	19.2
13	5.8	10.1	9.6	5.7	5.6	6.6	5.6	9.3	5.1	4.9	6.0	15.3
14	5.1	20	8.1	5.7	5.4	7.4	18.7	6.0	5.8	4.9	5.9	7.1
15	5.1	18.7	8.7	5.8	17.3	5.6	13.7	5.9	5.1	4.9	5.8	6.6
16	5.0	16.4	8.7	6.6	9.2	5.6	9.1	4.0	5.6	4.9	5.8	6.1
17	12.0	11.9	9.7	6.6	9.0	5.6	7.4	11.0	5.6	4.9	6.8	7.5
18	6.6	10.1	8.5	5.7	9.2	5.6	7.4	5.6	5.6	4.9	11.2	6.1
19	11.9	9.6	8.3	5.7	6.1	5.6	5.8	5.9	5.3	4.9	6.6	6.1
20	7.4	9.6	7.9	5.6	9.0	5.6	5.6	5.1	5.1	4.9	6.2	6.1
21	10.5	9.6	7.6	5.6	7.4	5.4	5.6	12.2	5.2	4.9	6.1	6.1
22	6.6	9.4	7.4	5.6	5.6	5.4	7.7	9.2	9.0	4.9	6.1	6.0
23	18.2	9.4	6.9	5.7	5.2	5.4	6.6	6.6	5.8	5.5	6.1	6.0
24	18.7	9.4	6.6	5.8	5.2	5.4	6.6	5.8	5.2	6.3	6.1	6.0
25	10.8	9.2	5.8	10.8	19.0	5.4	5.8	5.1	9.2	6.3	6.1	6.1
26	10.1	9.2	5.8	7.4	20.5	6.3	5.6	5.6	7.9	4.2	6.0	6.1
27	10.4	9.2	5.8	8.3	22	9.2	5.6	5.6	7.6	6.6	6.5	6.1
28	9.2	9.2	5.8	5.8	8.3	20	5.4	6.6	5.6	7.0	6.5	6.1
29	9.9	9.2	6.0	7.0	5.8	20.5	5.4	-	5.6	9.4	6.4	6.1
30	10.5	10.1	6.0	19.3	5.6	11.8	5.4	-	5.8	6.4	6.4	6.1
31	9.1	9.2	-	6.1	-	7.4	5.4	-	5.6	-	6.0	-
Total	262.4	323.0	241.4	225.6	243.8	274.4	215.5	172.8	192.0	164.8	198.0	216.0
Mean:												
mgd	8.46	10.4	8.05	7.28	8.13	8.85	6.95	6.17	6.19	5.49	6.39	7.20
cfs	13.1	16.1	12.5	11.3	12.6	13.7	10.8	9.55	9.58	8.49	9.89	11.1
Ac-ft	805	991	741	692	748	842	661	530	589	506	608	663

Calendar year 1950 : Max 27 Min 3.8 Mean(mgd) 8.49 Mean(cfs) 13.1 Ac-ft 9,510
Fiscal year 1950-51 : Max 22 Min 4.0 Mean(mgd) 7.48 Mean(cfs) 11.6 Ac-ft 8,380

Olowalu ditch near Olowalu

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

Records available.--August 1911 to June 1951.

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.--33 years (1917-20, 1921-51), 4.95 mgd (7.66 cfs).

Extremes.--1911-51: 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	5.6	5.8	3.3	4.3	5.2	9.4	5.6	8.4	7.0	4.8	3.3
2	4.4	5.2	5.5	4.3	3.6	3.1	9.2	5.5	7.7	6.9	4.7	3.3
3	4.2	4.9	5.4	4.7	3.3	2.7	9.2	5.4	7.3	7.4	4.8	3.2
4	4.2	5.9	5.2	4.7	3.5	9.1	8.7	5.2	6.8	7.4	4.6	3.2
5	4.6	4.7	5.2	7.4	3.15	9.1	8.1	5.1	6.9	7.4	4.5	3.15
6	4.4	6.7	5.1	7.0	3.05	9.1	8.0	5.0	6.7	7.4	4.8	3.25
7	4.0	7.2	5.0	5.5	3.0	9.1	7.2	4.9	6.3	7.4	4.8	3.55
8	4.1	6.1	5.0	5.5	2.9	9.1	6.7	4.8	6.0	7.4	4.5	3.2
9	4.0	5.4	5.7	4.7	2.85	9.0	6.1	4.6	5.8	7.3	4.3	3.1
10	7.3	5.3	5.4	4.2	2.95	9.2	5.7	4.5	5.8	7.3	4.2	4.4
11	7.6	5.7	4.9	4.6	2.95	9.4	5.3	4.4	5.6	7.4	4.2	3.35
12	5.4	5.7	4.6	4.3	2.9	9.4	5.1	4.7	5.8	7.3	4.1	6.2
13	4.9	5.6	4.6	3.55	2.75	9.3	4.9	6.5	7.9	7.1	4.0	6.5
14	4.4	9.9	4.6	3.3	3.1	9.2	5.3	5.1	9.8	6.9	4.0	4.6
15	4.1	5.8	4.3	3.75	7.8	9.0	7.3	4.8	9.5	6.7	3.95	3.8
16	4.1	4.4	4.8	3.25	7.0	8.9	9.0	5.4	9.4	6.6	3.8	3.5
17	4.2	4.0	4.4	3.1	4.6	8.5	8.4	5.1	9.4	6.4	4.8	3.7
18	3.9	3.45	4.1	3.0	6.4	7.9	8.2	6.5	9.2	6.3	4.7	3.55
19	5.9	6.7	4.0	2.95	8.5	7.5	7.8	9.3	9.2	6.1	3.95	3.35
20	7.6	8.8	3.9	2.9	8.3	7.1	7.4	7.3	8.9	6.0	3.9	3.3
21	8.7	8.7	3.8	2.85	7.0	6.8	7.0	9.8	8.5	5.9	3.85	3.25
22	8.4	8.5	3.7	2.8	6.0	6.6	8.4	9.1	8.8	5.7	3.75	3.15
23	8.5	8.4	3.6	3.3	5.3	6.3	8.2	9.0	8.8	5.7	3.6	3.1
24	8.8	8.1	3.5	4.1	4.8	6.1	8.0	9.0	8.8	5.6	3.6	3.3
25	8.8	7.6	3.55	3.25	8.2	6.4	7.3	9.0	8.9	5.3	3.5	3.15
26	8.6	7.1	3.45	3.35	9.4	6.4	7.1	8.9	9.6	5.1	3.55	3.05
27	8.4	7.1	3.45	3.3	9.5	9.2	6.6	8.7	9.4	5.0	3.45	2.95
28	8.2	6.5	3.4	2.95	9.1	9.9	6.2	8.4	7.5	5.0	3.45	3.0
29	7.4	6.5	3.3	3.5	8.8	10.4	6.1	-	7.0	5.1	3.5	3.45
30	7.1	6.7	3.45	7.5	9.1	10.0	5.9	-	7.0	5.0	3.35	3.2
31	6.2	5.9	-	6.3	-	9.6	5.7	-	7.0	-	3.3	-
Total	186.9	196.15	132.70	129.20	164.10	248.6	223.5	181.6	243.7	193.1	126.30	107.10
Mean:												
mgd	6.03	6.39	4.42	4.17	5.47	8.02	7.21	6.49	7.86	6.44	4.07	3.57
cfs	9.33	9.89	6.84	6.45	8.46	12.4	11.2	10.0	12.2	9.96	6.30	5.52
Ac-ft	574	608	407	396	504	763	686	557	748	593	388	329

Calendar year 1950: Max 10.7 Min 2.7 Mean(mgd) 6.20 Mean(cfs) 9.59 Ac-ft 6,950
Fiscal year 1950-51: Max 10.4 Min 2.7 Mean(mgd) 5.85 Mean(cfs) 9.05 Ac-ft 6,550

* 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 1951. 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.--16 years (1927-29, 1932-35, 1940-51), 37.1 mgd (57.4 cfs).

Extremes.--Maximum discharge during year, 5,740 mgd (8,880 cfs) Dec. 3 (gage height, 14.85 ft), from rating curve extended above 750 mgd by test on model of station site; minimum, 0.02 mgd (0.03 cfs) Sept. 6, 7.
1927-29, 1931-51: Maximum discharge, 6,000 mgd (9,280 cfs) Mar. 4, 1939, estimated on basis of computation of flow over dam at peak flow; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Small diversion below station for domestic supply and livestock.

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

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0	0	1.3	15.3
.1	.04	1.6	27.5
.2	.14	2.0	51
.3	.35	2.5	91
.4	.67	3.0	136
.5	1.18	4.0	254
.6	1.95	5.0	465
.8	4.1	6.1	785
1.0	7.5		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.48	1.07	0.09	0.31	0.16	2.1	0.25	0.35	785	67	16.6	0.92
2	.48	1.35	.12	.54	7.7	1.20	.35	.31	495	21	8.9	.57
3	.35	40	.05	.12	10.9	366	.90	.24	452	4.6	24	.79
4	.31	17.7	.04	.12	14.0	201	.30	.20	170	42	2.95	.51
5	2.95	1.31	.03	7.0	6.4	7.0	3.0	.16	726	47	1.42	.51
6	3.75	7.2	.02	14.1	53	1.2	.74	.14	162	63	.98	.78
7	.42	29.5	.03	.75	15.5	1.0	.27	.12	96	106	.74	3.45
8	.27	2.65	14.8	6.4	2.45	2.3	2.85	.10	7.3	16.7	1.19	.99
9	2.2	14.7	38.5	117	.82	1.1	8.3	.07	2.3	20.5	.57	3.4
10	118	22	26.5	11.6	.54	25	2.3	.05	1.41	9.6	*68	76
11	42	24.5	252	1.87	.41	15	4.3	.04	1.03	10.6	19.0	76
12	2.05	13.3	11.3	.54	.31	50	257	.07	.77	6.9	37.5	103
13	3.8	2.25	6.5	.35	3.3	3.0	99	3.4	137	4.0	13.3	64
14	.98	609	7.8	.33	1.31	1.2	256	*3.1	387	1.08	32.5	13.7
15	.92	82	5.2	.98	564	.60	316	40	5.5	.77	28	3.05
16	6.7	6.0	21	.65	388	.45	205	45	40	.64	7.8	1.26
17	9.4	10.7	5.7	.18	69	.35	33.5	49	14.7	.66	19.0	.98
18	*.63	7.1	1.57	.22	5.1	.30	65	461	2.15	1.98	37.5	.64
19	3.0	1.32	1.00	.30	4.1	.25	22.5	649	162	.54	5.8	.61
20	.58	.92	.41	.11	1.03	.20	28.5	268	116	.64	3.4	.79
21	32	.67	.27	.05	.72	.15	8.7	409	82	.98	1.43	.48
22	34	.54	.18	.13	.61	.12	80	111	354	1.46	1.02	.33
23	38	.45	.11	14.1	.48	.10	9.6	5.4	12.0	.51	.67	.42
24	84	.41	.06	75	.33	.10	2.0	3.3	3.0	.54	1.42	4.3
25	50	.45	.04	27	64	3.5	1.70	187	4.8	3.0	.72	1.50
26	8.2	.41	2.3	5.5	139	2.5	1.11	108	68	.81	1.04	.48
27	13.6	.31	10.0	8.4	61	4.0	.77	241	5.8	.31	2.9	.29
28	11.4	.24	.31	.52	6.6	50	.61	312	1.49	5.2	.94	.24
29	8.0	.18	.17	.24	.98	120	1.76	-	5.3	137	10.8	.33
30	31	.14	1.33	4.4	.74	15	.57	-	2.2	106	32.5	.27
31	2.8	.09	-	.71	-	.50	.45	-	15.0	-	4.6	-
Total	569.69	898.46	407.43	299.52	1,423.49	875.22	1,413.33	2,857.05	4,316.75	681.02	387.19	360.59
Mean:												
mgd	18.4	29.0	13.6	9.66	47.4	28.2	45.6	103	139	22.7	12.5	12.0
cfs	28.5	44.9	21.0	14.9	73.3	43.6	70.6	159	215	35.1	19.3	18.6
Ac-ft	1,750	2,760	1,250	919	4,370	2,690	4,340	8,890	13,250	2,090	1,190	1,110

Calendar year 1950 : Max 609 Min 0.02 Mean(mgd) 36.2 Mean(cfs) 56.0 Ac-ft 40,550
Fiscal year 1950-51 : Max 785 Min 0.02 Mean(mgd) 39.8 Mean(cfs) 61.6 Ac-ft 44,610

Peak discharge (base, 1,600 mgd).--Nov. 15 (2 p.m.) 3,070 mgd (4,750 cfs), 9.76 ft; Dec. 3 (11 p.m.) 5,740 mgd (8,880 cfs), 14.85 ft; Feb. 19 (5 a.m.) 2,520 mgd (3,900 cfs), 9.42 ft; Mar. 13 (11 p.m.) 2,400 mgd (3,710 cfs), 9.29 ft; Mar. 22 (9 a.m.) 1,820 mgd (2,820 cfs), 9.03 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 5 to Jan. 5; discharge estimated on basis of records for stations on nearby streams.

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 1951.

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.--21 years (1927-34, 1935-36, 1938-51), 3.50 mgd (5.42 cfs).

Extremes.--Maximum discharge during year, 382 mgd (591 cfs) Dec. 3 (gage height, 3.55 ft), from rating curve extended above 52 mgd by test on model of station site; minimum, 0.58 mgd (0.90 cfs) Feb. 11.

1927-51: Maximum discharge, 2,300 mgd (3,560 cfs), revised, Apr. 29, 1937 (gage height, 15.74 ft, datum then in use), from rating curve extended above 22 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Dec. 18, 1929.

Revisions.--The maximum discharge for fiscal years 1935 and 1937 have been revised to 440 mgd (681 cfs), gage height, 11.73 ft, and 2,300 mgd (3,560 cfs), gage height, 15.74 ft, datum then in use, superseding figures published in Water-Supply Papers 795 and 835.

Remarks.--Records good except those for periods of no gage-height record and those above 52 mgd, which are fair.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.9	0.62	1.5	6.8
1.0	1.01	1.6	9.3
1.1	1.54	1.7	12.4
1.2	2.3	1.8	17.4
1.3	3.3	1.9	23
1.4	4.8	2.1	37

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.30	1.73	0.86	1.52	1.10	2.5	0.87	0.97	9.0	3.7	5.5	1.66
2	1.30	1.73	.86	1.66	*1.68	1.35	.94	.92	6.5	3.7	2.55	1.35
3	1.25	4.2	.80	1.01	1.83	13.5	1.26	.87	4.0	1.80	4.8	1.87
4	1.25	2.4	.76	1.05	2.25	6.7	.89	.83	1.87	4.2	1.66	1.30
5	3.7	1.73	.74	2.05	1.41	1.73	2.95	.83	14.4	2.85	1.41	1.25
6	2.0	2.85	.72	2.35	5.4	1.47	1.93	.75	5.7	2.45	1.35	1.3
7	1.35	3.05	.71	1.25	2.0	1.35	.92	.71	7.9	6.3	1.41	2.0
8	1.20	1.66	4.5	1.88	2.7	2.1	.97	.68	2.2	2.2	1.97	1.04
9	1.34	1.66	7.0	5.7	1.15	1.25	1.13	.65	1.80	2.05	1.35	2.2
10	8.3	3.05	6.5	1.72	1.01	2.65	.92	.65	1.66	4.1	3.0	5.5
11	2.5	3.2	12	1.99	.92	2.05	.92	.62	1.47	6.6	1.85	6.0
12	1.41	2.8	4.0	1.20	.87	3.65	3.3	.68	1.35	5.3	4.7	7.0
13	1.41	1.73	3.0	1.05	1.10	1.66	2.65	1.11	4.8	2.25	4.7	4.5
14	1.35	16.5	3.5	.97	1.39	1.30	3.9	*.68	25.5	1.73	6.6	2.05
15	1.64	3.6	2.5	2.25	30	1.15	9.0	1.95	2.05	1.54	4.1	1.54
16	1.68	2.05	6.0	1.20	18.0	1.10	3.65	1.17	6.2	1.41	1.87	1.41
17	1.92	5.6	2.5	1.10	5.6	.97	1.85	1.43	2.45	1.38	2.4	1.54
18	*1.35	2.3	1.5	1.22	2.05	.92	3.15	10.6	1.66	3.8	3.1	1.25
19	3.35	1.80	1.4	1.53	1.54	.83	2.8	20	6.6	1.35	1.80	1.20
20	14.0	1.6	1.25	.92	1.35	.79	5.7	2.4	2.95	1.41	1.66	2.45
21	6.1	1.5	1.15	.87	1.20	.75	1.85	12.0	4.3	1.61	1.60	1.30
22	3.65	1.4	1.01	.87	1.15	.75	6.6	3.45	24.5	1.35	1.73	1.15
23	4.4	1.3	.97	1.40	1.10	.71	1.97	1.66	2.45	1.30	1.41	1.10
24	10.2	1.3	.92	3.2	.97	.75	1.54	2.5	1.87	1.20	2.3	8.3
25	7.1	1.3	.92	2.25	8.5	2.35	3.3	9.2	3.85	1.10	1.47	2.75
26	3.6	1.3	2.25	1.80	17.5	.75	1.47	3.6	12.4	1.05	1.54	1.73
27	3.7	1.2	3.9	2.2	5.7	.83	1.30	3.2	2.25	1.01	1.80	1.35
28	2.8	1.1	1.01	1.30	1.87	3.3	1.20	2.75	1.80	1.36	1.41	1.20
29	2.3	1.0	.99	1.15	1.54	7.5	1.78	-	1.80	3.4	1.66	1.38
30	3.55	.95	1.84	2.95	1.41	1.89	1.10	-	2.15	7.7	2.6	1.05
31	2.05	.90	-	1.35	-	1.01	1.05	-	3.05	-	1.96	-
Total	103.05	78.49	76.06	52.96	124.29	69.61	74.86	86.86	170.48	81.20	77.26	70.08
Mean:												
mgd	3.32	2.53	2.54	1.71	4.14	2.25	2.41	3.10	5.50	2.71	2.49	2.34
cfs	5.14	3.91	3.93	2.65	6.41	3.48	3.73	4.80	8.51	4.19	3.85	3.62
Ac-ft	316	241	233	163	381	214	230	267	523	249	237	215

Calendar year 1950: Max 30 Min 0.65 Mean(mgd) 3.25 Mean(cfs) 5.03 Ac-ft 3,640
Fiscal year 1950-51: Max 30 Min 0.62 Mean(mgd) 2.92 Mean(cfs) 4.52 Ac-ft 3,270

Peak discharge (base, 200 mgd).--Dec. 3 (11 p.m.) 382 mgd (591 cfs), 3.55 ft; Feb. 19 (4 a.m.) 235 mgd (364 cfs), 3.09 ft; Mar. 14 (8 a.m.) 205 mgd (317 cfs), 3.02 ft.

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 20 to Sept. 19, June 6-13; discharge estimated on basis of records for stations on nearby streams.

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 1951.

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

Extremes.--1948-51: Maximum daily discharge, 7.4 mgd (11.4 cfs) Mar. 5, 6, 1951; 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		4.2	1.60	1.29	1.50	4.0	3.7	1.93	6.0	2.3	1.34	1.01
2		4.3	1.55	1.24	1.50	4.2	3.6	1.87	6.9	2.4	1.34	.97
3		4.1	1.50	1.20	1.55	4.5	3.45	1.81	6.9	2.35	1.34	.92
4		3.9	1.45	1.15	1.65	5.1	3.45	1.71	6.9	2.4	1.29	.92
5		3.7	1.39	1.11	1.65	4.6	3.35	1.65	7.4	2.55	1.29	.92
6		3.7	1.34	1.11	1.71	6.0	3.1	1.60	7.4	2.6	1.29	.92
7		3.55	1.29	1.11	1.65	6.9	2.9	1.55	6.5	2.8	1.29	.88
8		3.55	1.39	1.11	1.65	6.5	2.7	1.50	6.0	2.9	1.29	.88
9		3.55	1.87	1.65	1.76	6.0	2.6	1.45	5.1	2.9	*1.24	.83
10		3.35	2.3	1.55	1.93	5.6	2.4	1.39	4.4	2.85	1.29	.97
11	2.5	3.1	4.3	1.50	2.15	5.6	2.3	1.34	3.9	2.85	1.29	1.01
12		3.0	3.4	1.39	3.0	5.6	2.35	1.29	3.6	2.85	1.29	2.0
13		2.9	3.05	1.29	3.45	5.2	2.4	1.34	3.75	2.8	1.24	1.81
14		4.5	2.85	1.29	3.35	4.7	3.85	1.29	5.0	2.65	1.24	1.87
15		4.6	2.8	1.24	3.2	4.3	4.8	1.20	4.2	2.55	1.20	1.93
16		4.0	2.7	1.24	3.1	4.0	5.2	1.29	3.75	2.35	1.20	1.93
17		3.8	2.65	1.20	3.05	3.9	4.1	1.45	3.55	2.2	1.20	1.93
18		3.55	2.6	1.20	3.05	3.7	3.75	3.45	3.9	2.1	1.24	1.93
19		3.4	2.45	1.20	2.9	3.55	3.6	4.7	5.2	1.99	1.20	1.87
20	(*)	3.2	2.3	1.15	*2.8	3.35	3.6	5.0	5.2	1.93	1.20	1.81
21	5.0	3.0	2.15	1.15	2.65	3.2	3.55	5.2	4.3	1.81	1.15	1.81
22	4.5	2.8	1.99	1.15	2.6	2.9	3.4	6.0	4.0	1.71	1.15	1.76
23	4.3	2.65	1.93	1.11	2.45	2.7	3.2	6.0	3.7	1.65	1.15	1.71
24	4.6	2.45	1.81	1.24	2.35	2.55	3.05	5.2	3.45	1.60	1.15	1.93
25	5.0	2.35	1.76	1.20	4.5	2.9	2.9	4.9	3.25	1.55	1.11	1.81
26	5.0	2.2	1.71	1.20	6.5	2.5	2.7	4.5	3.0	1.50	1.11	1.76
27	4.7	2.1	1.60	1.29	6.5	2.8	2.6	5.2	2.85	1.45	1.11	1.71
28	4.6	1.99	1.55	1.29	5.2	3.9	2.45	5.6	2.65	1.39	1.06	1.65
29	4.3	1.87	1.45	1.29	4.8	4.9	2.35	-	2.45	1.45	1.06	1.55
30	4.3	1.81	1.34	1.39	4.4	4.8	2.2	-	2.35	1.39	1.01	1.50
31	4.3	1.71	-	1.45	-	3.95	2.05	-	2.2	-	1.01	-
Total	100.6	98.88	62.07	38.98	88.55	134.40	97.65	81.41	139.75	65.82	37.37	44.50
Mean:												
mgd	3.25	3.19	2.07	1.26	2.95	4.34	3.15	2.91	4.51	2.19	1.21	1.48
cfs	5.03	4.94	3.20	1.95	4.56	6.71	4.87	4.50	6.98	3.39	1.87	2.29
Ac-ft	309	303	190	120	272	412	300	250	429	202	115	137

Calendar year 1950 : Max 6.9 Min - Mean(mgd) 2.98 Mean(cfs) 4.61 Ac-ft 3,340
Fiscal year 1950-51 : Max 7.4 Min 0.83 Mean(mgd) 2.71 Mean(cfs) 4.19 Ac-ft 3,040

* Discharge measurement made on this day.
Note.--No gage-height record July 1-20; 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 1951.

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.--29 years (1922-51), 13.6 mgd (21.0 cfs).

Extremes.--Maximum discharge during year, 1,130 mgd (1,750 cfs) Feb. 18 (gage height, 6.50 ft, estimated), from rating curve extended above 260 mgd as explained below; minimum, 1.7 mgd (2.6 cfs) June 5, 6, 8.
1914-16, 1921-51: 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 periods of no gage-height record, which are poor. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 1045: 1922-43(M).

Rating table, fiscal year 1950-51 (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	4.0	176
1.0	9.0	5.0	370
1.5	18.6		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.9	5.9	2.45	1.92	*2.5	7.1	6.7	3.15	140	31	2.5	1.82
2	3.3	6.2	2.5	1.92	2.25	22	6.2	3.1	40	20	2.4	1.76
3	2.8	4.6	2.3	1.82	2.15	114	5.5	3.0	27	7.1	*3.2	1.76
4	2.6	4.5	2.25	1.82	5.7	37	4.9	2.85	14	6.0	2.55	1.76
5	4.5	3.7	2.3	4.8	3.45	16.4	4.5	3.1	80	5.7	2.45	1.7
6	4.3	7.1	2.15	3.6	2.3	108	5.0	2.6	20	5.5	2.55	1.7
7	3.2	11.8	2.7	2.8	2.1	54	4.1	2.45	9.0	7.5	2.35	2.0
8	3.3	4.6	15.0	5.3	1.98	29	5.0	2.2	7.0	5.0	2.45	1.7
9	3.4	4.0	29	23	3.05	8.6	5.0	2.1	6.0	4.1	2.3	3.5
10	40	3.7	17.6	3.8	4.6	31	4.3	2.1	5.5	3.7	3.8	13
11	19	4.0	30	2.55	6.4	21.5	4.6	2.1	5.4	4.2	2.6	8.5
12	6.5	3.8	5.5	2.3	19.4	54	10.4	7.0	5.2	5.5	2.45	24.5
13	6.2	6.8	4.5	2.15	6.8	28	5.4	70	50	4.3	2.25	7.6
14	3.7	243	5.0	2.1	3.65	8 5	139	23	120	3.1	2.15	4.4
15	3.25	17.7	3.55	2.6	79	6.8	133	35	10	2.9	2.1	3.4
16	3.4	5.2	3.25	2.55	40	7.3	125	45	17	2.7	2.1	3.3
17	4.5	4.4	2.95	2.1	6.3	6.3	9.5	25	12	2.5	4.0	3.15
18	3.3	4.0	2.7	1.98	3.3	5.7	7.0	200	30	3.2	8.0	2.7
19	11.0	3.55	2.55	1.98	4.2	5.3	5.4	210	27	2.7	3.0	2.35
20	36	3.9	2.45	1.87	3.7	5.3	4.5	45	9.8	2.5	3.1	2.25
21	11.8	3.25	2.45	1.87	2.6	5.2	4.0	100	6.0	2.4	2.8	*2.05
22	13.4	3.0	2.35	2.1	2.45	5.0	5.0	180	21	2.4	2.5	1.98
23	14.6	2.85	2.25	2.4	2.25	5.0	6.1	14	6.2	3.3	2.2	1.98
24	18.7	2.8	2.15	14.7	2.15	4.8	6.2	7.0	5.2	4.3	2.2	7.7
25	13.7	2.7	2.15	6.6	226	26.5	4.2	8.0	5.4	5.0	2.0	2.6
26	8.1	2.55	2.05	6.3	144	31	4.3	17	4.3	2.8	2.0	2.1
27	7.4	2.55	1.98	4.8	16.0	43	4.0	50	3.8	2.4	2.3	1.98
28	8.6	2.5	1.92	2.8	8.7	50	3.7	48	3.6	2.8	2.0	1.92
29	8.8	2.45	2.05	2.5	5.5	206	3.5	-	3.5	6.0	1.9	1.87
30	9.9	3.55	1.98	5.3	4.5	32	3.3	-	3.4	2.8	1.9	1.98
31	5.8	2.5	-	3.15	-	10.1	3.25	-	12	-	1.9	-
Total	288.95	383.15	162.03	125.48	616.98	994.4	542.55	1,112.75	709.3	163.4	82.00	119.01
Mean:												
mgd	9.32	12.4	5.40	4.05	20.6	32.1	17.5	39.7	22.9	5.45	2.65	3.97
cfs	14.4	19.2	8.36	6.27	31.9	49.7	27.1	61.4	35.4	8.43	4.10	6.14
Ac-ft	887	1,180	497	385	1,890	3,050	1,670	3,410	2,180	501	252	365

Calendar year 1950: Max 347 Min 1.82 Mean(mgd) 18.6 Mean(cfs) 28.8 Ac-ft 20,820
Fiscal year 1950-51: Max 243 Min 1.7 Mean(mgd) 14.5 Mean(cfs) 22.4 Ac-ft 16,270

Peak discharge (base, 850 mgd).--Dec. 3 (10 p.m.) 1,070 mgd (1,660 cfs), 6.33 ft; Feb. 18 (time unknown) 1,130 mgd (1,750 cfs), 6.50 ft, estimated; Feb. 22 (time and discharge unknown).
* Discharge measurement made on this day
Note.--No gage-height record July 1-13, Feb. 8 to Mar. 19, Mar. 21 to May 3, May 17-31, June 5-10; discharge estimated on basis of records for nearby stations.

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 1951.

Gage.--Water-stage recorder.

Average discharge.--29 years (1922-51), 10.7 mgd (16.6 cfs).

Extremes.--Maximum discharge during year, 476 mgd (736 cfs) Feb. 19 (gage height, 4.61 ft), from rating curve extended above 200 mgd by logarithmic plotting; minimum, 0.65 mgd (1.01 cfs) June 4, 5, 6.
1921-51: 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 period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.35	1.4	12.8
.5	1.05	1.6	17.0
.6	2.1	1.8	23.5
.7	3.3	2.0	33
.8	4.9	2.4	60
1.0	7.6	2.8	101
1.2	10.0	3.2	156

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.35	5.5	1.15	0.97	*1.77	8.4	5.2	1.55	92	29.5	1.77	0.89
2	2.45	4.5	1.25	.89	1.15	22	4.5	1.45	35	18.6	1.45	.73
3	1.99	3.1	.89	.81	1.05	22	3.8	1.35	31	6.2	*1.94	1.11
4	1.77	3.05	.81	.81	4.6	27	3.05	1.35	14.1	4.7	1.99	.73
5	3.9	2.2	.89	5.3	3.0	16.3	2.9	1.88	71	4.0	1.25	.81
6	3.75	5.5	.89	5.5	1.55	86	3.75	1.88	a16	3.95	1.45	.73
7	2.3	9.8	1.60	2.9	1.15	44	2.55	1.35	a8.0	7.3	1.25	.89
8	2.1	3.15	14.8	6.8	.97	22	5.0	1.15	a6.0	3.55	1.66	.81
9	3.1	2.45	30.5	23.5	2.7	6.6	5.0	1.05	a4.7	2.55	1.35	1.05
10	38.5	1.99	21	3.8	5.4	25	3.5	1.05	a3.9	2.3	2.7	11.3
11	17.2	2.55	23.5	2.1	7.4	17.4	4.1	.97	a3.8	3.5	1.77	7.4
12	6.0	2.45	4.4	1.55	20.5	39.5	9.7	6.7	a3.6	5.2	1.35	22
13	5.7	4.5	3.05	1.35	8.7	22.5	4.8	56	a40	4.2	1.15	11.3
14	2.55	113	3.65	1.15	2.95	6.8	83	19.7	a45	2.55	1.05	3.75
15	1.99	11.3	2.1	1.84	20	4.6	75	32	a7.5	2.1	.97	2.55
16	2.1	3.65	1.88	2.1	17.3	5.2	66	42	a12	1.88	.89	2.3
17	3.75	2.55	1.55	1.35	6.9	3.8	7.1	22	a8.5	1.88	3.55	2.1
18	2.2	2.45	1.35	1.15	3.3	2.8	5.2	100	a40	2.3	7.5	1.88
19	10.6	1.88	1.15	1.25	3.95	2.45	3.45	116	a31	1.77	2.6	1.35
20	35.5	2.15	1.05	1.05	4.2	2.1	2.8	41	a6.6	1.66	2.45	1.15
21	12.0	1.77	1.05	.97	2.45	1.99	2.55	47	3.8	1.66	2.45	*.89
22	10.8	1.55	1.05	1.25	1.77	1.88	5.1	70	10.6	1.55	1.55	.89
23	15.5	1.35	1.05	2.4	1.45	1.88	6.3	8.3	4.2	2.5	1.25	.97
24	16.5	1.35	.97	20.5	1.25	1.66	6.1	5.5	3.85	3.95	1.05	7.4
25	14.1	1.25	.97	9.6	150	19.8	3.8	6.6	4.1	4.9	.97	2.5
26	6.2	1.25	.97	7.8	107	20	3.7	9.3	3.55	2.45	.97	1.35
27	5.9	1.25	.89	5.3	13.2	34	3.35	36	2.8	1.88	1.05	.97
28	5.9	1.15	.89	2.45	7.9	37	2.55	34	2.3	1.88	.89	.89
29	7.9	1.15	1.08	2.1	4.8	101	2.2	-	2.2	5.7	.97	.81
30	7.9	2.65	1.05	5.2	3.35	22	1.77	-	2.2	2.3	.97	.97
31	4.6	1.35	-	2.6	-	8.1	1.66	-	9.5	-	.89	-
Total	258.10	203.79	127.43	126.34	411.71	635.76	339.48	667.13	528.80	138.46	53.10	92.47
Mean:												
mgd	8.33	6.57	4.25	4.08	13.7	20.5	11.0	23.8	17.1	4.62	1.71	3.08
cfs	12.9	10.2	6.58	6.31	21.2	31.7	17.0	36.8	26.5	7.15	2.65	4.77
Ac-ft	792	625	391	388	1,280	1,950	1,040	2,050	1,620	425	163	284

Calendar year 1950: Max 150 Min 0.81 Mean(mgd) 12.5 Mean(cfs) 19.3 Ac-ft 13,970
Fiscal year 1950-51: Max 150 Min 0.73 Mean(mgd) 9.82 Mean(cfs) 15.2 Ac-ft 10,990

Peak discharge (base, 450 mgd).--Feb. 19 (4:30 a.m.) 476 mgd (736 cfs), 4.61 ft.
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for stations on nearby streams.

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 1951 in reports of Geological Survey. 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.--32 years, 21.6 mgd (33.4 cfs).

Extremes.--1919-51: 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.0	25	8.9	6.4	8.9	0.04	13.9	11.3	46	42	10.4	6.9
2	14.5	27.5	8.9	6.1	8.4	0	21.5	10.7	50	40	9.5	6.6
3	*12.5	22	8.9	5.9	8.2	0	12.3	10.4	50	23.5	11.3	7.4
4	11.9	20.5	8.9	5.9	16.7	0	20.5	10.1	50	22	9.8	6.6
5	15.6	17.2	8.7	13.5	11.9	0	18.8	10.7	52	20.5	9.2	6.6
6	17.2	27.5	8.2	13.2	9.2	0	19.2	10.1	49	20.5	9.8	6.6
7	12.9	34	9.3	8.9	8.2	0	16.5	9.5	45	29.5	8.9	6.9
8	12.5	19.9	42	17.2	7.9	0	19.5	8.9	38	20.5	*9.8	6.4
9	13.8	17.8	50	37.5	11.8	0	19.2	8.7	33.5	17.5	9.2	7.1
10	48	16.2	52	15.2	17.8	0	16.8	8.7	29	16.5	13.2	26
11	42	17.5	52	10.7	24.5	0	16.8	8.4	25.5	18.8	10.4	18.0
12	22	16.5	25.5	9.5	33.5	0	31.5	14.1	24.5	25	9.2	42
13	*19.9	21	18.8	8.7	29.5	0	21	45	30.5	18.8	8.7	29
14	16.8	52	21.5	8.2	17.5	0	49	29	48	15.5	8.4	18.5
15	14.5	40	15.5	9.5	32	13.9	52	45	35.5	13.8	7.9	14.8
16	14.5	24	12.9	9.8	45	25.5	52	45	35.5	13.2	7.9	13.5
17	16.8	19.9	11.6	8.4	24	22	38	41	35.5	12.9	15.0	13.2
18	13.5	18.1	11.3	7.9	15.5	19.5	29.5	45	35.5	13.7	19.6	11.9
19	*35	16.2	10.4	7.6	16.2	18.1	23.5	50	48	12.2	11.3	10.7
20	46	16.5	9.5	7.4	15.8	17.2	20.5	50	42	11.9	10.7	10.1
21	40	14.2	9.8	7.1	12.2	16.5	18.1	50	33.5	11.3	11.0	8.9
22	40	13.2	8.9	7.6	11.0	15.8	21	29.5	40	11.0	9.2	8.4
23	42	11.9	8.4	8.6	10.1	15.2	23	15.2	28.5	12.2	8.4	8.4
24	48	11.3	7.9	32.5	9.2	14.8	22.5	11.9	25	14.5	7.9	22.5
25	48	11.3	7.6	21.5	42	13.3	17.8	9.2	23.5	15.5	7.9	12.5
26	35.5	11.0	7.4	20.5	38	28.5	17.5	12.0	21	11.6	7.6	9.8
27	33.5	10.4	7.1	16.2	31	8.8	16.2	25	18.8	10.4	7.6	8.9
28	31	10.4	6.6	10.1	29.5	0	14.5	24.5	16.8	10.4	7.4	8.4
29	35.5	9.2	6.9	8.9	27	0	13.5	-	15.8	21	7.4	8.2
30	35.5	9.8	7.1	16.2	21	0	12.5	-	15.5	12.5	7.4	8.4
31	25.5	9.2	-	11.3	-	25.5	11.9	-	28	-	7.1	-
Total	831.4	591.2	472.5	378.0	593.5	254.64	700.5	648.9	1,069.4	538.7	299.1	373.2
Mean:												
mgd	26.8	19.1	15.8	12.2	19.8	8.21	22.6	23.2	34.5	18.0	9.65	12.4
cfs	41.5	29.6	24.4	18.9	30.6	12.7	35.0	35.9	53.4	27.9	14.9	19.2
Ac-ft	2,550	1,810	1,450	1,160	1,820	781	2,150	1,990	3,280	1,650	918	1,150

Calendar year 1950: Max 52 Min 0 Mean(mgd) 17.8 Mean(cfs) 27.5 Ac-ft 19,970
Fiscal year 1950-51: Max 52 Min 0 Mean(mgd) 18.5 Mean(cfs) 28.6 Ac-ft 20,710

* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder.

Average discharge.--29 years (1922-51), 7.79 mgd (12.1 cfs).

Extremes.--Maximum discharge during year, 298 mgd (461 cfs) Feb. 19 (gage height, 4.12 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 1.92 mgd (2.97 cfs) June 4-6, 8.
1921-51: 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 except those above 50 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.5	1.61	1.5	20
.7	3.05	2.0	45
.9	5.4	2.5	84
1.2	11.1		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.5	5.9	2.55	2.15	2.5	5.8	4.1	2.65	41	14.1	2.55	2.05
2	3.05	7.1	2.5	2.1	2.4	14.6	5.1	2.55	19.6	10.0	2.5	1.98
3	2.9	4.6	2.4	1.98	2.35	9.5	3.8	2.55	18.4	4.2	3.0	2.2
4	2.8	4.7	2.3	1.98	3.95	11.4	3.45	2.5	10.1	4.1	2.9	1.98
5	4.1	3.9	2.4	3.8	2.8	11.6	3.4	2.7	34.5	4.4	2.8	1.98
6	3.55	6.8	2.3	3.2	2.55	50	3.45	2.5	9.0	3.9	2.55	1.98
7	2.95	7.6	2.3	2.4	2.4	22	3.15	2.4	6.0	6.1	2.5	2.15
8	3.05	4.2	8.0	4.0	2.3	11.7	4.2	2.3	5.1	3.7	2.7	1.92
9	3.1	4.0	17.0	12.9	4.8	5.6	3.8	2.25	4.5	3.15	2.65	2.85
10	19.6	3.7	10.6	2.9	4.7	14.5	3.3	2.25	4.1	3.15	3.5	6.6
11	9.6	4.3	13.0	2.4	6.6	10.3	3.9	2.25	3.9	3.65	2.55	5.4
12	3.7	4.0	3.55	2.25	14.1	20.5	6.6	5.3	3.7	4.6	2.4	11.0
13	3.9	5.9	3.55	2.1	4.9	11.1	4.0	21.5	18.8	3.45	2.3	5.1
14	3.25	45	3.8	2.05	3.35	5.4	37	8.8	22.5	2.95	2.25	3.55
15	3.05	7.0	2.95	2.5	8.5	4.5	34.5	13.2	4.5	2.8	2.25	2.95
16	3.25	4.1	2.9	2.4	7.6	4.9	26	16.7	9.3	2.7	2.15	2.65
17	3.35	3.7	2.7	2.05	3.95	4.1	5.3	9.8	5.5	2.65	4.5	2.7
18	3.05	3.35	2.65	2.05	3.15	3.7	4.4	47	16.7	3.0	3.9	2.7
19	8.6	3.15	2.55	2.1	3.45	3.5	3.55	54	13.7	2.65	2.7	2.2
20	24	3.6	2.55	1.98	3.15	3.45	3.35	18.1	5.5	2.7	2.95	2.25
21	7.4	3.05	2.5	2.05	2.8	3.25	3.15	18.0	4.1	2.65	2.8	2.25
22	6.9	2.9	2.4	2.15	2.65	3.15	4.5	28	9.2	2.55	2.4	2.2
23	8.8	2.8	2.4	2.25	2.65	3.05	4.9	5.4	4.1	2.8	2.25	2.25
24	10.5	2.7	2.3	8.7	2.55	2.95	4.2	4.1	3.75	2.7	2.25	7.0
25	8.5	2.7	2.3	4.4	78	8.8	3.55	4.7	3.9	2.9	2.15	2.55
26	5.2	2.65	2.25	4.7	70	9.5	3.6	7.7	*3.6	2.65	2.15	2.3
27	5.6	2.7	*2.2	3.55	9.4	16.4	3.35	17.5	3.25	2.55	2.3	2.25
28	5.8	2.55	2.15	2.65	6.0	17.3	2.95	15.9	3.05	2.65	2.15	2.15
29	6.6	2.55	2.15	2.65	4.2	42	2.8	-	2.95	4.6	2.15	2.1
30	6.5	2.8	2.25	4.4	4.0	10.0	2.7	-	2.95	2.7	2.15	2.25
31	4.7	2.55	-	2.8	-	6.2	2.65	-	7.2	-	2.1	-
Total	190.85	166.55	115.45	99.59	271.75	350.75	204.70	322.60	304.45	116.70	80.45	93.45
Mean:												
mgd	6.16	5.37	3.85	3.21	9.06	11.3	6.60	11.5	9.82	3.89	2.60	3.12
cfs	9.53	8.31	5.96	4.97	14.0	17.5	10.2	17.8	15.2	6.02	4.02	4.83
Ac-ft	586	511	354	306	834	1,080	628	990	934	358	247	287

Calendar year 1950: Max 78 Min 1.87 Mean(mgd) 7.75 Mean(cfs) 12.0 Ac-ft 8,680
Fiscal year 1950-51: Max 78 Min 1.92 Mean(mgd) 6.35 Mean(cfs) 9.82 Ac-ft 7,120

Peak discharge (base, 300 mgd).--No peak above base.
* Discharge measurement made on this day.

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 1951.

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.--29 years (1915-17, 1922-34, 1936-51), 18.5 mgd (28.6 cfs).

Extremes.--Maximum discharge during year, 1,300 mgd (2,010 cfs) Feb. 18 (gage height, 5.62 ft), from rating curve extended above 75 mgd by logarithmic plotting; minimum, 1.11 mgd (1.72 cfs) Oct. 3, 4, June 4, 5, 8, 9.
1914-17, 1921-51: Maximum discharge, 5,050 mgd (7,810 cfs) Jan. 26, 1948 (gage height, about 9.5 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 above 50 mgd, which are poor. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 755: 1931-32.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.0	1.03	1.2	31
.1	2.05	1.6	57
.2	3.3	2.0	97
.4	6.3	2.5	165
.6	10.2	3.0	260
.9	19.0	3.5	390

/ Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	6.3	2.4	1.50	2.55	15.3	9.6	3.15	73	32	2.65	1.50
2	3.8	5.5	2.3	1.82	2.3	26	9.1	3.05	27	20	2.4	1.30
3	3.65	4.0	2.05	1.30	*2.2	67	6.7	3.4	22	9.0	3.1	1.60
4	3.55	4.3	1.94	1.30	7.7	62	5.1	2.9	12.9	7.1	2.4	1.30
5	4.8	3.15	2.2	9.3	4.3	21	4.8	4.3	51	6.0	2.2	1.30
6	4.8	8.4	2.2	9.9	2.55	88	6.0	3.75	20	5.6	2.3	1.40
7	3.8	11.5	3.8	5.1	2.3	45	4.2	2.8	11.2	8.3	2.2	2.1
8	3.8	4.1	17.1	13.2	2.55	28	8.0	2.55	8.1	4.5	*2.55	1.30
9	5.2	3.4	34.5	24.5	6.5	12.2	7.2	2.4	6.1	3.8	2.0	1.69
10	35.5	3.15	20.5	5.4	8.7	25.5	5.7	2.3	5.3	3.7	3.8	12.5
11	18.7	3.8	20.5	3.4	11.4	23.5	6.7	2.2	4.6	6.5	2.2	7.5
12	5.6	3.4	6.5	3.05	19.7	42	9.4	11.6	4.4	8.5	1.82	23.5
13	6.0	6.8	5.1	2.3	11.5	25.5	5.3	65	54	6.0	1.70	8.3
14	4.2	267	5.3	1.94	5.8	11.9	110	28.5	110	4.1	1.60	4.4
15	3.95	21	3.15	3.45	50	8.5	142	41	10.6	3.4	1.60	3.4
16	4.1	8.4	2.9	2.9	32	9.5	120	47	18.3	3.4	1.50	3.05
17	*5.2	5.3	2.55	2.05	14.2	6.7	14.0	25	13.1	3.15	7.8	2.9
18	3.3	4.8	2.3	1.82	7.4	5.3	8.7	162	14.3	4.3	8.5	2.55
19	13.8	3.65	2.2	2.05	8.2	4.8	6.1	172	15.4	3.05	3.4	2.2
20	29	3.95	1.94	1.70	9.0	4.2	5.0	50	7.4	2.9	3.4	1.94
21	13.3	3.05	1.94	1.70	5.7	4.1	4.4	90	5.4	2.9	3.3	1.60
22	13.7	2.8	1.82	2.2	4.1	3.8	11.2	193	16.1	2.8	2.3	1.60
23	15.0	2.55	1.60	3.0	3.4	3.65	10.6	17.0	6.1	4.7	1.94	1.70
24	17.1	2.55	1.60	23.5	2.95	3.4	9.9	10.3	5.6	5.8	1.94	10.3
25	14.0	2.55	1.60	13.2	280	19.6	7.5	10.2	6.0	6.1	1.82	2.85
26	8.1	2.3	1.50	13.7	175	26.5	6.8	10.1	*6.2	3.8	1.70	1.82
27	7.6	2.65	*1.40	8.8	18.6	41	5.8	29	5.0	3.3	2.05	1.50
28	9.2	2.3	1.40	3.95	14.3	43	4.5	23.5	3.95	3.3	1.60	1.60
29	9.4	2.2	1.50	3.3	8.6	186	4.1	-	3.65	6.0	1.70	1.40
30	10.2	4.8	1.70	8.0	6.8	33.5	3.65	-	3.65	3.05	1.82	1.66
31	6.1	2.3	-	3.55	-	16.4	3.4	-	12.7	-	1.60	-
Total	290.95	411.95	157.49	182.88	730.30	912.85	565.45	1,018.00	563.05	187.05	80.69	111.76
Mean:												
mgd	9.39	13.3	5.25	5.90	24.3	29.4	18.2	36.4	18.2	6.24	2.60	3.73
cfs	14.5	20.6	8.12	9.13	37.6	45.5	28.2	56.3	28.2	9.65	4.02	5.77
Ac-ft	893	1,260	483	561	2,240	2,800	1,740	3,120	1,730	574	248	343

Calendar year 1950: Max 351 Min 1.30 Mean(mgd) 17.7 Mean(cfs) 27.4 Ac-ft 19,860
Fiscal year 1950-51: Max 280 Min 1.30 Mean(mgd) 14.3 Mean(cfs) 22.1 Ac-ft 15,990

Peak discharge (base, 1,000 mgd).--Feb. 18 (8 p.m.) 1,300 mgd (2,010 cfs), 5.60 ft; Feb. 22 (2 a.m.) 1,240 mgd (1,920 cfs), 5.54 ft; Mar. 14 (12:30 a.m.) 1,070 mgd (1,660 cfs), 5.15 ft.
* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder. Dec. 21, 1913, to Oct. 22, 1917, at site 50 ft downstream.

Average discharge.--31 years (1915-17, 1922-51), 20.2 mgd (31.3 cfs).

Extremes.--Maximum discharge during year, 760 mgd (1,180 cfs) Nov. 25 (gage height, 5.95 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, 1.57 mgd (2.43 cfs) June 4.

1913-17, 1922-51: 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 and those above 310 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.32	1.7	19.2
.5	1.82	2.0	28.5
.6	2.4	2.5	52
.8	3.9	3.0	88
1.0	6.0	3.5	138
1.2	8.8	4.0	213
1.4	12.5	4.7	350

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.7	8.2	3.3	2.0	2.7	17.0	11.2	3.15	80	45	2.75	1.94
2	4.2	8.4	3.1	2.5	2.4	42	11.9	3.1	30	27	2.7	1.72
3	3.55	6.0	2.7	1.8	*2.25	23	8.7	3.15	23	9.5	3.7	2.0
4	3.5	5.9	2.5	1.8	9.2	45	6.0	2.8	13	7.5	2.7	1.67
5	7.3	4.6	3.0	12	4.1	23	5.3	4.5	50	6.5	2.55	1.77
6	6.4	14.8	2.95	11	2.5	160	6.1	3.45	21	6.0	2.85	1.85
7	3.65	18.5	6.3	5.8	3.65	85	4.7	2.7	11	9.0	2.7	2.7
8	3.85	5.6	30	16	2.6	40	8.5	2.5	8.3	5.2	3.1	1.77
9	7.8	4.8	66	45	13.6	15	6.9	2.35	6.5	4.3	2.6	2.3
10	71	4.5	34	6.0	11.4	43	5.7	2.3	5.5	7.0	5.1	20.5
11	28.5	4.1	29.5	4.5	15.1	43	7.1	2.3	5.0	8.0	2.7	12.2
12	6.4	4.8	6.8	4.0	29.5	80	10.2	17	4.8	10	2.4	36.5
13	6.5	14.3	5.8	3.7	11.2	45	5.2	90	38	5.7	2.25	10.4
14	4.6	298	7.1	2.8	4.8	14	139	45	130	3.9	2.2	4.9
15	3.9	34.5	3.9	5.0	39.5	8.2	146	65	11	3.5	2.1	3.5
16	4.7	10.1	3.5	3.7	41	9.0	148	80	28	3.55	2.05	3.1
17	*6.4	6.2	3.1	2.6	15.1	6.8	15.4	35	16	3.2	14.5	3.25
18	4.2	5.5	2.95	2.3	6.3	5.8	9.1	170	26	4.6	11.2	2.9
19	22.5	4.5	2.75	2.4	7.9	5.3	6.5	180	23.5	3.1	3.55	2.4
20	66	5.8	*2.7	2.1	8.5	4.8	5.4	50	*8.1	3.1	4.2	2.25
21	19.8	3.9	2.6	2.1	5.4	4.5	4.8	110	5.8	3.25	3.75	2.1
22	19.3	3.55	2.4	2.7	3.5	4.3	9.5	190	19.9	2.95	2.55	2.05
23	22.5	3.4	2.3	3.7	2.95	4.0	10.2	22	6.4	5.9	2.3	2.15
24	28	3.35	2.3	35	2.75	3.65	11.1	13	5.5	6.7	2.2	21
25	20	3.35	2.2	15	342	28	8.3	11	6.0	6.4	2.1	3.2
26	10.2	3.0	2.1	17	220	30	6.7	12	4.8	3.55	2.1	2.25
27	9.5	3.6	2.1	9.0	28	72	5.9	21	4.8	3.0	2.4	2.0
28	14.3	3.1	2.0	4.0	16.3	54	4.5	27	4.0	3.35	2.0	2.15
29	13.8	2.9	2.0	3.2	9.2	242	4.0	-	3.9	7.3	2.2	2.05
30	15.7	7.3	2.3	8.5	6.5	51	3.75	-	3.8	3.1	2.25	2.3
31	7.7	2.95	-	3.5	-	25	3.4	-	14	-	2.0	-
Total	451.45	510.50	244.25	240.7	869.90	1,233.35	639.05	1,170.30	617.6	221.15	103.75	160.87
Mean:												
mgd	14.6	16.5	8.14	7.76	29.0	39.8	20.6	41.8	19.9	7.37	3.35	5.36
cfs	22.6	25.5	12.6	12.0	44.9	61.6	31.9	64.7	30.8	11.4	5.18	8.29
Ac-ft	1,390	1,570	750	739	2,670	3,790	1,960	3,590	1,900	679	318	494

Calendar year 1950. Max 342 Min 1.8 Mean(mgd) 24.0 Mean(cfs) 37.1 Ac-ft 26,850
Fiscal year 1950-51: Max 342 Min 1.67 Mean(mgd) 17.7 Mean(cfs) 27.4 Ac-ft 19,850

Peak discharge (base, 600 mgd).--Aug. 14 (10 a.m.) 680 mgd (1,050 cfs), 5.78 ft; Nov. 25 (6:30 p.m.) 760 mgd (1,180 cfs), 5.95 ft; Dec. 6 (time and discharge unknown); Feb. 19 (time and discharge unknown); Feb. 22 (time and discharge unknown).

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 25 to Nov. 2, Dec. 3-17, Feb. 11 to Mar. 18, Mar. 29 to Apr. 12; discharge estimated on basis of records for stations on nearby streams.

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 1951.

Gage.--Water-stage recorder.

Average discharge.--29 years (1922-51), 24.6 mgd (38.1 cfs).

Extremes.--Maximum discharge during year, 1,230 mgd (1,900 cfs) Nov. 25 (gage height, 7.10 ft), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 1.47 mgd (2.27 cfs) June 4.
1914-17, 1921-51: 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 period of no gage-height record and those above 420 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.20	2.2	51
.5	1.74	2.6	81
.7	3.15	3.0	121
.9	5.0	3.5	185
1.2	9.5	4.0	270
1.5	17.4	5.1	540
1.8	29.5		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.4	8.8	3.5	2.1	3.65	21	14.2	3.85	84	53	3.15	2.0
2	4.8	9.0	3.4	2.75	3.3	60	16.2	4.1	35	31.5	2.9	1.74
3	4.0	6.5	3.1	1.93	3.05	41	11.4	3.95	25.5	9.9	3.85	1.93
4	3.9	6.4	2.8	1.93	7.9	66	8.0	3.5	12.9	7.9	2.85	1.58
5	7.8	5.2	3.2	16.2	4.4	34	6.9	5.0	49	6.9	2.7	1.63
6	7.0	16	3.2	13.1	3.25	172	7.2	3.9	21.5	6.2	2.9	1.74
7	4.1	20	7.6	6.3	3.7	96	5.8	3.25	10.9	9.2	2.75	2.45
8	4.1	6.0	35	16.5	3.25	47	8.7	3.0	8.6	5.4	2.9	1.69
9	9.0	5.4	70	42	9.5	16.4	8.1	2.85	7.0	4.6	2.6	2.1
10	75	5.0	37	7.6	10.3	48	7.2	2.7	6.2	8.1	4.3	17.0
11	30	5.4	33	5.4	15.6	48	7.3	2.6	5.6	9.3	2.6	9.2
12	6.8	5.2	7.5	4.6	29.5	88	9.1	19.1	5.3	10.8	2.4	40
13	7.0	17	6.5	4.4	15.7	51	5.8	115	39.5	7.0	2.3	10.2
14	5.3	400	7.4	3.4	6.6	17.4	153	56	150	5.0	2.2	5.4
15	4.3	50	4.3	5.6	33.5	11.5	188	77	12.1	4.3	2.05	4.1
16	5.2	14	3.8	4.2	43	12.2	182	92	27.5	4.2	2.0	3.6
17	6.8	6.8	3.4	2.9	15.5	9.0	17.8	42	16.8	3.95	12.7	3.5
18	4.4	6.2	3.2	2.6	7.5	7.5	10.3	183	23.5	5.2	10.4	3.05
19	20	5.2	3.0	2.75	9.0	6.6	7.8	183	20.5	3.75	4.0	2.7
20	*66	6.4	2.8	2.25	11.9	*5.9	6.8	50	8.4	3.6	4.4	2.55
21	22	5.0	2.7	2.25	7.5	5.4	5.9	119	6.8	3.65	3.85	2.25
22	21	4.1	2.7	2.7	5.2	5.0	9.4	200	19.9	3.4	2.85	2.2
23	25	3.9	2.55	3.9	4.3	4.6	10.6	27.5	7.4	6.0	2.55	2.25
24	29	3.8	2.3	36.5	3.95	4.4	12.2	15.2	6.3	6.8	2.4	21
25	23	3.8	2.3	16.3	528	35	9.0	12.8	6.3	6.4	2.3	3.85
26	13	3.4	2.2	18.1	335	32.5	7.4	13.0	5.4	4.2	2.3	2.85
27	12	4.0	2.25	9.2	40	80	6.3	24	5.0	3.6	2.4	*2.45
28	16	3.5	2.05	5.0	25.5	66	5.3	30.5	*4.4	3.85	2.1	2.5
29	15	3.2	2.05	4.4	14.4	314	4.7	-	4.1	5.9	2.2	2.45
30	17	8.0	2.5	9.1	10.6	64	4.4	-	4.1	3.4	2.25	2.65
31	8.5	3.3	-	4.6	-	33	4.1	-	14.4	-	2.05	-
Total	483.4	650.5	267.30	260.56	1,214.55	1,502.4	760.9	1,297.80	653.9	247.00	103.20	162.61
Mean:												
mgd	15.6	21.0	8.91	8.41	40.5	48.5	24.5	46.4	21.1	8.23	3.33	5.42
cfs	24.1	32.5	13.8	13.0	62.7	75.0	37.9	71.8	32.6	12.7	5.15	8.39
Ac-ft	1,480	2,000	820	800	3,730	4,610	2,340	3,980	2,010	758	317	4.99

Calendar year 1950. Max 528 Min 1.93 Mean(mgd) 28.3 Mean(cfs) 43.8 Ac-ft 31,730
Fiscal year 1950-51: Max 528 Min 1.58 Mean(mgd) 20.8 Mean(cfs) 32.2 Ac-ft 23,340

Peak discharge (base, 1,200 mgd).--Nov. 25 (7 p.m.) 1,230 mgd (1,900 cfs), 7.10 ft.
* Discharge measurement made on this day.
Note.--No gage-height record July 1 to Sept. 21; discharge estimated on basis of records for stations on nearby streams.

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 1951.

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

Average discharge.--29 years (1922-51), 9.15 mgd (14.2 cfs).

Extremes.--Maximum discharge during year, 355 mgd (549 cfs) Nov. 25 (gage height, 4.04 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.69 mgd (1.07 cfs) June 4, 6.
1913-17, 1922-51: 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.55	1.4	8.0
.8	.89	1.6	13.7
.9	1.36	1.8	23
1.0	2.0	2.0	36
1.1	2.9	2.5	81
1.2	4.1	3.1	168

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.75	4.8	1.49	0.98	1.62	7.5	6.8	1.62	28.5	13.2	1.31	0.86
2	1.94	5.7	1.36	1.08	1.49	18.5	10.0	1.62	13.7	10.6	1.22	.75
3	1.68	3.1	1.17	.86	1.42	11.5	6.0	1.55	11.7	3.9	1.85	.86
4	1.62	3.55	1.08	.86	4.6	27	3.6	1.42	6.1	3.8	1.27	.75
5	3.65	2.45	1.28	3.6	1.89	14.9	3.3	1.84	20	3.9	1.17	.79
6	2.95	7.6	1.36	3.35	1.42	68	3.25	1.49	7.0	2.9	1.27	.79
7	1.87	7.9	1.53	1.78	1.31	37	2.55	1.27	4.4	5.6	1.22	1.17
8	2.05	3.0	7.9	3.15	1.51	16.3	3.75	1.17	3.5	2.6	1.31	.86
9	3.3	2.65	23.5	13.4	4.9	7.6	3.15	1.12	2.9	2.1	1.19	1.20
10	24	2.25	14.2	3.2	6.0	17.8	2.8	1.08	2.55	2.95	2.55	7.8
11	13.9	3.15	12.6	2.1	7.8	18.1	3.3	1.03	2.35	3.65	1.27	3.75
12	3.7	2.45	3.95	1.68	10.7	31.5	4.6	2.9	2.2	3.7	1.08	13.5
13	3.55	6.5	2.95	1.62	4.5	14.1	2.65	29.5	12.7	2.5	1.03	6.0
14	2.55	167	4.1	1.31	2.55	7.6	57	14.4	62	1.94	.98	2.95
15	2.3	25	2.1	2.5	9.7	5.5	72	21.5	6.0	1.74	.94	2.0
16	2.7	5.8	1.87	1.80	19.8	5.5	61	26	10.8	1.81	.89	1.74
17	3.45	3.75	1.62	1.22	8.0	3.85	9.4	15.1	7.5	1.62	5.5	1.74
18	2.0	3.15	1.49	1.08	3.4	3.25	5.5	57	25	2.25	4.0	1.68
19	11.2	2.55	1.42	1.17	3.6	2.8	3.85	75	13.3	1.55	1.62	1.42
20	29	3.1	1.31	1.03	3.6	*2.65	3.15	18.6	4.6	1.55	2.1	1.31
21	9.3	2.1	1.27	1.03	2.95	2.35	2.7	44	3.4	1.55	2.15	1.22
22	8.3	1.81	1.22	1.27	2.2	2.2	3.75	71	10.9	1.49	1.27	1.22
23	9.0	1.68	1.17	1.98	1.81	2.0	4.2	11.3	3.4	2.25	1.17	1.27
24	11.6	1.62	1.08	9.6	1.62	1.87	4.5	6.2	2.8	2.45	1.12	11.0
25	8.7	1.62	1.08	4.8	147	7.2	3.3	5.6	2.7	2.85	1.03	1.87
26	5.3	1.42	1.03	5.2	125	10.2	3.0	6.8	2.25	1.62	1.03	1.42
27	5.5	1.68	*.98	3.4	16.8	28	2.65	9.9	2.0	1.42	1.12	1.27
28	6.6	1.42	.98	1.87	9.6	29	2.1	13.7	*1.79	1.49	.94	1.27
29	6.2	1.32	1.03	2.05	5.6	138	1.87	-	1.74	3.3	.98	1.27
30	7.0	2.2	1.08	5.7	4.0	32.5	1.74	-	1.74	1.42	.94	1.61
31	3.9	1.31	-	2.15	-	14.4	1.68	-	4.1	-	.89	-
Total	201.56	283.63	99.20	86.82	416.39	588.67	299.14	443.71	283.62	93.70	46.41	75.34
Means												
mgd	6.50	9.15	3.31	2.80	13.9	19.0	9.65	15.8	9.15	3.12	1.50	2.51
cfs	10.1	14.2	5.12	4.33	21.5	29.4	14.9	24.4	14.2	4.83	2.32	2.88
Ac-ft	619	870	304	266	1,280	1,810	918	1,360	870	288	142	231

Calendar year 1950: Max 167 Min 0.86 Mean(mgd) 10.7 Mean(cfs) 16.6 Ac-ft 12,000
Fiscal year 1950-51: Max 167 Min 0.75 Mean(mgd) 8.00 Mean(cfs) 12.4 Ac-ft 8,960

Peak discharge (base, 300 mgd).--Aug. 14 (12 m.) 355 mgd (549 cfs), 3.98 ft; Nov. 25 (7 p.m.) 355 mgd (549 cfs), 4.04 ft.
* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder. Jan. 1, 1914, to Oct. 23, 1917, water-stage recorder at site 500 ft upstream at different datum.

Average discharge.--29 years (1922-51), 5.66 mgd (8.76 cfs).

Extremes.--Maximum discharge during year, 275 mgd (425 cfs) Feb. 19 (gage height, 3.39 ft), from rating curve extended above 50 mgd; minimum, 0.53 mgd (0.82 cfs) Oct. 3, 4, June 4-6.

1914-17, 1921-51: 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.30	1.1	22
.4	.89	1.3	32.5
.5	2.1	1.5	45
.7	6.7	1.8	68
.9	13.0		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	4.5	1.09	0.72	1.19	2.95	2.75	0.99	31.5	7.3	0.89	0.65
2	1.52	4.6	.99	.65	.99	11.1	5.7	.99	14.3	6.5	.89	.59
3	1.29	2.55	.80	.53	.89	4.4	2.5	.89	12.5	1.95	1.40	.72
4	1.29	2.75	.72	.59	3.7	5.1	2.1	.89	5.7	2.7	.89	.59
5	3.45	1.95	.99	2.95	1.40	10.0	1.95	1.29	20.5	2.75	.89	.59
6	2.3	6.8	.99	2.1	.99	47	1.95	.99	6.3	1.95	.99	.59
7	1.40	8.0	1.09	.99	.99	19.8	1.52	.89	3.35	4.8	.89	.99
8	1.52	2.75	7.3	2.15	1.08	8.0	2.3	.80	2.75	1.95	1.09	.59
9	2.9	2.1	16.3	9.5	4.7	4.0	1.95	.80	2.1	1.52	.89	.95
10	20	1.95	8.8	1.65	5.2	14.4	1.65	.72	1.95	1.49	2.3	6.7
11	9.9	2.5	9.5	1.19	7.6	10.2	2.25	.65	1.65	2.45	.99	3.9
12	2.5	1.95	2.1	.89	10.2	21	4.0	1.99	1.52	2.55	.89	10.4
13	2.5	6.8	2.5	.80	3.7	8.2	1.95	11.0	6.9	1.40	.89	5.2
14	1.80	26.5	3.15	.72	1.95	4.0	21	4.1	12.4	1.19	.80	2.75
15	1.52	4.9	1.52	1.65	2.6	3.15	23	6.8	2.3	1.09	.72	1.95
16	1.80	2.5	1.40	1.19	3.15	3.55	16.0	9.0	7.0	1.09	.72	1.52
17	2.5	2.1	1.29	.72	1.95	2.3	3.35	7.7	3.15	.99	5.4	1.52
18	1.65	1.80	1.09	.65	1.65	1.95	2.75	41	18.6	1.40	3.8	1.40
19	*11.7	1.52	1.09	.72	2.1	1.80	2.1	41	12.4	.89	1.40	1.29
20	28	2.1	.99	.65	1.65	1.52	1.80	11.9	3.8	.89	1.95	1.09
21	7.0	1.40	.89	.65	1.40	1.52	1.52	8.0	2.5	.99	1.80	.99
22	6.4	1.29	.89	.80	1.19	1.40	2.1	13.3	8.3	.89	1.19	.99
23	7.8	1.19	.89	1.40	1.09	1.40	2.3	3.15	2.3	1.40	.99	.99
24	10.5	1.19	.80	7.6	1.07	1.29	2.75	2.75	1.95	1.65	.89	10.6
25	7.9	1.19	.80	3.35	60	3.35	1.95	3.4	2.1	1.80	.89	1.52
26	4.2	1.09	.72	3.55	57	3.35	1.95	5.2	1.52	1.09	.89	1.19
27	4.4	1.19	.65	2.1	6.9	11.9	1.52	10.4	1.40	.89	.99	1.09
28	5.7	.99	.59	1.29	4.0	11.4	1.40	14.0	*1.29	1.09	.80	1.19
29	5.2	.99	.65	1.40	2.75	29.5	1.29	-	1.19	2.8	.80	.99
30	7.1	1.40	.72	4.7	2.1	7.9	1.19	-	1.29	1.19	.80	1.29
31	3.35	.89	-	1.65	-	6.0	1.09	-	3.25	-	.72	-
Total	171.39	103.43	71.30	59.50	195.18	263.43	121.63	204.59	197.76	60.64	39.44	64.82
Mean:												
mgd	5.53	3.34	2.38	1.92	6.51	8.50	3.92	7.31	6.38	2.02	1.27	2.16
cfs	8.56	5.17	3.68	2.97	10.1	13.2	6.07	11.3	9.87	3.13	1.96	3.34
Ac-ft	526	317	219	183	599	808	373	628	607	186	121	199

Calendar year 1950: Max 102 Min 0.53 Mean(mgd) 6.09 Mean(cfs) 9.42 Ac-ft 6,830
Fiscal year 1950-51: Max 60 Min .53 Mean(mgd) 4.26 Mean(cfs) 6.59 Ac-ft 4,770

Peak discharge (base, 300 mgd).--No peak above base.
* Discharge measurement made on this day.

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 Keanae, 4.2 miles northwest of Nahiku, and 4.8 miles southeast of Kailua.

Records available.--September 1934 to June 1951.

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

Average discharge.--16 years (1935-51), 2.27 mgd (3.51 cfs).

Extremes.--1934-51: 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 good except those for period of no gage-height record, which are fair.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.85	2.15	1.52	1.39	1.43	2.05	a2.5	1.80	2.75	2.35	1.52	1.43
2	1.80	2.25	1.52	1.39	1.43	2.5	a2.4	1.75	2.4	2.2	1.52	1.43
3	1.71	2.05	1.52	1.39	1.43	2.35	a2.3	1.75	2.3	1.90	1.52	1.43
4	1.66	2.05	1.52	1.39	1.48	2.3	a2.3	1.75	2.2	1.95	1.52	1.39
5	1.66	1.90	1.52	1.57	1.43	2.35	2.25	1.80	2.5	1.90	1.52	1.39
6	1.71	2.1	1.48	*1.35	1.43	3.9	2.2	1.75	2.35	1.90	1.48	1.39
7	1.61	2.3	1.48	1.39	1.43	3.05	2.15	1.75	2.2	1.95	1.48	1.39
8	1.61	2.05	1.98	1.52	1.39	2.55	2.1	1.71	2.15	1.90	1.43	1.39
9	1.65	1.99	2.65	2.15	1.52	2.25	2.1	1.71	2.05	1.80	1.43	1.35
10	3.2	1.90	2.35	1.57	1.71	2.6	1.99	1.71	1.95	2.05	1.43	1.70
11	2.55	1.90	2.35	1.57	1.85	2.55	1.99	1.71	1.90	2.05	1.43	1.35
12	2.1	1.80	1.95	1.48	2.1	3.0	2.1	1.85	1.85	1.90	1.43	2.2
13	2.05	1.83	1.85	1.48	1.66	2.55	1.99	3.15	1.95	1.90	1.43	1.61
14	1.90	4.2	1.80	1.48	1.48	2.3	3.3	2.5	2.6	1.71	1.43	1.39
15	1.27	2.45	1.66	1.48	1.48	2.25	3.4	2.8	1.95	1.66	1.43	1.35
16	1.80	2.15	1.57	1.48	1.57	2.2	3.5	2.9	2.15	1.61	1.39	1.30
17	1.80	2.05	1.48	1.48	1.52	2.15	2.4	2.6	2.05	1.57	1.75	1.30
18	1.66	1.99	1.48	1.48	1.48	*2.15	2.3	3.55	2.55	1.57	1.75	1.30
19	2.35	1.95	1.48	1.48	1.48	2.2	2.2	2.8	2.05	1.52	1.43	1.35
20	3.1	1.90	1.48	1.48	1.52	2.2	2.1	2.25	1.57	1.52	1.43	1.52
21	2.55	1.85	1.43	1.43	1.43	2.2	2.05	2.05	1.48	1.52	1.43	1.52
22	2.35	1.75	1.43	1.43	1.39	2.1	2.05	2.5	1.80	1.57	1.43	1.52
23	2.5	1.66	1.43	1.43	1.39	2.1	2.1	1.75	1.43	1.57	1.43	1.52
24	2.6	1.61	1.43	2.3	1.43	2.1	2.1	1.66	1.39	1.57	1.43	2.25
25	2.55	1.57	1.39	1.52	4.7	a2.6	1.95	1.66	1.35	1.57	1.43	1.57
26	2.25	1.57	1.39	1.48	3.9	a2.6	1.99	1.80	*1.30	1.57	1.43	1.52
27	2.25	1.57	1.39	1.48	.95	a2.9	1.90	2.25	1.21	1.57	1.43	1.52
28	2.3	1.57	1.39	1.43	1.36	a3.0	1.85	2.25	1.21	1.57	1.43	1.52
29	2.35	1.57	1.39	1.43	2.15	a4.2	1.75	-	1.13	1.57	1.43	1.52
30	2.35	1.57	1.39	1.57	1.99	a2.9	1.80	-	1.66	1.57	1.43	1.57
31	2.15	1.52	-	1.48	-	a2.6	1.80	-	1.95	-	1.43	-
Total	65.24	60.77	48.70	46.98	51.51	78.75	68.91	59.51	59.38	52.56	45.48	44.99
Mean:												
mgd	2.10	1.96	1.62	1.52	1.72	2.54	2.22	2.13	1.92	1.75	1.47	1.50
cfs	3.25	3.03	2.51	2.35	2.66	3.93	3.43	3.30	2.97	2.71	2.27	2.32
Ac-ft	200	186	149	144	158	242	211	183	182	161	140	138

Calendar year 1950: Max 4.9 Min 0.95 Mean(mgd) 2.00 Mean(cfs) 3.09 Ac-ft 2,240
Fiscal year 1950-51: Max 4.7 Min 0.95 Mean(mgd) 1.87 Mean(cfs) 2.89 Ac-ft 2,090

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for nearby streams.

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 1951 in reports of Geological Survey. Gage-height records collected in this vicinity since 1904 are contained in files of East Maui Irrigation Co.

Gage.--Water-stage recorder. Jan. 1, 1910, to Dec. 31, 1912, staff gage at same site and datum.

Average discharge.--33 years (1918-51), 66.7 mgd (103 cfs).

Extremes.--1910-12, 1917-51: Maximum daily discharge, 172 mgd (266 cfs) Apr. 19, 1935; no flow at times.

Remarks.--Records excellent below 100 mgd, 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	55	77	30	22	*31	87	86	34	134	133	30	20.5
2	43	83	28	23.5	28	117	96	34	135	130	28	19.2
3	*38	60	25	20.5	26.5	98	69	34	133	86	37.5	22
4	36	66	23.5	20.5	72	133	60	30	127	71	28	19.2
5	62	47	26.5	67	42	111	56	37	135	67	26.5	19.2
6	59	102	26.5	75	28	136	65	34	131	62	28	19.2
7	40	107	35	40	30	136	49	28	113	93	26.5	23.5
8	40	58	102	79	28	132	74	26.5	91	58	30	19.2
9	48	51	131	121	53	84	65	26.5	77	47	26.5	22
10	130	45	129	57	91	102	55	25	65	54	47	99
11	127	54	123	40	116	116	62	25	60	76	28	60
12	69	49	76	32	117	136	95	50	56	74	25	135
13	67	67	60	28	98	132	60	131	66	63	25	95
14	49	130	72	25	54	84	123	129	128	45	23.5	56
15	43	131	45	41	86	73	130	134	99	40	22	40
16	44	88	40	34	133	91	129	131	99	40	22	36
17	62	65	36	25	98	69	127	131	114	38	73	36
18	38	56	34	23.5	58	58	92	122	99	47	82	32
19	122	45	31.5	23.5	64	54	69	124	133	34	36	28
20	124	53	28	22	72	49	60	132	104	34	40	25
21	120	40	28	22	49	47	54	135	77	34	38	25
22	115	36	26.5	25	38	45	81	122	114	32	26.5	23.5
23	124	34	25	33	34	43	83	72	73	49	25	25
24	132	32	23.5	122	30	40	87	63	60	53	23.5	80
25	130	32	23.5	102	127	87	65	71	65	58	23.5	37.5
26	102	30	23.5	107	106	85	60	74	54	38	23.5	28
27	102	32	23.5	69	92	129	56	126	47	32	23.5	25
28	99	28	22	38	117	120	45	121	43	34	22	25
29	104	26.5	22	33.5	89	120	40	-	40	69	22	23.5
30	109	46	23.5	82	66	128	38	-	38	34	22	26.5
31	77	28	-	42	-	118	36	-	82	-	20.5	-
Total	2,510	1,798.5	1,343.0	1,495.0	2,073.5	2,960	2,267	2,202.0	2,792	1,725	954.5	1,145.0
Mean:												
mgd	81.0	58.0	44.8	48.2	69.1	95.5	73.1	78.6	90.1	57.5	30.8	38.2
cfs	125	89.7	69.3	74.6	107	148	113	122	139	89.0	47.7	59.1
Ac-ft	7,700	5,520	4,120	4,590	6,360	9,080	6,960	6,760	8,570	5,290	2,930	3,510

Calendar year 1950: Max 136 Min 20.5 Mean(mgd) 70.7 Mean(cfs) 109 Ac-ft 79,170
Fiscal year 1950-51: Max 136 Min 19.2 Mean(mgd) 63.7 Mean(cfs) 98.6 Ac-ft 71,390

* Discharge measurement made on this day.

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 1951. 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.--35 years (1916-51), 10.1 mgd (15.6 cfs).

Extremes.--Maximum discharge during year, 192 mgd (297 cfs) Nov. 25 (gage height, 4.17 ft), from rating curve extended above 40 mgd by logarithmic plotting; minimum not determined.

1913-51: 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) several days during January, February, May, and June 1945.

Remarks.--Records good except those for periods of no gage-height record and indefinite stage-discharge relation, and those above 6 mgd, which are fair. Haipuaena diversion ditch diverts water above station. Water used for irrigation in central Maui.

Rating tables, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used May 1-12, 17-22. June 5, 6, 10-19, 24-27)

July 1 to Feb. 7				Feb. 8 to June 30			
-0.2	0.10	1.2	7.9	1.3	0.04	1.9	3.8
-.1	.20	1.6	13.5	1.4	.21	2.1	7.2
0.0	.30	2.0	22	1.5	.58	2.3	12.0
.1	.50	2.4	37	1.6	1.03	2.6	23.5
.2	.79	2.7	59	1.7	1.73	3.0	46
.4	1.50	3.0	95	1.8	2.6	3.5	94
.8	4.0	3.5	195				

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.35	2.6	1.12	0.19	0.62	4.9	2.8	a0.33	12.3	16.0	0.30	0.14
2	1.98	4.3	1.31	.28	.36	9.9	6.6	a.31	6.0	8.2	.26	.14
3	.82	2.45	.28	.18	.28	6.2	2.8	a.30	4.2	2.5	.64	.13
4	.70	2.2	.21	.18	2.5	9.7	1.60	a.27	2.25	1.85	.30	.13
5	2.55	1.20	.21	5.1	.77	8.3	1.34	a1.3	6.2	2.85	.21	2.2
6	2.45	4.8	.26	4.4	.29	66	1.70	a.50	5.3	3.0	.21	1.10
7	1.02	6.6	.22	1.05	.23	37	1.04	a.24	1.97	3.55	1.28	.30
8	.94	2.05	7.5	4.0	.22	13.0	2.35	*.21	1.36	1.73	.52	.20
9	2.2	1.39	26	7.7	*1.35	4.2	2.75	.21	1.03	1.72	.23	.21
10	41	1.12	13.0	.80	6.0	29.5	1.49	.21	.83	1.71	1.05	9.8
11	12.0	1.61	8.6	1.16	8.8	20	1.81	.18	.66	1.52	.33	2.4
12	2.6	1.51	2.45	.94	6.0	34	1.74	4.1	.54	1.16	.22	20.5
13	2.15	5.7	1.81	.24	2.15	17.5	.95	32.5	1.04	1.37	.20	5.9
14	1.31	147	3.05	.20	.95	5.0	73	16.3	21.5	.66	.18	2.0
15	.96	21.5	1.09	1.56	1.64	3.0	71	20	*1.58	.38	.17	1.03
16	1.35	2.9	.86	.82	4.4	3.0	56	21.5	4.7	.60	.17	.62
17	2.6	5.3	.76	.24	4.8	1.98	4.6	14.4	4.2	.90	4.5	.63
18	.96	3.35	.46	.20	1.12	1.35	2.7	57	29.5	2.6	5.0	.47
19	8.1	1.15	.36	.19	3.45	1.02	1.70	32.5	9.9	.50	.88	.54
20	46	1.65	.28	.18	5.9	.79	1.27	10.3	2.9	.58	1.09	.40
21	12.3	.94	.25	.19	2.55	.62	1.02	8.9	1.81	.34	1.19	.30
22	7.9	.64	.23	.26	.84	.46	2.65	14.1	9.9	.50	.31	.25
23	9.5	.48	.20	.68	.50	.36	4.5	3.9	1.99	1.86	.25	.28
24	13.5	.42	.20	13.7	.34	.28	2.85	2.15	1.80	1.78	.22	10.9
25	9.9	.38	.19	4.5	176	7.9	1.48	1.73	3.5	1.79	.20	1.86
26	4.0	.30	.19	6.4	159	14.3	1.13	2.45	1.36	.66	.21	.46
27	3.85	.62	.19	2.5	9.5	37.5	1.07	3.85	1.09	.46	.22	.34
28	5.2	.35	.18	.82	4.6	26.5	.67	6.1	.78	.50	.19	.28
29	5.2	.25	.19	.86	2.55	104	.48	-	.58	.96	.17	.25
30	6.1	.84	.21	5.0	1.84	14.7	.38	-	.56	.27	.16	.22
31	2.7	.27	-	1.52	-	5.5	a.36	-	4.7	-	.15	-
Total	214.19	225.87	71.86	66.04	409.55	488.46	255.83	255.84	146.03	62.50	21.01	63.98
Mean:												
mgd	6.91	7.29	2.40	2.13	13.7	15.8	8.25	9.14	4.71	2.08	0.678	2.13
cfs	10.7	11.3	3.71	3.30	21.2	24.4	12.8	14.1	7.29	3.22	1.05	3.30
Ac-ft	657	693	221	203	1,260	1,500	785	785	448	192	64	196

Calendar year 1950: Max 265 Min 0.13 Mean(mgd) 11.5 Mean(cfs) 17.8 Ac-ft 12,920
Fiscal year 1950-51: Max 176 Min 0.13 Mean(mgd) 6.25 Mean(cfs) 9.67 Ac-ft 7,000

Peak discharge (base, 750 mgd).--No peak above base.
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for stations on nearby streams.
Note.--Stage-discharge relation indefinite May 1 to June 30; discharge estimated on basis of records for stations on nearby streams.

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 1951.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,300 ft (from topographic map).

Average discharge.--5 years (1946-51), 0.443 mgd (0.685 cfs).

Extremes.--1945-51: 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, 1949-51.

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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.51	0.23	0.46	0.03	0.18	1.07	0.74	0.09	0.82	1.09	0.11	0.09
2	.67	.53	.55	.21	.12	1.06	.48	.08	.48	.86	.09	.15
3	.32	.57	.22	.09	.09	.99	.40	.08	.30	.55	.19	.10
4	.32	.28	.13	.06	.11	1.04	.28	.07	.21	.77	*.22	.11
5	.37	.19	.11	.79	.11	.66	.25	.07	.57	1.14	.12	.52
6	.51	.29	.13	1.12	.09	1.50	.37	.08	.64	.84	.35	.58
7	.27	.71	.18	.64	.07	1.28	.25	.06	.28	.76	.65	.28
8	.21	.30	.84	1.14	.06	1.20	.60	.05	.19	.57	.35	.19
9	.29	.23	1.05	1.16	.05	.72	.90	.04	.15	.83	.17	.17
10	1.79	.23	1.0	.58	.14	1.18	.56	.03	.11	.75	.12	1.07
11	1.10	.67	.98	.73	.38	1.26	.45	.02	.09	.50	.14	.59
12	.54	.65	.67	.62	.35	1.60	.34	.79	.09	.48	.17	1.14
13	.38	.56	.39	.34	.16	1.27	.28	1.03	.37	.47	.10	.98
14	.28	1.29	.43	.21	.10	.80	.41	.90	1.11	.28	.09	.60
15	.21	.90	.32	.26	.39	.48	.22	1.56	.42	.23	.08	.30
16	.19	.74	.31	.23	.78	.64	.18	1.57	.70	.30	.11	.22
17	.37	.88	.27	.15	.77	.42	.14	1.00	.75	.35	.54	.19
18	.23	.91	.17	.11	.34	.30	.32	.95	.65	.42	.79	.15
19	.84	.46	.14	.09	.56	.22	.35	1.18	.65	.26	.28	.11
20	1.47	.35	.10	.08	1.03	.17	.27	1.22	.44	.25	.22	.09
21	.99	.30	.09	.06	.66	.14	.22	1.31	.30	.19	.19	.08
22	1.14	.22	.09	.05	.30	.10	.89	1.05	1.1	.23	.18	.06
23	1.14	.16	.07	.11	.21	.09	1.06	.70	.47	.27	.14	.10
24	1.37	.14	.06	1.15	.16	.09	.84	.42	.30	.33	.15	.93
25	1.08	.12	.05	.94	.74	.94	.46	.32	.73	.25	.38	.52
26	.53	.10	.04	1.04	.48	1.16	.34	.25	.40	.19	.40	.30
27	.40	.09	.04	.56	.77	.79	.28	.28	.34	.16	.32	.22
28	.50	.09	.03	.28	.87	.59	.19	.27	.22	.14	.21	.14
29	.54	.07	.02	.21	.52	.31	.16	-	.19	.16	.14	.10
30	.49	.10	.02	.52	.54	.78	.12	-	.25	.15	.10	.09
31	.34	.13	-	*.34	-	1.06	.10	-	.86	-	.09	-
Total	19.39	12.49	8.96	13.90	11.13	23.91	12.45	15.47	14.18	13.77	7.19	10.17
Mean:												
mgd	0.625	0.403	0.299	0.448	0.371	0.771	0.402	0.552	0.457	0.459	0.232	0.339
cfs	0.967	0.624	0.463	0.693	0.574	1.19	0.622	0.854	0.707	0.710	0.359	0.525
Ac-ft	60	38	27	43	34	73	38	47	44	42	22	31

Calendar year 1950: Max 1.79 Min 0.02 Mean(mgd) 0.513 Mean(cfs) 0.794 Ac-ft 574
Fiscal year 1950-51: Max 1.79 Min 0.02 Mean(mgd) 0.447 Mean(cfs) 0.692 Ac-ft 499

* Discharge measurement made on this day.
Note.--No gage-height record Aug. 28 to Sept. 18 and Mar. 20-22; discharge estimated on basis of recorded range in stage, nearby stations, and records for Maui Board of Water Supply station.

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 1951.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,800 ft (from topographic map).

Average discharge.--13 years, 2.01 mgd (3.11 cfs).

Extremes.--1938-51: Maximum daily discharge, 11.4 mgd (17.6 cfs) Aug. 14, 1950; minimum daily, 0.19 mgd (0.29 cfs) Jan. 30, 31, 1947.

Remarks.--Records good. Ditch diverts water from Haipuaena Stream for East Maui Irrigation Co.'s hydroelectric plant about 1 mile downstream.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.15	2.8	2.55	1.19	1.90	2.85	2.6	1.69	3.75	4.3	1.62	0.90
2	2.05	3.25	2.2	1.62	1.83	3.5	3.25	1.76	2.85	3.3	1.56	.85
3	1.69	2.8	1.90	1.13	1.76	3.0	2.55	1.76	2.6	2.3	1.83	.96
4	1.56	2.7	1.62	1.07	2.3	3.55	2.3	1.62	2.3	2.25	1.56	.85
5	2.2	2.4	1.90	2.75	1.90	3.25	2.3	1.76	2.9	2.4	1.42	1.60
6	2.1	3.3	1.96	2.75	1.69	6.8	2.3	1.62	2.8	2.3	1.55	1.76
7	1.69	3.75	2.25	2.05	1.56	5.9	2.2	1.42	2.3	2.55	2.05	1.49
8	1.62	2.7	5.3	2.7	1.42	4.0	2.6	1.31	2.1	2.25	1.69	1.07
9	2.1	2.5	6.0	3.15	1.78	2.85	2.5	1.19	2.05	2.2	1.49	1.10
10	6.9	2.3	4.7	1.96	2.85	4.9	2.3	1.13	1.96	2.1	1.90	3.45
11	3.9	2.5	3.9	2.05	3.25	4.3	2.3	1.07	1.90	2.1	1.56	2.35
12	*2.25	2.5	2.8	1.96	2.8	6.1	2.25	2.2	1.83	2.1	1.31	4.6
13	2.05	3.25	3.05	1.69	2.25	*4.4	2.2	6.5	1.96	2.05	1.25	2.85
14	1.76	11.4	2.8	1.49	1.96	3.0	7.6	4.5	4.9	1.90	1.19	2.25
15	1.62	6.0	2.5	2.15	2.2	2.6	6.6	5.0	2.1	1.76	1.13	1.96
16	1.76	3.1	2.4	1.96	2.65	2.6	5.0	5.2	2.65	1.96	1.07	1.90
17	2.05	3.6	2.25	1.62	2.7	2.4	2.85	4.1	2.7	2.05	2.55	1.90
18	1.69	3.0	2.1	1.42	2.05	2.3	2.5	6.6	4.5	2.4	2.6	1.83
19	3.25	2.4	2.05	1.42	2.45	2.2	2.3	5.6	3.3	1.90	1.90	1.90
20	7.0	2.55	1.90	1.31	2.9	2.1	2.25	3.6	2.4	1.90	1.96	*1.69
21	4.4	2.4	1.83	1.31	2.3	2.05	2.2	3.4	2.25	1.90	1.96	1.56
22	3.9	2.2	1.69	1.31	1.96	1.96	2.6	4.1	3.5	1.83	1.62	1.36
23	4.0	2.05	1.56	1.77	1.90	1.96	3.0	2.6	2.25	2.25	1.42	1.49
24	5.0	2.05	1.36	4.0	1.83	1.96	2.5	2.3	2.25	2.25	1.42	3.5
25	4.3	1.96	*1.36	2.8	9.0	3.5	2.25	2.25	2.6	2.25	1.25	2.1
26	3.25	1.90	1.31	3.0	8.8	4.1	2.2	2.3	2.1	1.90	1.25	1.76
27	3.15	2.2	1.31	2.4	3.4	5.8	2.1	2.55	2.05	1.83	1.31	1.56
28	3.55	1.90	1.13	2.05	2.8	5.3	1.96	2.8	1.90	1.90	1.13	1.49
29	3.4	1.90	1.13	1.96	2.4	8.9	1.90	-	1.83	1.96	1.13	1.36
30	3.6	2.05	1.25	2.8	2.4	3.75	1.83	-	1.90	1.76	1.07	1.31
31	2.85	2.05	-	2.2	-	3.15	1.76	-	2.8	-	.96	-
Total	92.79	91.46	70.06	63.04	80.99	115.03	85.05	81.93	79.28	65.90	47.71	54.75
Mean:												
mgd	2.99	2.95	2.34	2.03	2.70	3.71	2.74	2.93	2.56	2.20	1.54	1.82
cfs	4.63	4.56	3.62	3.14	4.18	5.74	4.24	4.53	3.96	3.40	2.38	2.82
Ac-ft	285	281	215	193	249	353	261	251	243	202	146	168

Calendar year 1950: Max 11.4 Min 0.85 Mean(mgd) 2.95 Mean(cfs) 4.56 Ac-ft 3,310
Fiscal year 1950-51: Max 11.4 Min 0.85 Mean(mgd) 2.54 Mean(cfs) 3.93 Ac-ft 2,850

* Discharge measurement made on this day.

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 1951 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, at same site at different datum. Feb. 20, 1930, to Oct. 25, 1935, at site 100 ft upstream at different datum.

Average discharge.--28 years (1922-29, 1930-51), 13.3 mgd (20.6 cfs).

Extremes.--1922-51: Maximum daily discharge, 77 mgd (119 cfs) Nov. 5, 1946; no flow at times.

Remarks.--Records good. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.3	11.5	6.9	0.18	3.55	14.7	8.9	0.92	20.5	20	0.65	0.16
2	8.9	12.3	5.9	2.1	2.0	22	13.3	.80	11.8	10.8	.26	.15
3	5.1	10.4	1.60	.22	1.40	15.2	8.7	.74	9.3	2.9	2.25	.16
4	4.7	11.4	.80	.15	10.7	19.1	6.4	.68	5.7	2.3	.65	.15
5	10.0	7.1	.98	11.0	4.0	18.6	5.7	.62	11.0	3.25	.26	4.9
6	9.2	17.2	1.78	12.0	1.60	46	6.4	.56	10.2	3.8	.91	3.4
7	5.9	19.7	2.1	5.8	1.04	36.5	4.7	.41	5.5	4.8	3.7	1.79
8	6.2	10.3	19.7	10.7	.74	19.6	6.9	.23	4.5	1.70	2.05	.19
9	7.3	7.8	37	16.2	4.4	8.8	7.8	.16	3.7	1.50	.46	.22
10	43	6.6	28.5	4.8	16.5	22.5	5.7	.16	3.2	1.81	4.3	20
11	23	9.1	22	4.5	21	21.5	6.4	.15	2.4	1.52	.80	8.7
12	10.3	8.5	10.1	4.4	16.7	37	6.4	7.1	1.90	1.12	.26	32
13	11.2	15.1	8.7	1.40	8.8	22.5	4.7	46	3.4	1.38	.16	14.9
14	7.3	60	11.3	.80	5.1	7.6	37	28.5	28	.50	.16	7.5
15	5.9	29	5.7	6.2	8.4	4.9	31.5	34.5	4.0	.33	.16	4.3
16	7.9	12.2	4.5	4.7	13.0	4.7	37.5	36	8.3	.52	.16	2.9
17	12.8	14.9	3.2	1.21	12.9	3.05	9.0	28.5	8.1	.87	7.4	2.9
18	5.8	13.2	2.1	.43	6.5	2.0	5.9	41	19.0	4.8	9.8	2.6
19	21.5	5.7	1.60	.43	10.7	1.60	4.3	36.5	14.6	1.49	3.25	3.0
20	42	8.0	1.20	.23	15.1	1.30	3.55	17.7	3.9	2.0	5.0	1.57
21	21	4.9	1.20	.26	8.8	2.1	3.05	14.8	2.0	1.14	4.8	.50
22	14.5	3.55	1.04	1.25	4.5	2.25	5.7	20.5	13.5	1.31	1.13	.23
23	18.2	2.6	.68	4.2	3.05	1.80	8.5	8.4	2.25	4.5	.42	.97
24	26.5	2.0	.40	26	1.94	1.40	6.1	5.7	1.90	5.4	.30	19.1
25	22	2.0	.33	14.5	50	17.9	3.9	5.1	4.4	5.7	.19	5.6
26	13.2	1.60	.23	17.0	54	*19.9	3.2	6.6	1.40	2.75	.26	2.2
27	13.8	4.2	.30	10.0	21.5	35.5	3.55	9.1	.92	1.75	.59	.92
28	15.8	1.73	.14	4.3	14.9	33.5	2.9	11.4	.50	2.05	.19	.47
29	17.2	1.61	.15	4.5	10.1	52	2.0	-	.40	4.1	.19	.26
30	17.3	6.0	.58	15.1	7.9	23.5	1.70	-	.36	1.41	.16	.40
31	11.6	2.0	-	6.8	-	13.3	1.10	-	5.1	-	.16	-
Total	447.4	322.19	180.71	191.36	340.82	532.30	262.45	382.83	211.73	97.50	51.03	142.14
Mean:												
mgd	14.4	10.4	6.02	6.17	11.4	17.2	8.47	13.0	6.83	3.25	1.65	4.74
cfs	22.3	16.1	9.31	9.55	17.6	26.6	13.1	20.1	10.6	5.03	2.55	7.33
Ac-ft	1,370	989	555	587	1,050	1,630	805	1,110	650	299	157	436

Calendar year 1950: Max 60 Min 0.08 Mean(mgd) 11.9 Mean(cfs) 18.4 Ac-ft 13,330
Fiscal year 1950-51: Max 60 Min 0.14 Mean(mgd) 8.61 Mean(cfs) 13.3 Ac-ft 9,640

* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder and Parshall flume. Prior to Mar. 21, 1933, at same site at datum 1.94 ft lower. Mar. 21, 1933, to Mar. 20, 1935, at same site at datum 0.25 ft lower than present datum.

Average discharge.--19 years, 79.7 mgd (123 cfs).

Extremes.--1932-51: 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 except those for period of no gage-height record, which are fair. Flow regulated by floodgates. Water used for domestic supply and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	62	81	37	25	35.5	86	92	37	183	167	34	24
2	48	106	35.5	28	32.5	111	110	37	162	155	32.5	22
3	41	67	31	23.5	31	100	80	37	155	85	42	25
4	39	71	29.5	23.5	76	134	67	34	137	80	32.5	22
5	71	55	32.5	83	47	106	63	42	162	81	31	22
6	69	119	32.5	84	32.5	137	72	39	149	72	34	22
7	44	126	42	46	32.5	134	55	32.5	119	109	32.5	27
8	44	63	123	89	31	136	81	31	94	67	34	22
9	55	55	164	143	60	85	76	29.5	80	55	30	25
10	181	52	165	61	110	101	59	28	67	63	54	130
11	150	61	150	46	139	119	67	28	63	84	32.5	70
12	76	55	81	37	135	123	100	60	59	81	29.5	170
13	72	82	67	32.5	100	135	63	178	74	68	28	130
14	55	176	82	28	59	94	171	163	176	50	26.5	66
15	48	163	48	48	89	85	177	171	103	46	25	47
16	52	96	44	37	149	106	183	176	115	48	25	41
17	67	72	39	28	106	80	143	169	125	46	87	41
18	44	67	37	26.5	59	67	99	180	109	62	99	37
19	156	52	34	28	73	59	76	176	137	39	41	*33
20	166	60	32.5	25	81	59	67	169	103	39	46	29.5
21	148	46	32.5	25	55	52	59	162	85	39	44	28
22	135	42	30.5	29.5	42	48	86	162	142	37	31	26.5
23	156	39	29.5	35.5	37	46	96	84	80	56	28	28
24	174	39	28	150	34	44	101	70	72	59	26.5	109
25	162	37	28	106	166	101	73	76	76	63	26.5	42
26	108	35.5	26.5	118	124	95	68	84	63	42	25	31
27	108	39	26.5	72	91	169	59	137	55	37	26.5	28
28	111	34	25	42	121	148	50	149	50	39	23.5	28
29	117	32.5	25	37	91	170	46	-	48	73	25	28
30	128	52	26.5	93	67	171	42	-	46	39	25	30
31	80	34	-	46	-	142	41	-	102	-	24	-
Total	2,965	2,109.0	1,584.5	1,690.0	2,306.0	3,243	2,622	2,741.0	3,191	1,981	1,101.0	1,384.0
Mean:												
mgd	95.6	68.0	52.8	54.7	76.9	105	84.6	97.9	103	66.0	35.5	46.1
cfs	148	105	81.7	84.6	119	162	131	151	159	102	54.9	71.3
Ac-ft	9,100	6,470	4,860	5,200	7,080	9,950	8,050	8,410	9,790	6,080	3,380	4,250

Calendar year 1950: Max 190 Min 23.5 Mean(mgd) 84.1 Mean(cfs) 130 Ac-ft 94,160
Fiscal year 1950-51: Max 183 Min 22 Mean(mgd) 73.8 Mean(cfs) 114 Ac-ft 82,620

* Discharge measurement made on this day.

Note.--No gage-height record May 31 to June 19; discharge estimated on basis of records for nearby ditches.

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 1951. 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.--34 years (1917-51), 21.3 mgd (33.0 cfs).

Extremes.--Maximum discharge during year, 760 mgd (1,180 cfs) Feb. 18 (gage height, 5.28 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum, 1.38 mgd (2.14 cfs) June 2-4.
1913-51: 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 except those for periods of no gage-height record and those above 400 mgd, which are fair. Kula pipeline diverts small amount of water above station, at altitude 4,300 ft, for domestic supply.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.6	1.20	1.2	15.5
.7	2.15	1.5	36
.8	3.45	2.0	86
.9	5.8	2.5	165
1.0	8.8	3.0	252

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.5	10.9	7.0	2.05	3.6	20.5	13.0	3.3	37	35	2.85	1.65
2	8.7	13.4	8.5	2.5	3.0	31.5	19.0	3.45	17.9	18	2.6	1.56
3	5.2	9.7	5.5	1.95	2.7	20.5	12.1	3.3	13.1	8.0	3.8	1.65
4	3.6	10.2	3.5	1.95	7.7	28	8.4	3.0	8.8	6.4	2.7	1.65
5	9.4	8.0	3.3	13.0	3.8	26.5	7.6	4.7	17.8	7.5	2.6	2.85
6	10.3	17	3.45	12.7	2.7	132	8.8	3.6	16.9	12	2.6	3.75
7	5.5	22	3.15	5.2	2.35	86	6.6	2.7	8.2	8.6	4.4	2.5
8	5.2	10	21	13.2	2.25	40	10.2	2.6	6.0	6.4	3.3	1.65
9	10.6	8.2	59	19.9	*4.9	17.2	12.4	2.35	5.2	7.0	2.5	1.85
10	99	6.8	34.5	4.4	17.4	69	8.4	2.25	4.7	10	5.1	29
11	35	6.6	25	3.7	22.5	50	10.0	2.15	4.0	5.6	2.7	8.8
12	10.9	8.0	9.9	4.5	15.6	81	9.5	12.7	3.8	5.3	2.35	56
13	9.4	23	8.2	2.6	7.1	51	6.6	82	5.1	6.8	2.15	17.7
14	7.0	200	11.2	2.25	4.4	19.2	108	42	49	4.5	1.95	7.0
15	5.8	40	5.8	5.5	5.9	14.0	107	55	*7.0	3.8	1.95	4.4
16	7.7	16	5.0	4.0	11.0	13.3	139	56	13.7	4.3	1.95	3.45
17	10.9	21	4.2	2.5	11.7	10.9	18.6	45	11.6	5.0	14.4	3.45
18	5.8	18	3.8	2.15	5.2	8.8	12.5	158	72	8.6	14.6	3.3
19	26.5	8.0	3.45	2.05	12.1	7.6	9.7	93	26.5	4.7	4.0	3.3
20	103	7.6	3.15	1.75	15.4	6.6	7.6	32.5	9.5	3.8	4.9	2.7
21	32	6.3	3.0	1.85	8.6	6.4	6.6	25.5	6.6	3.2	5.1	2.35
22	24	5.5	2.7	2.15	4.4	5.8	10.7	33	27.5	4.2	2.85	2.15
23	30.5	4.7	2.5	3.55	3.8	5.2	20	13.0	7.6	7.4	2.5	2.25
24	40	4.5	2.35	33.5	3.3	4.4	13.0	9.4	7.2	8.2	2.35	25.5
25	31.5	4.3	2.35	13.4	225	30	7.8	7.8	14.1	6.4	2.15	6.3
26	14.8	4.2	2.25	18.7	235	30.5	6.6	10.1	6.4	4.6	2.15	3.0
27	14.4	5.0	2.25	9.0	32.5	86	6.4	12.7	5.0	3.8	2.25	2.5
28	18.1	4.3	2.15	4.0	17.7	62	5.0	20	4.2	3.45	1.95	2.35
29	18.3	4.0	2.05	4.7	12.1	156	4.2	-	3.9	4.7	1.95	2.15
30	20.5	6.2	2.35	14.4	11.1	45	3.8	-	3.7	*3.15	1.85	2.15
31	11.2	4.0	-	6.1	-	20	3.45	-	10	-	1.75	-
Total	644.3	517.4	252.55	219.20	714.80	1,184.9	622.55	741.10	434.0	220.40	110.25	208.91
Mean:												
mgd	20.8	16.7	8.42	7.07	23.8	38.2	20.1	26.5	14.0	7.35	3.56	6.96
cfs	32.2	25.8	13.0	10.9	36.8	59.1	31.1	41.0	21.7	11.4	5.51	10.8
Ac-ft	1,980	1,590	775	673	2,190	3,640	1,910	2,270	1,330	676	338	641

Calendar year 1950: Max 303 Min 1.51 Mean(mgd) 24.6 Mean(cfs) 38.1 Ac-ft 27,520
Fiscal year 1950-51: Max 235 Min 1.56 Mean(mgd) 16.1 Mean(cfs) 24.9 Ac-ft 18,010

Peak discharge (base, 750 mgd).--Feb. 18 (7 p.m.) 760 mgd (1,180 cfs), 5.28 ft.
* Discharge measurement made on this day.
Note.--No gage-height record Aug. 5 to Sept. 4 and Mar. 29 to Apr. 27; discharge estimated on basis of records for stations on nearby streams.

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 1951.

Gage.--Water-stage recorder and sharp-crested weir.

Average discharge.--32 years (1918-24, 1925-51), 5.87 mgd (9.08 cfs).

Extremes.--1917-51: 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.97	2.25	0.86	0.39	0.68	15.7	3.55	1.00	20.5	1.57	0.68	0.25
2	.77	4.6	.81	.45	.62	32	5.7	.93	8.1	1.09	.65	.25
3	.45	1.61	.45	.45	.56	24	3.3	1.00	7.2	.68	1.01	.28
4	.45	2.4	.45	.45	2.65	29.5	2.15	.85	4.0	1.10	.74	.22
5	1.67	1.23	.45	1.98	.93	29	1.80	2.25	11.8	1.23	.56	.94
6	.96	3.6	.45	2.35	.51	64	2.1	1.08	6.5	.79	.63	1.66
7	.51	4.2	.44	.78	.45	50	1.38	.74	3.55	.79	1.21	1.13
8	.45	1.61	3.8	1.88	.39	40	2.15	.65	2.65	.62	.79	.45
9	1.00	1.38	18.0	5.8	1.66	21	1.99	.51	2.25	.68	.62	.40
10	26.5	1.08	10.5	.85	6.5	36	1.53	.45	1.89	.85	.93	7.8
11	6.0	1.50	13.8	.81	10.4	39.5	1.63	.39	1.70	1.00	.68	3.5
12	.85	1.38	2.6	.73	9.0	46	2.55	1.34	1.53	1.07	.51	16.1
13	1.41	4.7	2.45	.39	3.5	43	1.53	15.5	2.65	1.00	.34	6.5
14	.68	63	3.1	.39	1.61	15.1	33	5.4	14.5	.62	.28	3.1
15	.56	16.2	1.31	1.14	*2.7	2.3	25	6.4	2.15	.56	.25	2.15
16	.71	2.9	1.08	.72	4.0	1.99	26	8.3	5.9	.56	.25	1.61
17	1.70	2.25	.93	.39	3.55	1.61	3.0	10.0	3.2	.68	.56	1.53
18	.68	2.35	.79	.34	1.89	1.31	2.15	30	17.2	1.15	.93	1.59
19	6.8	1.31	.74	.34	2.75	1.23	1.53	39.5	26.5	.85	.62	1.79
20	41	1.65	.74	.34	3.8	1.08	1.31	15.2	16.3	.85	.62	1.15
21	9.0	1.08	.68	.28	2.6	1.23	1.15	6.7	8.0	.79	.68	.85
22	5.5	.93	.62	.45	1.23	1.15	1.92	10.4	8.5	.79	.56	.62
23	8.3	.79	.56	1.08	1.00	1.08	3.45	3.45	2.45	1.10	.51	.90
24	10.1	.74	.56	3.85	.93	1.00	2.15	2.45	2.15	1.15	.45	9.0
25	*6.8	.68	.51	3.45	47	4.5	1.70	2.15	2.9	1.31	.34	2.8
26	3.45	.62	.51	3.6	63	6.8	1.72	3.9	1.61	.79	.39	1.46
27	3.65	.74	.45	2.45	33	22	1.89	6.0	1.31	.74	.45	1.00
28	2.9	.62	.45	.74	21	20	1.61	7.7	.79	.74	.39	.85
29	3.55	.66	.45	1.21	9.7	51	1.31	-	.68	1.35	.39	.74
30	5.8	1.68	.51	5.2	7.9	11.4	1.23	-	.74	.79	.28	.68
31	1.70	.62	-	1.68	-	6.1	1.08	-	1.00	-	.28	-
Total	154.87	130.36	69.05	44.96	245.53	620.58	142.56	184.24	190.20	27.29	17.58	71.30
Means:												
mgd	5.00	4.21	2.30	1.45	8.18	20.0	4.60	6.58	6.14	0.910	0.567	2.38
cfs	7.74	6.51	3.56	2.24	12.7	30.9	7.12	10.2	9.50	1.41	0.877	3.68
Ac-ft	475	400	212	138	754	1,900	438	565	584	84	54	219

Calendar year 1950: Max 68 Min 0.28 Mean(mgd) 7.46 Mean(cfs) 11.5 Ac-ft 8,350
Fiscal year 1950-51: Max 64 Min 0.22 Mean(mgd) 5.20 Mean(cfs) 8.05 Ac-ft 5,820

* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder. Datum of gage is 1,293.59 ft above mean sea level.

Average discharge.--29 years, 16.5 mgd (25.5 cfs).

Extremes.--Maximum discharge during year, 1,000 mgd (1,550 cfs) Aug. 14 (gage height, 6.04 ft), from rating curve extended as explained below; minimum, 0.51 mgd (0.79 cfs) June 3.
1922-51: 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 study; minimum, 0.16 mgd (0.25 cfs) Feb. 11, 1945.

Remarks.--Records good. Haleakala ranch and Kula pipelines 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.48	2.1	27
.9	1.00	2.5	52
1.1	1.70	3.0	102
1.3	3.2	3.5	175
1.5	6.3	4.0	274
1.8	14.4	4.7	462

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.3	5.8	3.05	0.70	3.05	22	10.3	2.65	21	44	1.80	1.09
2	6.8	6.8	4.3	1.06	2.45	23.5	8.8	2.65	11.7	21.5	1.46	.70
3	4.1	5.1	2.45	1.11	2.1	17.8	6.6	2.85	8.5	7.2	1.95	.58
4	3.6	5.4	2.05	.84	3.4	33	4.5	2.45	5.8	5.4	1.71	.84
5	4.9	3.7	1.97	11.2	3.05	16.2	4.1	3.35	9.4	6.3	1.43	.70
6	6.7	7.8	1.83	11.6	2.2	95	5.1	2.9	11.7	10.1	1.25	3.7
7	4.0	12.8	1.62	5.3	1.25	71	3.85	1.50	5.8	7.8	3.3	2.5
8	3.7	5.1	14.5	10.8	1.06	33	6.4	1.25	4.5	5.4	3.2	1.70
9	5.2	4.1	53	15.7	1.67	11.8	9.1	1.08	3.85	6.0	2.3	1.54
10	91	3.3	31.5	4.2	9.5	46	5.8	.95	3.85	8.2	3.05	22.5
11	29.5	3.2	17.2	3.6	13.8	48	6.6	.87	3.2	4.9	2.25	5.4
12	7.8	4.0	8.0	4.4	10.3	61	5.1	10.9	2.95	4.6	1.95	44
13	5.8	10.3	4.9	2.4	4.8	38	3.85	97	3.55	5.9	1.75	13.2
14	4.5	448	6.0	1.95	3.3	13.7	115	48	86	3.7	1.58	5.8
15	4.0	93	3.7	3.85	3.75	8.1	120	58	7.7	3.2	.87	4.0
16	4.5	9.5	3.3	3.5	8.7	7.9	150	60	*7.9	3.65	.81	3.2
17	6.9	12.5	2.85	2.2	*10.3	6.1	13.4	34.5	10.4	4.6	8.8	3.05
18	4.1	11.0	2.55	1.78	4.1	4.5	7.3	132	29	7.2	13.4	2.75
19	16.2	4.6	2.4	1.06	9.1	4.0	5.6	83	16.3	3.7	4.2	1.80
20	86	4.5	2.3	.87	12.8	3.45	5.1	26	6.6	3.25	3.7	1.46
21	32.5	3.7	1.43	.81	8.2	3.05	4.5	33	4.7	2.95	4.0	1.12
22	17.7	3.05	1.40	.97	3.7	2.75	10.4	57	22	3.45	2.55	.92
23	26	2.65	1.12	1.37	2.95	2.45	19.1	11.6	5.9	6.4	2.05	.90
24	33	2.55	1.66	28	2.5	2.3	13.2	6.5	5.1	6.8	1.16	14.7
25	24.5	2.4	1.80	12.4	251	18.7	6.4	5.2	14.6	5.8	.95	*5.8
26	9.4	2.25	1.66	17.4	223	31	5.2	6.2	5.3	4.1	.98	2.95
27	7.9	2.75	.92	7.4	25.5	82	5.1	7.4	4.3	3.3	1.09	2.3
28	9.9	2.3	.81	3.6	12.7	56	4.3	9.9	3.6	2.55	1.66	1.22
29	11.5	1.61	.71	3.45	7.0	234	3.7	-	3.05	3.1	.98	1.00
30	10.9	2.7	.90	9.3	5.8	47	3.3	-	3.05	2.2	.81	1.45
31	6.3	1.75	-	4.9	-	15.4	3.05	-	11.0	-	.95	-
Total	495.2	688.21	181.88	177.72	653.03	1,058.70	574.75	708.68	342.30	207.25	77.94	152.87
Mean:												
mgd	16.0	22.2	6.06	5.73	21.8	34.2	18.5	25.3	11.0	6.91	2.51	5.10
cfs	24.8	34.3	9.38	8.87	33.7	52.9	28.6	39.1	17.0	10.7	3.88	7.89
Ac-ft	1,520	2,110	558	545	2,000	3,250	1,760	2,170	1,050	636	239	469

Calendar year 1950: Max 448 Min 0.55 Mean(mgd) 21.3 Mean(cfs) 33.0 Ac-ft 23,870
Fiscal year 1950-51: Max 448 Min 0.58 Mean(mgd) 14.6 Mean(cfs) 22.6 Ac-ft 16,310

Peak discharge (base, 900 mgd).--Aug. 14 (12:30 p.m.) 1,000 mgd (1,550 cfs), 6.04 ft.
* Discharge measurement made on this day.

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 1951.

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.--40 years (1911-51), 4.87 mgd (7.54 cfs).

Extremes.--Maximum discharge during year, 248 mgd (384 cfs) Mar. 18 (gage height, 3.24 ft), from rating curve extended above 130 mgd; minimum, 0.39 mgd (0.60 cfs) June 4. 1910-51: 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 above 130 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.39	1.1	4.6
.6	.70	1.3	9.7
.7	1.07	1.5	18.5
.8	1.58	1.8	38
.9	2.3	2.1	65

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.16	4.2	0.70	0.58	1.00	4.4	2.1	0.85	13.6	6.4	0.64	0.51
2	1.03	4.6	.67	.58	.88	11.8	3.45	.85	7.2	3.6	.60	.45
3	.85	2.3	.64	.48	.88	4.9	2.6	.77	6.7	1.57	1.48	.48
4	.81	3.4	.58	.58	2.85	7.6	1.48	.74	3.0	2.55	.70	.45
5	2.8	1.48	.67	1.83	1.10	11.2	1.41	2.1	8.6	2.5	.74	.51
6	1.73	5.6	.64	2.2	.81	50	1.77	.86	4.0	1.74	.70	.61
7	.92	5.9	.61	.64	.74	18.4	1.22	.70	2.4	4.4	.81	1.21
8	1.07	2.1	4.0	1.73	.70	6.9	3.05	.67	1.80	1.52	.81	.54
9	1.28	1.72	11.4	5.1	2.8	3.8	1.84	.61	1.43	1.17	.66	.65
10	14.2	1.48	9.1	.81	8.3	10.8	1.33	.61	1.57	1.03	2.2	7.1
11	6.5	2.75	11.0	.67	11.8	7.4	2.15	.54	1.22	1.03	.77	3.1
12	1.72	2.3	1.76	.61	7.5	20.5	3.4	.96	1.07	1.70	.64	12.6
13	2.3	7.0	2.7	.54	2.45	12.1	1.74	5.0	3.4	1.06	.61	5.6
14	1.22	26	4.4	.51	1.53	3.85	19.7	1.90	9.1	.85	.58	2.25
15	1.03	5.9	1.32	1.19	2.25	2.9	19.7	2.7	1.43	.81	.54	1.62
16	1.63	2.3	1.17	.81	3.75	2.5	11.1	6.0	*6.1	.77	.54	1.12
17	3.1	1.87	1.00	.54	*2.05	1.87	3.0	10.1	2.55	.74	2.2	1.00
18	1.14	1.53	.92	.51	1.78	1.48	2.5	36	31	1.40	3.05	1.38
19	9.7	1.27	.85	.51	3.55	1.32	1.72	22	9.3	.74	.96	1.00
20	30	1.48	.81	.45	2.6	1.17	1.43	9.1	2.85	.74	1.37	.81
21	6.4	1.12	.77	.46	1.69	1.03	1.22	4.9	2.1	.67	1.77	.77
22	6.6	1.00	.70	.94	1.22	.96	2.4	5.0	7.0	.64	.77	.70
23	7.9	.88	.67	1.34	1.03	.88	5.5	2.15	1.80	.64	.67	.70
24	12.3	.85	.64	6.7	1.05	.85	2.35	1.72	2.4	.91	.67	5.6
25	7.4	.81	.64	2.35	48	1.83	*1.78	1.43	3.9	1.59	.61	1.08
26	3.3	.77	.61	2.35	60	2.6	1.81	4.7	1.48	.81	.67	.77
27	4.4	.96	.54	1.93	13.3	11.0	1.81	6.0	1.22	.64	.77	.70
28	3.3	.77	.54	.96	4.3	11.5	1.27	9.5	1.07	.76	.61	.67
29	5.2	1.47	.45	2.4	2.7	24	1.03	-	1.00	2.3	.61	.64
30	5.9	2.15	.68	5.1	4.5	6.1	.96	-	1.04	.77	.61	.64
31	2.15	.77	-	1.44	-	3.9	.88	-	2.85	-	.54	-
Total	149.04	96.73	61.18	46.84	197.11	249.54	107.70	138.46	144.18	46.05	28.90	55.26
Mean:												
mgd	4.81	3.12	2.04	1.51	6.57	8.05	3.47	4.94	4.65	1.54	0.932	1.84
cfs	7.44	4.83	3.16	2.34	10.2	12.5	5.37	7.64	7.19	2.38	1.44	2.85
Ac-ft	457	297	188	144	605	766	331	425	442	141	89	170

Calendar year 1950. Max 84 Min 0.43 Mean(mgd) 5.46 Mean(cfs) 8.45 Ac-ft 6,110
Fiscal year 1950-51: Max 60 Min 0.45 Mean(mgd) 3.62 Mean(cfs) 5.60 Ac-ft 4,060

Peak discharge (base, 250 mgd).--No peak above base.
* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder and concrete weir. Prior to Aug. 1, 1934, water-stage recorder at site 40 ft downstream at datum 5.75 ft higher.

Average discharge.--29 years (1922-51), 4.64 mgd (7.18 cfs).

Extremes.--Maximum discharge during year, 240 mgd (371 cfs) Feb. 18 (gage height, 3.28 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.39 mgd (0.60 cfs) June 4.
1921-51: 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	0.8	8.6
.3	.63	1.0	15.3
.4	1.34	1.5	42
.5	2.45	2.0	79
.6	4.0		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.59	2.85	0.80	0.50	1.17	5.1	2.3	0.87	12.3	6.5	0.74	0.46
2	1.44	4.8	.74	.54	1.01	10.1	3.85	.87	6.2	4.5	.63	.42
3	1.01	1.95	.63	.46	.94	5.2	2.8	.80	5.4	1.63	1.28	.46
4	.94	3.3	.58	.54	3.05	7.6	1.73	.74	2.45	2.3	.80	.42
5	2.95	1.63	.68	1.99	1.31	9.7	1.63	1.83	6.6	2.4	.80	.46
6	2.1	5.2	.63	2.55	.87	42	1.84	1.01	3.85	2.05	.74	.54
7	1.17	6.3	.63	.80	.80	18.1	1.53	.74	2.05	4.0	.87	1.21
8	1.17	2.2	3.65	1.67	.68	6.6	2.85	.68	1.53	1.63	.87	.54
9	1.58	1.73	10.7	4.9	3.15	4.0	2.05	.63	1.25	1.25	.74	.58
10	16.8	1.53	7.9	1.01	8.5	11	1.53	.58	1.34	1.17	1.94	6.8
11	7.8	2.4	9.3	.74	11.0	7.0	1.81	.58	1.09	1.09	*.87	3.05
12	2.05	2.2	1.95	.68	6.5	20	3.45	*.93	.94	1.50	.63	12.4
13	2.15	5.8	2.2	.58	*2.45	12	1.73	7.7	1.78	1.09	.58	6.1
14	1.34	27.5	4.1	.54	1.63	4.0	19.6	3.1	9.1	.87	.54	2.2
15	1.17	7.7	1.43	1.11	1.89	3.0	22.5	3.85	1.34	.80	.54	1.63
16	1.61	2.45	1.17	.87	3.75	2.4	15.6	6.9	5.0	.80	.54	1.17
17	3.55	1.95	1.09	.58	2.25	1.9	3.2	10.3	2.3	.80	2.3	1.09
18	1.25	1.63	.94	.54	1.84	1.5	2.3	40	29.5	1.70	3.3	1.25
19	8.7	1.34	.87	.54	3.9	1.4	1.73	20.5	9.0	.87	1.09	1.01
20	28	1.53	.80	.50	3.1	1.2	1.53	8.2	2.55	.74	1.17	.80
21	8.1	1.17	.74	.50	1.84	1.1	1.34	4.9	1.73	.68	1.72	.68
22	6.0	1.01	.68	.87	1.34	1.0	2.1	4.8	6.0	.68	.87	.63
23	9.3	.94	.63	1.17	1.17	.92	5.7	2.05	1.58	.68	.68	.68
24	11.1	.87	.63	6.9	1.09	.85	2.45	1.63	2.15	1.01	.63	4.7
25	8.0	.80	.58	2.7	49	1.7	1.73	1.25	4.3	1.78	.58	1.17
26	3.5	.80	.54	2.7	60	2.5	1.92	2.95	1.53	1.01	.63	.80
27	3.85	1.01	.54	2.05	12.9	14	1.84	5.3	1.34	.74	.68	.68
28	3.3	.80	.50	1.09	4.6	13	1.34	8.8	1.17	.87	.58	*.63
29	4.2	.82	.54	1.87	2.45	23.5	1.17	-	1.01	2.15	.58	.63
30	6.5	2.1	.63	5.8	3.85	7.3	1.01	-	1.09	.87	.54	.58
31	2.3	.80	-	1.75	-	5.0	.94	-	1.95	-	.50	-
Total	154.52	97.11	56.80	49.04	198.03	244.67	117.10	142.49	129.42	48.16	28.96	53.77
Mean:												
mgd	4.98	3.13	1.89	1.58	6.60	7.89	3.78	5.09	4.17	1.61	0.934	1.79
cfs	7.71	4.84	2.92	2.44	10.2	12.2	5.85	7.88	6.45	2.49	1.45	2.77
Ac-ft	474	298	174	150	608	751	359	437	397	148	89	165

Calendar year 1950 . Max 78 Min 0.46 Mean(mgd) 5.34 Mean(cfs) 8.26 Ac-ft 5,970
Fiscal year 1950-51 : Max 60 Min 0.42 Mean(mgd) 3.62 Mean(cfs) 5.60 Ac-ft 4,050

Peak discharge (base, 250 mgd).--No peak above base.
* Discharge measurement made on this day.
Note.--No gage-height record Nov. 12, Dec. 8-28; discharge estimated on basis of records for Alo Stream.

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 1951. December 1910 to June 1915, at site half a mile downstream; records not equivalent.

Gage.--Water-stage recorder and concrete control.

Average discharge.--20 years (1931-51), 1.76 mgd (2.72 cfs).

Extremes.--Maximum discharge during year, 136 mgd (210 cfs) probably Nov. 26 (gage height, 3.75 ft), from rating curve extended above 20 mgd as explained below; minimum, 0.16 mgd (0.25 cfs) June 4.

1930-51: 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 except those for period of no gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.6	0.05	2.1	3.75
1.7	.23	2.3	8.2
1.8	.65	2.5	14.7
1.9	1.32	2.8	30
2.0	2.35		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.36	1.57	0.23	0.19	0.40	1.8	0.81	0.32	5.4	2.4	0.19	0.18
2	.40	2.85	.21	.18	.36	3.5	.84	.32	2.9	1.64	.18	.18
3	.32	.81	.21	.18	.32	2.0	1.08	.32	2.95	.60	.59	.18
4	.28	1.91	.19	.21	.99	2.8	.55	.28	1.13	1.07	.25	.16
5	.73	.70	.23	.69	.45	3.5	.59	1.39	3.5	1.02	.33	.18
6	.72	2.4	.28	1.50	.32	17	.82	.45	1.58	.74	.25	.21
7	.36	2.3	.23	.32	.25	7.0	.60	.32	.81	1.53	.28	.71
8	.36	.81	1.91	.44	.23	2.5	1.01	.28	.65	.60	.25	.23
9	.36	.75	4.7	2.5	2.15	1.5	.75	.25	.55	.40	.21	.28
10	5.9	.60	3.8	.45	4.3	4.0	.50	.23	.55	.36	.71	3.2
11	2.6	.96	6.0	.28	5.4	2.5	.70	.23	.40	.32	.28	.99
12	.65	.94	.75	.23	4.4	7.0	1.52	.25	.32	.83	.21	4.9
13	.89	2.15	1.11	.21	*1.18	4.0	.73	.95	1.08	.45	.19	2.65
14	.50	10.6	1.71	.19	.70	1.4	8.6	.46	4.1	.28	.19	.75
15	.40	3.3	.55	.43	.80	1.0	7.1	.55	.55	.25	.18	.65
16	.59	.94	.40	.28	1.6	.80	3.25	1.51	2.65	.25	.18	.40
17	1.25	.75	.36	.21	.90	.65	1.10	2.85	1.00	.23	.74	.32
18	.45	.60	.32	.19	.80	.55	.87	15.7	11.1	.40	1.40	.45
19	4.0	.50	.28	.21	1.7	.47	.60	10.4	4.2	.25	.36	.40
20	14.9	.60	.25	.19	1.4	.42	.50	4.1	1.02	.23	.40	.28
21	3.35	.40	.23	.19	.80	.38	.45	2.25	.70	.21	.66	.25
22	2.5	.36	.23	.51	.60	.35	1.02	2.05	2.6	.19	.25	.23
23	4.3	.32	.21	.62	.48	.32	2.4	.87	*.65	.21	.21	.21
24	*5.3	.32	.21	3.15	.40	.30	.81	.65	.97	.25	.21	2.25
25	3.25	.28	.21	1.13	20	.55	.65	.50	1.90	.58	.19	.40
26	1.25	.25	.19	1.03	28	.85	.81	1.77	.65	.28	.19	.28
27	1.62	.32	.19	.98	6.0	4.7	.75	2.9	.50	.21	.21	.23
28	1.28	.25	.18	.36	2.0	4.5	.50	3.5	.40	.23	.19	*.21
29	2.0	.28	.19	1.20	1.2	6.1	.40	-	.36	1.06	.19	.19
30	2.65	.86	.21	2.4	1.9	2.5	.36	-	.32	.25	.21	.19
31	.81	.28	-	.65	-	1.77	.32	-	.91	-	.19	-
Total	64.33	39.96	25.77	21.30	90.03	86.71	40.99	55.65	56.40	17.32	10.07	21.74
Mean:												
mgd	2.08	1.29	0.859	0.687	3.00	2.80	1.32	1.99	1.82	0.577	0.325	0.725
cfs	3.22	2.00	1.33	1.06	4.64	4.33	2.04	3.08	2.82	0.893	0.503	1.12
Ac-ft	197	123	79	65	276	266	126	171	173	53	31	67

Calendar year 1950, Max 49 Min 0.18 Mean(mgd) 2.21 Mean(cfs) 3.42 Ac-ft 2,480
Fiscal year 1950-51: Max 28 Min 0.16 Mean(mgd) 1.45 Mean(cfs) 2.24 Ac-ft 1,630

Peak discharge (base, 130 mgd).--Probably Nov. 26 (time unknown) 136 mgd (210 cfs), 3.75 ft.
* Discharge measurement made on this day.

Note.--No gage-height record Nov. 15 to Dec. 29; discharge estimated on basis of records for nearby streams.

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 1951. 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.--30 years (1920-24, 1925-51), 24.4 mgd (37.8 cfs).

Extremes.--Maximum discharge during year, 1,740 mgd (2,690 cfs) Feb. 18 (gage height, 6.43 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 2.1 mgd (3.2 cfs) June 4.

1910-18, 1919-51: Maximum discharge, 8,100 mgd (12,500 cfs) Apr. 27, 1950 (gage height, 10.36 ft), from rating curve extended above 130 mgd by logarithmic plotting; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.

Remarks.--Records good except those for periods of faulty or no gage-height record and those above 130 mgd, which are fair. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 755: 1932. W 795: 1934.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.8	1.35	2.6	31
1.9	2.9	3.0	73
2.0	5.0	3.5	159
2.2	10.8	4.0	290
2.4	19.0	4.5	470

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.0	14.9	6.6	3.55	6.9	32.5	15.0	5.5	66	41	4.8	2.6
2	9.4	19.6	6.1	*3.75	5.8	61	17.5	5.5	28	25	4.4	2.6
3	7.2	11.4	5.0	4.2	5.5	30	14.2	5.0	23	9.9	6.8	2.45
4	6.6	15.4	4.6	3.55	12.5	50	10.5	5.0	13.5	11.1	4.8	2.3
5	10.8	9.9	5.0	11.8	7.4	55	10.3	6.0	30.5	11.3	4.8	2.45
6	10.8	22.5	5.3	14.0	5.3	238	11.1	5.0	22.5	11.2	4.4	2.6
7	7.4	29.5	4.8	5.8	4.8	112	9.6	4.7	12.3	17.8	4.8	4.8
8	7.2	12.3	20.5	10.2	4.6	48	14.2	4.3	10.2	10.0	5.0	2.6
9	10.7	10.5	71	23	20.5	22.5	12.7	4.0	9.2	8.0	4.2	2.6
10	105	9.6	40	6.6	45	84	9.9	3.9	8.6	7.2	8.4	37
11	26	12.9	32	5.0	49	53	11.2	3.8	8.0	6.9	*5.0	12.5
12	10.8	12.7	10.8	4.6	29.5	124	14.5	5.5	7.4	8.9	3.75	72
13	10.5	35	11.5	3.95	12.4	70	9.6	80	8.7	7.2	3.5	27
14	8.3	246	16.8	3.75	9.2	22.5	150	55	58	5.8	3.1	9.9
15	7.7	58	8.6	6.3	10.2	17.2	192	65	9.2	5.3	3.1	7.7
16	9.8	15.0	8.0	5.5	19.4	14.6	124	58	22.5	5.5	3.1	6.1
17	13.9	13.5	7.2	3.95	14.3	12.3	19.0	70	13.8	5.8	12.8	5.8
18	8.0	11.9	6.6	3.55	12.5	10.5	14.6	300	140	10.2	17.4	6.1
19	24	9.9	6.1	3.55	23.5	9.6	11.6	129	41	5.5	6.4	5.3
20	110	10.5	5.8	3.1	18.1	8.9	10.2	68	13.1	4.8	6.8	4.6
21	45	8.9	5.5	3.2	11.8	8.0	9.2	36	10.2	4.8	8.2	3.95
22	22	8.0	5.0	4.9	8.9	7.4	14.7	32	38.5	5.0	4.8	3.75
23	26.5	7.4	4.8	6.3	8.0	7.2	38	15.0	*10.5	6.5	4.2	3.75
24	51	6.9	4.6	42	7.2	6.6	19	12.3	12.7	8.6	3.95	18.4
25	39	6.6	4.4	16.1	331	27	10	10.2	27.5	10.6	3.75	6.8
26	19.0	6.1	4.2	16.8	386	23	9.0	16.4	9.9	6.6	3.75	4.4
27	19.5	7.4	3.95	11.7	73	97	8.0	22.5	8.9	5.3	3.75	3.75
28	20.5	6.4	3.75	7.2	26.5	83	7.5	46	7.7	6.4	3.3	3.75
29	21	6.1	3.75	9.4	16.4	170	7.0	-	6.9	9.9	3.1	3.75
30	28.5	10.1	4.2	23	28.5	52	6.5	-	6.9	5.5	3.1	3.75
31	13.8	6.1	-	9.5	-	32.5	6.0	-	11.7	-	2.75	-
Total	719.9	661.0	326.45	279.80	1,213.7	1,589.3	816.6	1,073.6	696.9	287.6	161.80	275.05
Mean:												
mgd	23.2	21.3	10.9	9.03	40.5	51.3	26.3	38.3	22.5	9.59	5.22	9.17
cfs	35.9	33.0	16.9	14.0	62.7	79.4	40.7	59.3	34.8	14.8	8.08	14.2
Ac-ft	2,210	2,030	1,000	859	3,720	4,880	2,510	3,290	2,140	883	497	844

Calendar year 1950. Max 698 Min 3.1 Mean(mgd) 32.9 Mean(cfs) 50.9 Ac-ft 36,890
Fiscal year 1950-51: Max 386 Min 2.3 Mean(mgd) 22.2 Mean(cfs) 34.3 Ac-ft 24,860

Peak discharge (base, 1,250 mgd).--Feb. 18 (7:30 p.m.) 1,740 mgd (2,690 cfs), 6.43 ft; Mar. 18 (7:30 p.m.) 1,310 mgd (2,030 cfs), 5.89 ft.

* Discharge measurement made on this day.

Note.--Faulty gage-height record July 10, 20, 21; no gage-height record Jan. 24 to Feb. 15; 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 1951. 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.--32 years (1919-51), 19.1 mgd (29.6 cfs).

Extremes.--Maximum discharge during year, 1,120 mgd (1,730 cfs) Feb. 18 (gage height, 6.52 ft), from rating curve extended above 650 mgd by logarithmic plotting; minimum, 1.00 mgd (1.55 cfs) June 4, 6.
1910-11, 1913-18, 1919-51: 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 except those above 650 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.7	1.0	2.7	29
1.8	2.05	3.0	48
1.9	3.4	3.5	97
2.1	7.4	4.0	163
2.4	16.4	5.0	370

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.1	7.9	3.4	1.61	3.4	37	14.2	3.25	28	45	2.55	1.30
2	6.2	8.4	3.25	*1.72	2.85	35	*10.3	3.1	12.5	22.5	2.45	1.20
3	4.1	5.9	2.85	1.50	2.55	24	8.4	3.0	9.2	8.2	2.7	1.20
4	3.6	6.3	2.45	1.61	4.1	52	6.5	2.85	6.5	6.5	2.45	1.10
5	4.3	4.8	2.55	6.5	3.25	29.5	5.9	3.9	9.6	7.0	2.3	1.10
6	5.2	9.5	2.55	10.2	2.45	122	6.3	3.25	11.0	7.7	2.2	1.10
7	3.6	15.3	2.45	4.3	2.2	90	5.2	2.55	6.1	8.3	2.3	1.50
8	3.25	6.3	10.4	8.4	1.94	39.5	7.4	2.45	4.8	5.9	2.45	1.10
9	6.0	5.0	53	12.2	3.7	16.4	9.5	2.3	4.3	4.7	2.05	1.20
10	101	4.7	29	4.5	18.8	58	6.5	2.05	3.95	6.6	2.85	17.4
11	35.5	5.2	14.5	2.85	18.9	59	7.2	1.94	3.75	4.3	2.3	5.1
12	8.7	5.9	7.4	3.0	13.6	76	6.5	4.4	3.4	4.5	1.83	46
13	7.0	14.5	5.4	2.45	5.9	48	5.0	102	3.8	4.8	1.72	13.6
14	5.2	360	6.3	1.94	3.95	18.3	149	52	63	3.4	1.61	5.0
15	4.5	84	4.1	2.7	4.3	11.8	167	66	7.4	3.1	*1.72	3.4
16	4.5	13.6	3.6	2.85	12.1	10.0	176	66	8.8	3.1	1.61	2.7
17	7.6	10.8	3.25	2.2	13.0	8.4	20	54	10.4	3.6	6.3	2.45
18	4.3	10.7	3.0	1.83	7.4	7.0	11.2	186	45	5.5	12.9	2.3
19	15.1	6.7	2.85	1.72	15.1	6.1	8.2	107	20	3.1	3.75	2.05
20	85	6.5	2.55	1.50	16.7	5.4	7.0	29	7.4	2.85	3.1	1.83
21	37.5	5.4	2.45	1.50	10.9	4.8	5.9	36.5	5.4	2.7	3.6	1.72
22	17.6	4.7	2.45	1.83	5.4	4.5	10.3	36.5	26.5	2.85	2.45	1.61
23	31	4.1	2.2	2.2	4.3	3.95	31.5	11.8	6.7	5.0	2.05	1.50
24	35	3.95	2.05	27.5	3.6	3.75	14.6	8.2	7.4	5.9	1.83	6.0
25	28	3.6	2.05	12.5	285	22.5	7.4	6.7	27.5	6.1	1.72	4.2
26	11.5	3.4	1.94	15.9	292	30	6.3	7.2	7.0	3.75	1.72	2.2
27	10.0	3.75	1.83	7.9	45	102	5.9	9.0	5.4	3.1	1.61	1.72
28	11.5	3.4	1.83	4.3	18.8	79	4.8	16.1	4.5	3.6	1.50	1.50
29	12.2	3.1	1.72	3.75	10.9	240	4.3	-	3.95	4.1	1.50	1.40
30	12.5	4.3	1.83	10.6	12.7	62	3.95	-	3.75	3.0	1.40	1.30
31	7.4	3.1	-	5.4	-	31	3.6	-	6.7	-	1.30	-
Total	533.95	634.80	185.20	168.96	844.79	1,336.90	735.85	829.04	373.70	200.75	81.82	135.78
Mean:												
mgd	17.2	20.5	6.17	5.45	28.2	43.1	23.7	29.6	12.1	6.69	2.64	4.53
cfs	26.6	31.7	9.55	8.43	43.6	66.7	36.7	45.8	18.7	10.4	4.08	7.01
Ac-ft	1,640	1,950	568	519	2,590	4,100	2,260	2,540	1,150	616	251	417

Calendar year 1950: Max 418 Min 1.50 Mean(mgd) 26.3 Mean(cfs) 40.7 Ac-ft 29,450
Fiscal year 1950-51: Max 360 Min 1.10 Mean(mgd) 16.6 Mean(cfs) 25.7 Ac-ft 18,600

Peak discharge (base, 1,300 mgd).--No peak above base.
* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder and concrete control. Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--39 years (1911-15, 1916-51), 4.80 mgd (7.43 cfs).

Extremes.--Maximum discharge during year, 139 mgd (215 cfs) Nov. 26 (gage height, 3.56 ft), from rating curve extended above 90 mgd by broad-crested weir formula; minimum, 1.01 mgd (1.56 cfs) June 8, 9.
1911-51: 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 except those above 90 mgd, which are fair. Water used for irrigation in central Maui.

Revisions (fiscal years).--W 755: 1931-32.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.3	0.75	1.9	11.7
1.4	1.50	2.2	24
1.5	2.7	2.5	40
1.6	4.2	2.9	70
1.7	6.2		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.74	4.8	1.74	1.40	1.86	11.4	3.75	2.1	8.2	3.65	1.74	1.08
2	1.62	5.3	1.62	1.40	1.74	11.6	3.3	1.98	5.6	3.6	1.62	1.08
3	1.50	3.3	1.50	1.31	1.74	8.3	3.15	1.98	5.8	2.85	1.74	1.08
4	1.50	3.75	1.50	1.40	1.98	10.0	2.85	1.86	4.0	3.0	1.50	1.08
5	1.74	2.85	1.50	1.74	1.74	10.4	3.0	2.95	4.9	2.7	1.62	1.08
6	1.62	3.75	1.50	1.98	1.62	39	3.0	1.98	4.2	2.6	1.62	1.15
7	1.50	4.5	1.50	1.62	1.62	20.5	2.6	1.86	3.6	3.0	1.50	1.23
8	1.50	3.0	1.98	1.74	1.50	10.5	2.85	1.74	3.3	2.6	1.50	1.08
9	1.50	2.7	4.5	2.55	2.3	7.0	2.6	1.74	3.0	2.35	1.40	1.08
10	7.0	2.7	3.85	1.62	4.2	9.5	2.45	1.62	2.85	2.2	1.74	2.45
11	4.5	2.85	3.65	1.50	5.0	7.1	2.55	1.62	2.6	2.1	1.40	1.40
12	2.2	2.7	2.2	1.50	5.2	13.4	3.0	1.74	2.6	3.2	1.31	3.4
13	2.1	4.3	2.35	1.40	2.85	8.4	2.6	2.35	2.6	2.2	1.31	3.4
14	1.86	20.5	2.55	1.40	2.45	5.8	13.4	1.98	5.9	2.1	1.31	1.86
15	1.74	8.6	1.98	1.74	2.65	5.0	13.1	2.2	2.7	2.1	1.31	1.62
16	1.98	4.9	1.86	1.40	3.5	4.2	11.7	3.15	3.7	1.98	1.23	1.50
17	2.2	4.0	1.86	1.40	2.95	3.75	5.0	4.9	3.0	1.98	1.80	1.40
18	1.74	3.6	1.74	1.31	3.8	3.45	4.2	25	12.0	1.98	2.15	1.40
19	3.9	3.15	1.62	1.31	4.9	3.15	3.75	14.1	6.3	1.86	1.40	1.40
20	15.8	3.0	1.62	1.31	4.2	2.85	3.3	6.4	3.75	1.86	1.40	1.31
21	*6.0	2.7	1.62	1.31	3.3	2.7	3.15	5.0	3.3	1.74	1.40	1.23
22	5.4	2.6	1.50	1.50	3.0	2.45	3.75	6.4	6.1	1.74	1.31	1.23
23	7.5	2.35	1.50	1.50	2.7	2.35	4.7	3.9	3.3	1.74	1.31	1.23
24	8.1	2.2	1.40	3.85	2.45	2.2	3.3	3.45	3.9	1.86	1.23	1.76
25	6.9	2.1	1.40	2.35	26	2.35	3.0	3.15	6.8	1.86	1.23	1.31
26	4.8	2.1	1.40	2.2	48	2.35	3.0	3.7	3.45	1.74	1.23	1.23
27	4.6	2.2	1.40	2.1	18.2	5.4	2.7	4.6	3.15	1.74	1.23	1.23
28	4.2	1.86	1.31	1.86	9.3	6.8	2.45	6.4	2.85	1.86	1.23	1.15
29	4.6	2.1	1.40	1.95	5.8	8.8	2.35	-	*2.7	2.2	1.15	1.08
30	4.6	2.2	1.50	3.0	7.9	6.3	2.2	-	2.6	1.74	1.15	1.08
31	3.45	1.86	-	2.1	-	4.8	2.1	-	2.85	-	1.15	-
Total	119.39	118.52	57.05	54.75	184.45	241.80	124.85	119.85	131.60	68.13	44.22	43.61
Mean:												
mgd	3.85	3.82	1.90	1.77	6.15	7.80	4.03	4.28	4.25	2.27	1.43	1.45
cfs	5.98	5.91	2.94	2.74	9.52	12.1	6.24	6.62	6.58	3.51	2.21	2.24
Ac-ft	366	364	175	168	566	742	383	368	404	209	136	134

Calendar year 1950: Max 65 Min 1.31 Mean(mgd) 5.15 Mean(cfs) 7.97 Ac-ft 5,770
Fiscal year 1950-51: Max 48 Min 1.08 Mean(mgd) 3.58 Mean(cfs) 5.54 Ac-ft 4,020

Peak discharge (base, 150 mgd).--No peak above base.
* Discharge measurement made on this day.

Hoolawanui Stream near Huelo

Location.--Lat 20°53'15", long. 156°14'55", on right bank 250 ft upstream from intake of Wailoa ditch, 2 miles west of Kailua, and 2 miles southwest of Huelo.

Records available.--December 1910 to June 1951.

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.--39 years (1911-15, 1916-51), 7.92 mgd (12.3 cfs).

Extremes.--Maximum discharge during year, 420 mgd (650 cfs) Nov. 26 (gage height, 2.94 ft), from rating curve extended above 100 mgd; minimum, 0.65 mgd (1.01 cfs) June 4, 6, 8, 9.
1910-51: Maximum discharge, 3,240 mgd (5,010 cfs) Apr. 27, 1950 (gage height, 5.94 ft), from rating curve extended above 100 mgd; 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 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.53	0.9	13.9
.4	1.23	1.1	23.8
.5	2.45	1.4	47
.6	4.2	1.7	80
.7	7.0	2.0	131

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.75	5.2	2.2	1.15	1.56	17.9	6.0	2.9	13	8.2	1.45	0.71
2	2.45	6.1	1.93	1.15	1.34	16.9	5.2	2.7	6.5	6.2	1.34	.71
3	2.05	4.0	1.80	1.07	1.23	13.0	4.8	2.7	7.3	4.0	1.67	.71
4	1.93	4.2	1.80	1.15	1.80	18.6	4.5	2.5	5.8	4.2	1.34	.71
5	2.3	3.4	1.80	1.76	1.45	17.2	4.7	3.7	7.0	3.85	1.34	.71
6	2.2	5.4	1.80	2.55	1.23	63	4.7	3.2	6.1	3.4	1.23	.77
7	1.80	6.6	1.67	1.34	1.15	42	4.1	3.0	4.7	4.4	1.23	.91
8	1.80	3.6	3.05	1.80	1.05	21	4.3	2.8	4.2	3.2	1.15	.71
9	1.99	3.2	9.6	3.4	2.5	13.5	4.0	2.6	3.8	2.75	1.15	.71
10	21.5	3.05	6.5	1.45	5.5	21.5	3.6	2.05	3.8	2.6	1.67	3.55
11	9.9	3.8	4.3	1.15	7.1	21	3.7	1.93	3.4	2.45	1.15	1.14
12	3.6	3.6	2.6	1.07	5.9	31	4.3	2.2	3.4	3.9	1.07	7.1
13	3.4	6.4	2.45	1.07	2.75	21	3.9	11.9	3.5	2.6	.99	3.8
14	2.75	65	2.95	.99	2.2	12.8	22	7.7	11.8	2.3	.99	1.67
15	2.45	22.5	2.05	1.34	2.7	10.6	21	11	3.6	2.2	*1.14	1.23
16	2.85	9.5	1.93	1.07	4.6	8.9	20	13	5.5	2.05	.99	1.07
17	3.7	7.0	1.80	.99	3.7	7.6	8.0	17	4.4	2.05	2.25	.99
18	2.45	5.8	1.67	.91	5.4	6.4	7.0	80	19.0	2.3	3.4	1.07
19	6.7	5.0	1.56	.91	7.3	5.8	6.0	45	9.4	1.93	1.23	.99
20	24	4.7	1.56	.84	6.2	5.2	5.4	12	4.7	1.80	1.15	.91
21	9.9	4.0	1.45	.91	4.3	4.7	5.0	10	4.0	1.67	1.23	.84
22	7.5	3.6	1.45	1.23	3.05	4.2	5.8	11	9.9	1.67	.99	.77
23	10.7	3.2	1.34	1.15	2.9	4.0	7.0	5.0	4.4	1.67	.91	.77
24	12.2	3.05	1.23	6.5	2.6	3.8	5.5	4.3	6.1	1.93	.84	1.59
25	10.4	2.9	1.23	2.75	71	4.1	4.5	3.9	11.0	2.4	.84	.99
26	6.6	2.75	1.23	2.6	118	4.0	4.4	4.1	4.7	1.80	.84	.77
27	6.4	2.9	1.23	2.2	26.5	10	4.0	5.5	4.2	1.56	.84	.71
28	6.4	2.45	*1.15	1.56	13.6	12	3.6	12	3.8	1.93	.77	.71
29	6.2	2.45	1.15	1.58	9.6	14	3.4	-	*3.4	2.4	.84	.71
30	6.8	3.0	1.23	3.8	15.5	10	3.1	-	3.2	1.56	.77	.71
31	4.7	2.2	-	1.93	-	7.6	2.9	-	4.3	-	.77	-
Total	190.37	210.55	67.71	53.37	333.71	453.3	196.4	285.68	189.9	84.97	37.27	38.74
Mean:												
mgd	6.14	6.79	2.26	1.72	11.1	14.6	6.34	10.2	6.13	2.83	1.20	1.29
cfs	9.50	10.5	3.50	2.66	17.2	22.6	9.81	15.8	9.48	4.38	1.86	2.00
Ac-ft	584	646	208	164	1,020	1,390	603	877	583	261	114	119

Calendar year 1950: Max 246 Min 0.84 Mean(mgd) 10.4 Mean(cfs) 16.1 Ac-ft 11,650
Fiscal year 1950-51: Max 118 Min 0.71 Mean(mgd) 5.87 Mean(cfs) 9.08 Ac-ft 6,570

Peak discharge (base, 300 mgd).--Aug. 14 (9 p.m.) 308 mgd (477 cfs), 2.64 ft; Nov. 26 (9 a.m.) 420 mgd (650 cfs), 2.94 ft; Jan. 14 (time unknown) 308 mgd (477 cfs), 2.67 ft.
* Discharge measurement made on this day.
Note.--No gage-height record Nov. 7-10, Dec. 23 to Feb. 9, Feb. 15-22, Feb. 24 to Mar. 2; discharge estimated on basis of records for nearby streams.

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 1951.

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.--38 years (1911-14, 1916-51), 3.11 mgd (4.81 cfs).

Extremes.--Maximum discharge during year, 110 mgd (170 cfs) Nov. 25 (gage height, 2.82 ft), from rating curve extended above 70 mgd as explained below; minimum, 0.26 mgd (0.40 cfs) June 30.

1910-51: Maximum discharge, 3,690 mgd, revised (5,710 cfs) Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by model studies of the station site; minimum, 0.01 mgd (0.02 cfs) several days in 1933 and 1934.

Revisions.--The figures of maximum discharge for fiscal years since 1914 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.....	1913-15	May 8, 1914	2.30	64	99
445.....	1916	May 1	3.7	480	743
465.....	1917	Apr. 30	3.15	212	328
485.....	1918	Apr. 3, 10	3.55	395	611
515.....	1919	Dec. 3	3.00	165	255
516.....	1920	Sept. 3	2.66	98	152
535.....	1921	Jan. 16	3.55	395	611
555.....	1922	Feb. 1	5.50	1,710	2,650
575.....	1923	Feb. 23	4.22	780	1,210
595.....	1924	Feb. 13	3.34	295	456
615.....	1925	Oct. 16	4.09	720	1,110
635.....	1926	June 12	2.38	71	110
655.....	1927	Aug. 5	3.68	480	743
675.....	1928	May 12	2.50	79	122
695.....	1929	Dec. 13	3.44	345	534
710.....	1930	Feb. 23	3.12	195	302
725.....	1931	Nov. 18	7.28	3,690	5,710
740.....	1932	Apr. 30	4.10	710	1,110
755.....	1933	Dec. 31	3.85	560	866
770.....	1934	Apr. 25	3.09	185	286
795.....	1935	Feb. 25	3.06	170	263
815.....	1936	Jan. 17	3.24	240	371
835.....	1937	Dec. 29	3.83	560	866
865.....	1938	Apr. 7	3.23	240	371
885.....	1939	Feb. 7	4.45	890	1,380
905.....	1940	Feb. 21	2.73	102	158
935.....	1941	June 30	3.97	620	959
965.....	1942	Mar. 8	3.49	360	557
985.....	1943	Oct. 21	3.39	310	480
1015.....	1944	Aug. 21	3.26	240	371
1045.....	1945	Dec. 26	3.04	170	263
1065.....	1946	Jan. 22	3.70	470	727
1095.....	1947	Dec. 17	3.88	590	913
1125.....	1948	Jan. 25	4.26	830	1,280
1155.....	1949	Sept. 27	3.60	410	634
1185.....	1950	Apr. 27	5.14	1,380	2,140

Remarks.--Records good except those above 70 mgd, which are fair. No diversions above station. Water used for irrigation in central Maui.

Honopou Stream near Huelo--Continued.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.03	1.1	8.6
.5	.48	1.4	15.7
.6	1.26	1.7	25
.8	3.55	2.1	42

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.00	2.45	1.00	0.48	0.54	12.6	2.8	1.36	5.5	2.6	0.68	0.36
2	.92	2.85	.92	.48	.48	8.8	2.4	1.26	3.55	2.25	.60	.36
3	.76	1.76	.84	.48	.48	6.2	2.2	1.26	3.65	1.86	.76	.36
4	.68	1.96	.76	.48	.68	8.5	1.96	1.16	2.8	1.96	.60	.30
5	.86	1.58	.76	.68	.54	8.4	1.96	2.1	3.45	1.76	.60	.30
6	.84	2.3	.76	1.00	.48	31.5	1.96	1.16	2.7	1.66	.60	.36
7	.68	2.85	.76	.54	.48	18.0	1.76	1.08	2.2	2.0	*.60	.42
8	.68	1.56	1.30	.88	.42	9.6	1.96	1.00	1.96	1.56	.54	.36
9	.76	1.46	3.4	1.28	.74	7.3	1.66	1.00	1.86	1.36	.54	.36
10	6.2	1.36	2.6	.60	2.5	9.3	1.56	.92	1.76	1.26	.68	1.87
11	3.05	1.66	2.05	.54	2.5	6.5	1.70	.84	1.66	1.16	.54	.60
12	1.16	1.56	1.08	.48	2.55	11.3	1.93	.92	1.66	2.25	.48	2.35
13	1.36	3.35	1.08	.42	1.08	7.8	1.56	1.56	1.78	1.26	.48	1.88
14	1.00	18.1	1.37	.42	.92	5.7	11.9	1.16	5.2	1.08	.42	.76
15	.92	6.4	.84	.60	1.19	4.7	12.2	1.16	1.66	1.00	.54	.60
16	1.08	3.4	.76	.42	2.3	4.3	10.3	2.25	3.0	1.00	.42	.48
17	1.41	2.9	.76	.36	1.36	3.7	4.6	3.9	1.86	1.00	1.29	.48
18	1.00	2.7	.68	.36	2.3	3.2	3.7	23.5	7.7	1.00	1.67	.48
19	2.9	2.2	.68	.36	3.15	2.8	3.2	11.8	3.3	.84	.60	.48
20	10.8	2.05	.60	.36	2.3	2.55	2.8	5.3	2.2	.84	.60	.42
21	3.5	1.86	.60	.36	1.66	*2.3	2.55	4.5	1.96	.84	.54	.36
22	3.3	1.66	.60	.60	1.46	2.05	3.55	5.9	5.3	.76	.48	.36
23	4.7	1.66	.54	.60	1.36	1.86	3.8	3.2	2.05	.84	.48	.30
24	5.3	1.46	.54	3.25	1.26	1.66	2.3	2.8	3.4	.84	.48	.66
25	4.2	1.36	.54	1.08	22	1.76	2.05	2.4	6.2	1.00	.42	.42
26	2.8	1.26	.54	.92	39	1.76	2.05	3.15	2.3	.76	.42	.30
27	2.8	1.46	.54	.84	15.7	4.8	1.86	3.4	2.2	.68	.42	.30
28	2.9	1.16	*.48	.54	7.5	4.9	1.66	5.4	2.05	.84	.42	.30
29	3.05	1.16	.48	.70	5.3	5.9	1.56	-	1.86	1.22	.36	.30
30	2.85	1.46	.54	1.66	7.0	5.2	1.56	-	1.76	.68	.36	.26
31	1.96	1.08	-	.76	-	3.5	1.46	-	1.96	-	.36	-
Total	75.22	80.01	28.40	22.53	129.23	208.44	98.51	95.44	90.49	38.16	17.98	17.14
Mean:												
mgd	2.43	2.58	0.947	0.727	4.31	6.72	3.18	3.41	2.92	1.27	0.580	0.571
cfs	3.76	3.99	1.47	1.12	6.67	10.4	4.92	5.28	4.52	1.96	0.897	0.883
Ac-ft	231	246	87	69	397	640	302	293	278	117	55	53

Calendar year 1950. Max 57 Min 0.36 Mean(mgd) 4.18 Mean(cfs) 6.47 Ac-ft 4,680
Fiscal year 1950-51: Max 39 Min 0.26 Mean(mgd) 2.47 Mean(cfs) 3.82 Ac-ft 2,770

Peak discharge (base, 100 mgd).--Nov. 25 (5 p.m.) 110 mgd (170 cfs), 2.82 ft; Feb. 18 (7 p.m.) 110 mgd (170 cfs), 2.80 ft.

* Discharge measurement made on this day.

Wailoa ditch at Honopou, near Heulo

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 1951.

Gage.--Water-stage recorder.

Average discharge.--28 years (1923-51), 113 mgd (175 cfs).

Extremes.--1922-51: Maximum daily discharge, 186 mgd (288 cfs) June 25, 30, 1941; no flow Jan. 24-27, 1923.

Remarks.--Records excellent except those above 150 mgd and those for period of no gage-height record, which are fair. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	105	144	72	41	66	97	134	69	149	153	59	38
2	104	150	72	47	59	79	144	69	153	153	53	35
3	79	131	56	38	56	93	141	69	153	138	72	38
4	72	138	53	36	116	104	124	63	150	131	56	35
5	105	104	53	100	a90	104	112	79	153	124	53	43
6	127	141	56	134	a56	108	127	72	153	131	56	49
7	79	153	63	79	a52	108	104	59	150	141	63	53
8	79	127	138	121	a48	104	126	56	141	116	63	38
9	81	108	156	153	a80	108	138	53	124	93	53	41
10	156	97	156	93	a150	112	112	50	112	108	89	143
11	156	116	153	72	156	112	121	47	101	120	59	107
12	138	112	131	66	156	108	138	59	93	111	50	153
13	131	120	120	53	144	104	112	101	99	116	47	147
14	101	159	131	47	101	112	147	116	153	82	47	108
15	86	159	86	80	124	116	150	104	141	72	44	82
16	97	153	79	66	156	116	134	93	134	76	41	69
17	131	144	69	47	144	116	108	79	150	79	97	66
18	86	138	66	44	116	124	108	90	141	110	138	66
19	153	104	59	44	108	112	116	82	153	69	76	59
20	156	116	56	41	134	104	112	76	147	69	79	53
21	156	93	53	41	124	97	104	72	*131	66	82	47
22	153	82	53	50	86	90	112	82	150	66	56	44
23	156	76	47	63	76	86	108	79	134	93	50	47
24	156	72	47	152	69	79	112	82	131	108	47	114
25	156	69	47	150	156	129	104	82	147	116	44	85
26	153	66	44	150	162	138	99	86	116	76	44	56
27	153	72	44	124	159	144	86	86	101	66	47	50
28	153	66	*41	76	159	134	72	86	90	69	41	47
29	153	59	41	75	153	134	62	-	82	113	41	44
30	156	98	47	153	138	131	59	-	79	66	41	47
31	144	59	-	93	-	138	72	-	128	-	38	-
Total	3,911	3,426	2,289	2,531	3,394	3,441	3,498	2,141	4,039	3,031	1,826	2,004
Mean:												
mgd	126	111	76.3	81.6	113	111	113	76.5	130	101	58.9	66.8
cfs	195	172	118	126	175	172	175	118	201	156	91.1	103
Ac-ft	12,000	10,510	7,020	7,770	10,420	10,560	10,730	6,570	12,400	9,300	5,600	6,150

Calendar year 1950. Max 176 Min 27.5 Mean(mgd) 109 Mean(cfs) 169 Ac-ft 122,000
Fiscal year 1950-51: Max 162 Min 35 Mean(mgd) 97.3 Mean(cfs) 151 Ac-ft 109,000

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby ditches.

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 1951.

Gage.--Water-stage recorder. Prior to May 15, 1921, water-stage recorder at site 300 ft upstream at different datum.

Average discharge.--33 years, 27.3 mgd (42.2 cfs).

Extremes.--1918-51: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.95	9.5	0.87	0.32	0.51	9.8	0.36		81	90	0.58	0.21
2	3.15	39	.76	.32	.32	.15	19.4		90	84	.47	.19
3	.76	3.35	.71	.28	.28	.10	23.5	0.25	86	17.3	.62	.19
4	.66	17.9	.66	.28	3.1	.15	2.5		47	8.9	.62	.19
5	8.6	2.5	.66	22.5	.89	.15	1.72		69	7.1	.51	.21
6	9.7	49	.66	26.5	.36	.19	2.75	2.0	77	16.5	.55	.24
7	.76	69	.66	.62	.28	.13	1.72		27	31	.58	.32
8	.62	2.75	3.0	19.2	.26	.13	15.8		9.1	3.45	.43	.28
9	3.3	2.5	35	51	3.35	.13		.87	3.05	1.38	.32	.19
10	92	2.1	20	1.60	64	.13		.76	2.55	1.25	.55	45
11	84	2.7	10	.47	62	.13		.71	2.25	2.6	.54	2.65
12	9.4	2.25	2.5	.32	52	.13		10.9	2.0	10.6	.32	88
13	4.3	16.3	2.0	.28	24	.13	15	74	4.6	5.7	.28	64
14	.87	94	1.9	.26	1.65	.13		52	92	1.13	.26	1.06
15	.66	92	1.5	.32	11.0	.13		36.5	21.5	.97	.26	.62
16	.66	38.5	.75	.43	38.5	.13		34	29.5	.92	.26	.47
17	17.4	8.9	.72	.28	41	.13		14.8	58	.87	14.2	.39
18	.76	11.0	.71	.24	12.2	.13		.39	33.5	2.0	44	.36
19	73	2.1	.71	.24	36.5	2.2		.32	92	.76	.62	.36
20	86	3.15	.66	.21	45	1.72		.21	30.5	.76	.39	.32
21	82	1.85	.62	.19	13.8	1.85		.21	*3.65	.71	.36	.28
22	67	1.65	.58	.26	1.85	1.78		.28	66	.62	.32	.26
23	86	1.45	.51	.36	1.58	1.65		.15	7.8	.81	.26	.24
24	84	1.38	.36	62	1.31	1.45	.9	.15	6.1	1.31	.26	39
25	88	1.25	.32	44	71	43		.19	50	.76	.24	3.65
26	52	1.18	.28	46	96	17.5		.28	3.25	.71	.24	.36
27	54	1.31	.26	10.7	92	80		.28	2.75	.58	.26	.26
28	34.5	1.18	.32	.55	80	61		.32	2.35	.58	.24	.24
29	53	1.18	.32	.39	36.5	30.5		-	2.0	4.9	.24	.21
30	63	2.15	.36	40	14.6	.24		-	1.93	.87	.24	.21
31	9.0	1.08	-	3.1	-	.24		-	11.2	-	.24	-
Total	1,072.05	484.16	88.38	333.22	805.84	255.23	201.25	236.32	1,014.58	299.04	69.26	249.96
Mean:												
mgd	34.6	15.6	2.95	10.7	26.9	8.23	6.49	8.44	32.7	9.97	2.23	8.33
cfs	53.5	24.1	4.56	16.6	41.6	12.7	10.0	13.1	50.6	15.4	3.45	12.9
Ac-ft	3,290	1,490	271	1,020	2,470	783	618	725	3,110	918	213	767

Calendar year 1950: Max 98 Min 0.10 Mean(mgd) 25.0 Mean(cfs) 38.7 Ac-ft 28,020
Fiscal year 1950-51: Max 96 Min - Mean(mgd) 14.0 Mean(cfs) 21.7 Ac-ft 15,680

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 7-18, Jan. 9 to Feb. 8; discharge estimated on basis of records for nearby ditches.

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 1951.

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

Average discharge.--18 years (1918-22, 1937-51), 2.57 mgd (3.98 cfs).

Extremes.--1918-22, 1936-51: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow for short periods.

Remarks.--Records good except those for period of no gage-height record, which are fair. Wailoa and New Hamakua ditches divert most of flow above this station. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.02	0.24	0.02	0.01	a0.01	1.78	0.05	0.05	12.5	8.6	0	0
2	.01	3.55	.02	.01	a.01	.13	.04	.04	7.8	6.0	0	0
3	.01	.05	.02	.01	a.01	.10	.04	.03	5.9	.07	.02	0
4	.01	.09	.02	.01	a.01	.10	.04	.02	.10	.05	.01	0
5	.01	.05	.02	.02	a.01	.10	.04	.05	4.2	.04	.01	0
6	.01	.99	.02	.05	a.01	.16	.04	.05	5.6	.05	.01	0
7	.01	4.4	.02	.04	.01	.07	.03	.04	.09	.46	.01	0
8	.01	.06	.11	.04	.01	.06	.04	.03	.05	.05	.01	0
9	.01	.04	3.15	.27	.02	.05	.04	.02	.04	.03	.01	0
10	12.1	.04	1.67	.05	.21	.05	.03	.02	.04	.03	.01	1.84
11	8.3	.04	.92	.03	.45	.05	.03	.02	.04	.02	.01	.03
12	.06	.03	.07	.02	.50	.05	.04	.02	.03	.04	0	8.4
13	.04	1.40	.05	.02	.10	.04	.04	.09	.04	.03	0	5.3
14	.02	16.9	.05	.02	.05	.04	.07	.07	10.8	.02	0	.04
15	.02	11.8	.04	.02	.05	.04	8.3	.06	.13	.02	0	.02
16	.02	.26	.02	.01	3.2	.05	7.8	.06	3.0	.02	0	.01
17	.02	.05	.02	.01	3.85	.05	.09	.06	1.72	.02	.01	.01
18	.02	.04	.02	.01	.13	.04	.09	.09	5.1	.02	.33	0
19	3.55	.04	.02	.01	6.8	.10	.07	.05	10.0	.02	.03	0
20	12.1	.04	.02	.01	6.2	.05	.06	.03	.14	.02	.02	0
21	8.2	.03	.02	.01	.45	.04	.05	.04	.05	.02	.01	0
22	1.83	.03	.01	.01	.05	.03	.05	.04	7.2	.01	.01	0
23	10.1	.02	.01	.01	.04	.03	.07	.03	.10	.02	.01	0
24	11.0	.02	.01	.80	.03	.03	.07	.03	.14	.02	.01	.23
25	12.3	.02	.01	a.5	16.0	4.9	.06	.03	5.0	.01	0	.05
26	.32	.02	.01	a.5	26.5	1.84	.06	.04	.09	0	0	.01
27	.12	.02	.01	a.15	20	14.3	.06	.04	.05	0	0	.01
28	.61	.02	.01	a.01	9.5	2.85	.07	.04	.05	.01	0	0
29	2.85	.02	.01	a.01	.81	.19	.07	-	.04	.02	0	0
30	6.1	.03	.01	a.4	1.96	.06	.07	-	.04	.01	0	0
31	.05	.02	-	a.01	-	.05	.06	-	.04	-	0	-
Total	89.83	40.36	6.41	3.08	96.98	27.43	17.67	1.19	80.12	15.73	.53	15.95
Mean:												
mgd	2.90	1.30	0.214	0.099	3.23	0.885	0.570	0.042	2.58	0.524	0.017	0.532
cfs	4.49	2.01	0.331	0.153	5.00	1.37	0.882	0.065	3.99	0.811	0.026	0.823
Ac-ft	276	124	20	9.5	298	84	54	3.7	246	48	1.6	49

Calendar year 1950: Max 26.5 Min 0.01 Mean(mgd) 2.79 Mean(cfs) 4.32 Ac-ft 3,130
Fiscal year 1950-51: Max 26.5 Min 0 Mean(mgd) 1.08 Mean(cfs) 1.67 Ac-ft 1,210

a No gage-height record; dischar e estimated on basis of engineer's notes and records for nearby streams and ditches.

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 1951. 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.--37 years (1910-26, 1930-51), 29.4 mgd (45.5 cfs).

Extremes.--1910-27, 1930-51: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Records good. 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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.5	30.5	g6.9	5.3	6.6	13.0	13.3	10.0	52	51	5.1	g3.45
2	6.5	37	g7.2	5.2	5.3	4.6	17.0	9.6	47	45	5.8	g4.2
3	5.3	25.5	g7.2	4.6	4.8	4.2	33	9.6	41	18.3	6.9	g3.9
4	5.0	37	g6.2	4.6	7.9	3.3	15.6	9.0	21.5	18.3	6.2	g3.75
5	5.7	24	g5.8	10.0	6.6	2.7	12.8	18.8	28	15.8	5.5	g3.9
6	9.0	35	g6.0	19.4	4.8	10.4	15.8	11.8	41	17.0	5.7	g5.0
7	5.3	43	g6.0	6.9	4.3	4.2	12.6	8.8	24	19.9	*6.7	g5.7
8	5.2	23	g14.3	12.6	4.2	1.70	13.6	8.1	23	14.5	5.8	g5.0
9	4.8	30.5	g28.5	32	4.0	1.36	14.6	13.4	18.3	15.9	5.7	g4.2
10	39	23	g45	13.3	43	1.18	11.3	21.5	17.0	20.5	6.2	g25
11	46	15.8	g45	15.8	39	1.01	11.0	15.2	15.8	18.3	5.2	g7.8
12	20.5	15.3	g25.5	9.0	49	.93	19.4	6.7	15.0	13.2	4.2	g43
13	21.5	15.8	g23	4.8	28	.74	12.6	52	15.8	12.0	3.75	g35
14	14.0	50	g17	4.5	13.8	.65	33	28	54	8.6	3.45	g11.0
15	10.4	49	g11.3	5.0	15.8	.60	33.5	1.18	24	7.8	3.3	g7.8
16	6.2	37	g10.0	5.5	24	.60	.84	1.01	28	7.4	3.3	g5.8
17	10.2	26.5	g10.8	4.3	35	.50	.84	.93	37	7.4	8.4	g5.8
18	6.0	37	g11.8	4.0	19.4	.46	.79	1.52	32.5	8.1	35	g5.3
19	30	25.5	11.3	4.0	26	9.1	6.8	2.25	54	7.2	5.2	g8.1
20	45	17	10.6	3.9	37.5	15.8	15.8	1.34	35	6.9	4.2	g5.2
21	47	19.4	10.3	3.6	21.5	14.6	14.6	1.01	*24	6.5	4.0	g5.3
22	37	15.8	10.8	4.0	11.5	13.8	23	1.54	46	6.2	3.6	g6.0
23	49	12.0	10.6	4.5	12.8	12.6	24	.93	29	6.0	4.8	9.0
24	45	11.3	12.6	33.5	13.8	11.8	4.3	.84	28	6.7	5.0	24
25	49	g10.6	6.9	26	44	30.5	3.75	.74	44	6.5	3.2	13.2
26	39	g9.3	6.2	25.5	58	17.0	3.6	.70	24	5.8	3.05	5.5
27	37	g8.6	6.2	14.3	58	49	3.3	.74	18.2	5.3	3.05	4.5
28	32.5	g8.3	5.8	13.0	54	54	3.2	.74	18.3	9.9	2.9	7.6
29	45	g7.2	5.5	14.0	51	21	2.9	-	17.0	12.3	3.05	7.2
30	43	g7.6	6.2	25.5	42	.84	2.8	-	15.8	6.2	g2.9	4.8
31	26.5	g7.8	-	13.8	-	8.2	7.9	-	18.5	-	g2.9	-
Total	751.1	715.3	390.5	352.4	745.6	310.37	387.52	237.97	904.0	404.5	174.05	286.00
Mean:												
mgd	24.2	23.1	13.0	11.4	24.9	10.0	12.5	8.50	29.2	13.5	5.61	9.53
cfs	37.4	35.7	20.1	17.6	38.5	15.5	19.3	13.2	45.2	20.9	8.68	14.7
Ac-ft	2,310	2,200	1,200	1,080	2,290	952	1,190	730	2,770	1,240	534	878

Calendar year 1950. Max 58 Min 0.46 Mean(mgd) 18.9 Mean(cfs) 29.2 Ac-ft 21,240
Fiscal year 1950-51: Max 58 Min 0.46 Mean(mgd) 15.5 Mean(cfs) 24.0 Ac-ft 17,370

* Discharge measurement made on this day.
g Computed from once- or twice-daily staff-gage readings.

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 Peshi 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.--39 years (1910-28, 1930-51), 22.0 mgd (34.0 cfs).

Extremes.--1910-28, 1930-51: 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 except those for periods of no gage-height record, which are poor. Haiku ditch diverts water from all streams between Kailua Stream and Maliko Gulch. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.44	g1.91	0.85	0.48	0.65	5.0	1.71	1.00	60	39.5	0.46	0.03
2	.40	g15.9	.80	.44	.54	.56	8.1	.95	30	24	.34	.03
3	.37	g2.3	.80	.40	.51	.50	9.6	.95	8.9	2.0	.44	.03
4	.34	g2.8	.75	.37	.62	.40	1.71	.90	2.0	2.25	.34	.04
5	.37	1.71	.80	.74	.54	.34	1.50	3.65	6.2	1.71	.30	.06
6	.44	3.35	.80	.95	.48	.99	1.55	1.45	18.2	1.64	.37	.07
7	.30	23.5	.80	.51	.46	.45	1.29	.95	2.2	1.78	.37	.10
8	.34	1.98	8.9	.67	.44	.28	1.29	.90	1.78	1.56	.34	.09
9	g.30	1.94	44	14.3	1.0	.24	1.15	.90	1.50	1.10	.30	.09
10	g.43	1.64	52	.87	15	.22	1.05	.80	1.43	1.05	.40	13.7
11	g38.5	1.50	41	.62	30	.22	1.00	.62	1.29	.99	.28	.32
12	g1.33	1.50	3.9	.51	35	.20	2.75	.54	1.22	.95	.28	43
13	g.85	3.35	2.55	.40	10	.20	1.05	6.0	1.52	.90	.26	30
14	g.62	62	2.25	.37	1.5	.18	8.9	1.05	49	.80	.15	.44
15	g.51	5.4	1.71	.30	1.7	.18	.60	1.05	2.7	.75	.08	.30
16	g.48	6.0	1.43	.34	24	.16	.10	1.00	15.9	.70	.08	.28
17	g.58	3.2	1.29	.28	28	.16	.10	1.00	8.4	.65	.09	.26
18	g.51	3.95	1.12	.28	2.7	.16	.09	1.00	16.9	.65	6.9	.20
19	g2.5	2.55	.95	.28	25	5.8	.67	1.04	40	.62	21	.16
20	g31	2.25	.95	.28	28	3.2	1.50	.85	4.1	.62	.05	.16
21	g47	1.85	.85	.28	9.0	2.25	1.36	.80	2.8	.58	.05	.16
22	g14.3	1.57	.80	.28	1.6	1.71	9.8	.80	32.5	.51	.05	.16
23	g34.5	1.36	.75	.39	1.3	1.57	10.7	.75	3.6	.48	.05	.16
24	g28.5	1.29	.75	30	1.0	1.43	1.15	.75	3.65	.44	.05	1.17
25	g55	1.29	.65	4.6	40	8.1	1.10	.75	22	.44	.05	.42
26	g7.0	1.15	.58	1.38	70	2.7	1.10	.70	3.4	.40	.05	.24
27	g4.1	1.29	.48	.85	66	33	1.10	.70	5.4	.40	.05	.24
28	g11.9	1.10	.48	.65	50	28.5	1.10	.70	2.65	.40	.05	.22
29	g16.2	1.10	.51	.78	20	4.3	1.05	-	2.35	.58	.05	.18
30	g18.9	1.43	.58	1.66	8.0	1.29	1.05	-	2.2	.40	.04	.18
31	g4.6	1.00	-	.95	-	1.22	1.48	-	2.1	-	.03	-
Total	322.61	163,16	174.08	65.21	473.04	105.51	76.70	32.55	355.89	88.85	12.56	92.49
Mean:												
mgd	10.4	5.26	5.80	2.10	15.8	3.40	2.47	1.16	11.5	2.96	0.405	3.08
cfs	16.1	8.14	8.97	3.25	24.4	5.26	3.82	1.79	17.8	4.58	0.627	4.77
Ac-ft	990	501	534	200	1,450	324	235	100	1,090	273	39	284

Calendar year 1950: Max 70 Min 0.16 Mean(mgd) 12.6 Mean(cfs) 19.5 Ac-ft 14,090
Fiscal year 1950-51: Max 70 Min 0.03 Mean(mgd) 5.38 Mean(cfs) 8.32 Ac-ft 6,020

g Computed from once- or twice-daily staff-gage readings.
Note.--No gage-height record July 1-5, Nov. 7 to Dec. 4; discharge estimated on basis of recorded range in stage and records for nearby ditches.

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 1950 to June 1951

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
Oct. 31	Olinda Reservoir intake	Olinda Reservoir	At Olinda Reservoir, near Olinda.	2.17	1.40

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 1951.

Gage.--Water-stage recorder. Combined Parshall flume and concrete weir control. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--20 years (1931-51), 7.19 mgd (11.1 cfs)

Extremes.--Maximum discharge during year, 66 mgd (102 cfs) Feb. 18 (gage height, 3.52 ft), from rating curve extended above 40 mgd on basis of weir formulae; minimum, 0.22 mgd (0.34 cfs) Oct. 6, 7.

1930-51: 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 ye 950-51 (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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.9	17.8	2.35	0.40	0.56	2.25	4.3	5.2	43	6.5	3.55	*2.5
2	3.7	16.1	2.25	.37	3.75	2.05	4.0	4.7	46	5.6	3.4	2.55
3	3.45	15.7	2.05	.34	3.1	2.05	3.9	4.3	48	6.0	3.9	2.85
4	3.25	13.8	1.96	.29	2.7	2.05	3.9	3.9	44	5.6	3.4	2.6
5	3.25	11.9	1.80	.27	2.5	1.96	3.7	3.7	42	6.0	3.25	2.5
6	3.75	11.3	1.69	.25	2.25	3.85	3.45	3.45	37.5	6.0	3.2	2.35
7	*3.45	13.1	1.53	.22	2.05	4.8	3.2	3.2	32.5	6.5	3.1	2.3
8	3.0	10.2	1.39	1.26	2.05	3.95	2.95	3.0	27	6.5	3.05	2.35
9	2.95	10.2	1.34	.91	2.05	3.55	2.85	2.8	24	6.5	2.95	2.3
10	4.4	9.7	1.25	.98	2.05	3.3	2.65	2.55	20.5	6.5	2.95	3.4
11	5.1	9.2	1.50	.82	2.0	3.25	3.3	2.35	17.8	6.9	3.2	4.8
12	4.5	8.7	1.25	.74	1.96	4.6	8.0	2.2	15.3	6.5	3.0	8.6
13	4.2	7.8	1.55	.66	1.96	6.5	6.5	3.55	13.2	6.5	3.1	7.4
14	3.9	7.8	1.64	.63	3.4	5.6	11.3	3.8	13.4	6.0	3.05	6.5
15	3.55	7.4	1.48	.56	*2.65	5.4	10.2	5.6	11.3	5.5	3.2	5.6
16	3.25	6.9	1.34	.53	3.2	5.1	14.0	6.0	12.6	5.3	3.05	5.4
17	3.3	6.5	1.20	.50	3.1	4.6	12.5	7.7	10.8	5.1	3.0	5.3
18	3.0	6.0	1.15	.44	3.65	4.3	13.2	19.5	10.2	5.0	2.95	5.0
19	3.5	5.6	1.06	.40	3.2	4.1	10.2	26	9.7	4.6	2.85	5.0
20	10.5	5.4	.98	.37	4.9	3.95	12.5	28.5	10.2	4.3	2.75	4.6
21	11.1	5.0	.94	.40	3.7	3.9	11.9	28.5	10.2	3.95	2.65	4.4
22	10.8	4.6	.94	.50	3.3	3.7	12.1	29.5	9.7	3.8	2.55	4.3
23	11.1	4.3	.86	.58	3.1	3.55	10.8	25	9.2	3.75	2.45	4.2
24	10.8	3.95	.78	.82	3.0	3.3	10.2	21.5	8.7	3.95	2.35	4.2
25	10.8	3.75	.70	1.00	2.85	3 45	9.7	23.5	8.3	3.9	2.3	4.0
26	10.2	3.55	.63	1.22	3.25	3.55	8.7	20.5	7.8	3.7	2.55	3.9
27	9.7	3.25	.60	.86	2.85	3.8	8.3	29	7.4	3.75	2.7	3.75
28	13.6	3.0	.53	.74	2.65	3.75	7.4	36	6.9	3.55	2.2	3.7
29	16.9	2.85	.57	.66	2.55	5.6	6.9	-	6.5	3.95	2.15	3.55
30	17.8	2.65	.54	.63	2.35	4.8	6.0	-	6.0	3.75	3.35	3.3
31	17.8	2.55	-	.56	-	4.6	5.6	-	6.0	-	2.6	-
Total	220.50	240.55	37.85	18.91	82.68	121.21	237.20	355.50	575.7	155.45	90.75	123.20
Mean:												
mgd	7.11	7.76	1.26	0.610	2.76	3.91	7.65	12.7	18.6	5.18	2.93	4.11
cfs	11.0	12.0	1.95	0.944	4.27	6.05	11.8	19.6	28.8	8.01	4.53	6.36
Ac-ft	677	738	116	58	254	372	728	1,090	1,770	477	279	378

Calendar year 1950: Max 48 Min 0.22 Mean(mgd) 7.47 Mean(cfs) 11.6 Ac-ft 6,370
Fiscal year 1950-51: Max 48 Min 0.22 Mean(mgd) 6.19 Mean(cfs) 9.58 Ac-ft 6,940

Peak discharge (base, 50 mgd).--Feb. 18 (12 p.m.) 66 mgd (102 cfs), 3.52 ft; Feb. 27 (10 p.m.) 59 mgd (91 cfs), 3.42 ft; Mar. 1 (5:30 p.m.) 66 mgd (102 cfs), 3.49 ft; Mar. 3 (6 a.m.) 59 mgd (91 cfs), 3.42 ft.

* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--20 years (1929-40, 1941-47, 1948-51), 174 mgd (269 cfs).

Extremes.--Maximum discharge during year, 8,940 mgd (13,800 cfs) Mar. 1 (gage height, 17.44 ft), from rating curve extended above 3,400 mgd by logarithmic plotting; minimum, 2.05 mgd (3.17 cfs) Oct. 6, 7.
1928-51: 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 period 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.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.4	1.6	5.0	234
1.6	4.1	6.0	382
1.8	7.6	8.0	820
2.0	12.3	10.0	1,520
2.5	29	12.0	2,690
3.0	54	14.0	4,460
4.0	124		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	164	8.3	7.1	6.9	17.4	25	17.4	3,910	197	52	*26.5
2	25	141	7.8	5.6	100	14.9	22	15.2	2,470	117	51	22.5
3	22	249	7.4	5.1	112	18.5	19.7	13.9	1,320	130	121	25.5
4	19.0	121	6.7	3.4	54	17.7	16.8	12.6	1,700	160	57	26
5	20.5	93	6.0	3.0	65	15.2	14.6	14.9	2,040	130	46	21.5
6	41	72	6.0	2.35	41	25	13.1	14.4	977	136	42	21
7	64	130	5.6	2.35	61	25	12.6	11.8	567	124	38	20
8	35.5	108	5.8	17.5	45	18.6	11.0	9.8	350	117	34	21.5
9	24.5	86	7.8	223	29	13.1	10.6	8.7	248	179	30.5	21
10	69	66	10.0	617	22.5	11.0	10.6	7.4	186	205	30	168
11	121	78	41	103	20.5	14.4	33	6.2	a120	117	35	248
12	48	91	*29	42	19.7	23.5	1,070	6.0	a90	88	38	484
13	35.5	54	16.8	29	17.1	85	325	77	a70	69	48	164
14	29	141	29	21	15.5	44	588	169	a600	57	62	93
15	24.5	75	22	16.8	15.8	33	637	331	a450	52	44	66
16	22.5	48	20	13.6	23	43	*1,220	255	a700	49	47	54
17	33	66	16	11.3	20.5	25	290	981	a500	46	42	42
18	23	54	14	9.6	14.9	20.5	164	2,060	a400	52	38	37.5
19	23	37.5	11	10.0	13.9	17.4	106	2,570	a350	40	32	42
20	868	29	8.9	8.9	130	14.9	72	1,400	a400	38	29.5	29
21	550	25	7.2	7.4	184	14.4	54	431	*a300	37	27.5	23.5
22	204	22	8.0	10.5	57	12.3	73	1,340	222	40	26	20.5
23	279	20	7.2	12.8	25	10.8	74	504	154	31	24	19.4
24	124	18.0	5.6	51	19.7	20	42	320	108	45	22.5	20.5
25	93	17.4	5.0	40	16.8	250	45	914	90	134	21.5	24
26	66	15.2	3.7	37.5	223	80	48	498	69	57	22	19.7
27	57	14.6	3.55	20.5	59	46	37.5	2,470	54	60	36	16.4
28	405	13.9	3.0	14.4	31	43	29	2,090	165	46	26.5	14.1
29	1,390	12.6	4.2	11.3	24.5	92	24.5	-	525	81	26	11.8
30	514	11.0	12.5	9.1	20	63	21	-	143	63	36	10.6
31	257	9.6	-	7.6	-	35.5	18.7	-	231	-	45	-
Total	5,511.5	2,080.8	339.05	1,373.70	1,487.3	1,164.1	5,127.7	16,548.3	19,509	2,697	1,230.0	1,813.5
Mean:												
mgd	178	67.1	11.3	44.3	49.6	37.6	165	591	629	89.9	39.7	60.4
cfs	275	104	17.5	68.5	76.7	58.2	255	914	973	139	61.4	93.5
Ac-ft	16,910	6,390	1,040	4,220	4,560	3,570	15,740	50,780	59,870	8,280	3,770	5,570

Calendar year 1950. Max 2,500 Min 2.35 Mean(mgd) 137 Mean(cfs) 212 Ac-ft 153,700
Fiscal year 1950-51: Max 3,910 Min 2.35 Mean(mgd) 161 Mean(cfs) 249 Ac-ft 180,700

Peak discharge (base, 5,600 mgd).--Feb. 18 (12 p.m.) 8,620 mgd (13,300 cfs), 17.22 ft; Mar. 1 (3:30 p.m.) 8,940 mgd (13,800 cfs), 17.44 ft.

* Discharge measurement made on this day.

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

Waiilikahi 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 1951. Prior to July 1941, published as Waimanuliiiii Stream near Waimanu.

Gage.--Water-stage recorder. Altitude of gage is 2,740 ft (by barometer).

Average discharge.--12 years, 641 mgd (9.92 cfs).

Extremes.--Maximum discharge during year, 178 mgd (275 cfs) Aug. 14 (gage height, 3.50 ft), from rating curve extended above 25 mgd as explained below; minimum, 0.51 mgd (0.79 cfs) Mar. 30.

1939-51: 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 except those above 25 mgd, which are fair, and those for periods of no gage-height record, which are poor.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.28	1.4	11.5
.5	.68	1.8	23.5
.6	1.28	2.2	42
.8	3.05	2.6	69
1.0	5.1		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.89	2.15	1.43	2.5	0.75	13.6	2.9	1.18	4.1	*5.5	1.61	1.23
2	7.3	8.2	2.2	3.35	.70	42	5.0	2.2	2.6	2.15	6.7	1.51
3	2.8	3.85	1.30	3.15	.70	7.9	4.1	3.55	1.61	6.0	8.4	6.6
4	6.8	2.3	1.03	1.33	.80	5.9	2.4	3.1	1.23	12.1	2.5	2.0
5	13.2	1.77	1.03	2.5	.75	8.4	2.75	3.0	1.09	3.3	10.5	1.23
6	7.5	5.5	.91	1.61	.70	60	3.35	2.85	2.1	1.86	14.7	1.42
7	7.1	12.0	1.45	1.54	.70	50	2.5	1.30	2.1	2.05	5.5	*3.5
8	4.1	2.65	1.77	12.4	.70	19.6	2.25	.91	1.16	3.1	2.55	2.85
9	4.9	2.05	1.53	2.25	9.8	6.0	2.5	.80	.97	4.3	2.6	3.1
10	21	4.3	10.7	1.16	16.4	17.0	1.69	.70	.91	2.75	3.65	16.8
11	9.9	12.7	3.75	.85	17.7	10.8	1.45	.65	.80	1.23	1.77	9.5
12	2.45	7.4	1.45	.75	2.9	23	1.53	2.55	.75	.91	1.37	12.5
13	1.69	18.7	3.1	.70	1.53	33.5	1.37	54	.70	.80	1.16	7.9
14	*1.45	56	4.2	.75	a.80	5.7	5.1	27.5	24	.65	1.03	4.1
15	1.23	8.4	4.4	1.48	a6.0	10.6	3.1	24	2.05	.65	.91	4.8
16	4.1	4.1	3.1	1.66	a15	5.8	37	9.8	1.60	.80	.85	5.5
17	6.6	6.0	3.5	.91	a13	2.85	2.95	7.4	2.0	2.75	3.4	5.2
18	2.7	3.15	1.86	.75	a4.5	2.15	1.95	8.8	1.68	2.35	2.75	5.1
19	23	1.86	*1.31	.75	a5.0	1.69	1.45	8.7	1.58	1.16	1.45	4.1
20	52	1.69	1.03	.70	a14	1.45	1.23	2.2	1.03	1.03	1.44	2.05
21	15.8	1.45	1.17	.87	a5.0	1.23	a1.1	1.69	.91	2.55	2.25	1.45
22	9.2	1.30	5.9	1.86	a1.8	1.16	a2.5	3.75	4.4	3.1	3.2	1.23
23	10.5	1.09	1.77	2.4	a1.2	1.40	a5.8	2.4	1.92	8.7	3.85	1.30
24	19.7	1.67	1.03	2.75	*.85	3.9	5.1	1.45	2.0	13.3	3.25	1.23
25	7.1	2.65	.85	11.0	29	13.3	2.05	3.05	1.67	8.8	3.5	1.77
26	7.4	1.86	.80	8.1	42	12.4	1.98	7.2	.97	13.2	3.0	1.30
27	15.2	7.3	.75	2.15	4.5	28	3.3	3.05	.75	14.0	3.55	.97
28	25	2.4	.70	1.16	2.15	5.3	1.69	9.6	.65	5.8	1.53	.85
29	38.5	3.0	.75	.85	1.86	31.5	1.16	-	.60	3.5	1.37	.80
30	7.8	2.6	.97	.85	1.37	5.8	.97	-	.70	2.4	3.1	.75
31	2.75	1.45	-	.80	-	6.8	.85	-	3.65	-	1.37	-
Total	340.66	191.54	65.74	73.88	202.16	438.73	112.87	197.38	72.28	130.79	104.81	112.64
Mean:												
mgd	11.0	6.18	2.19	2.38	6.74	14.2	3.64	7.05	2.33	4.36	3.38	3.75
cfs	17.0	9.56	3.39	3.68	10.4	22.0	5.63	10.9	3.61	6.75	5.23	5.80
Ac-ft	1,050	588	202	227	620	1,350	346	606	222	401	322	346

Calendar year 1950. Max 81 Min 0.59 Mean(mgd) 7.32 Mean(cfs) 11.3 Ac-ft 8,210
Fiscal year 1950-51: Max 60 Min 0.60 Mean(mgd) 5.60 Mean(cfs) 8.66 Ac-ft 6,280

Peak discharge (base 150 mgd).--Aug. 14 (8:30 a.m.) 178 mgd (275 cfs), 3.50 ft; Nov. 25 (12 p.m.) 170 mgd (263 cfs), 3.46 ft.

* Discharge measurement made on this day.

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

Kaimu Stream near Waimanu

Location.--Lat 20°08'30", long. 155°39'40", on right bank 300 ft upstream from Waimanu trail crossing, 1.5 miles west of Waimanu, and 1.6 miles upstream from mouth.

Drainage area.--0.5 sq mi.

Records available.--March 1939 to June 1947, July 1950 to June 1951.

Gage.--Water-stage recorder. Altitude of gage is 1,980 ft (by barometer).

Average discharge.--9 years, 5.52 mgd (8.54 cfs).

Extremes.--Maximum discharge during year, 600 mgd (928 cfs) Nov. 9 (gage height, 3.62 ft), from rating curve extended above 7 mgd as explained below; minimum, 0.38 mgd (0.59 cfs) Nov. 8, 9.
1939-47, 1950-51: Maximum discharge, 3,050 mgd (4,720 cfs) June 30, 1941 (gage height, 9.6 ft, from floodmarks), from rating curve extended above 7 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Feb. 16, 17, 1942, Feb. 1, 1943.

Remarks.--Records good except those for periods of no gage-height record and those above 7 mgd, which are fair.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.30	1.1	9.5
.4	.62	1.5	21
.5	1.10	2.0	43
.6	1.80	2.3	69
.7	2.75	2.4	100
.9	5.5		

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	2.55	1.4	1.34	0.55	14.6	3.0	1.10	3.7	4.8	1.10	1.0
2	6.6	5.8	1.8	3.05	.48	43	3.35	2.25	2.3	1.70	3.95	1.1
3	2.4	3.0	1.1	1.99	.48	9.8	5.1	3.8	1.29	3.85	8.2	6.0
4	5.8	2.3	.9	.98	.74	6.3	2.3	3.1	1.05	6.7	1.90	1.6
5	11	1.7	.9	1.39	.65	7.6	2.05	4.1	.98	3.0	9.4	1.1
6	6.6	4.5	.8	1.10	.55	52	4.0	2.95	1.80	1.16	11.9	.9
7	5.8	9.0	1.0	.93	.48	40	2.3	1.10	1.80	1.23	5.7	*2.6
8	3.5	2.4	1.5	9.5	.41	17.4	1.84	.83	.98	1.85	2.3	1.63
9	3.6	2.0	1.3	1.90	30	7.3	2.9	.74	.79	2.25	1.61	1.10
10	16	3.2	8.0	.93	15.0	12.4	1.35	.65	.74	2.5	3.6	10.4
11	8.0	9.0	2.3	.70	15.9	10.6	1.16	.62	.65	.83	1.41	8.0
12	2.4	6.5	1.3	.62	3.4	16.2	1.16	3.5	.62	.70	1.05	10.5
13	1.7	16	2.5	.55	1.55	24.5	1.10	34	.62	.58	.88	7.4
14	1.4	40	3.8	.51	1.10	7.1	4.5	20.5	16.0	.55	.79	3.4
15	*1.29	5.8	2.7	1.10	7.0	8.5	2.75	16.9	1.55	.51	.70	3.6
16	3.0	4.5	2.5	1.49	13.0	7.2	36.5	9.6	1.59	.55	.65	4.7
17	5.8	5.6	3.0	.79	10.5	3.1	2.65	7.5	1.70	1.76	2.35	5.2
18	2.85	3.5	1.6	.58	4.3	2.3	1.63	8.9	1.23	1.66	2.1	5.3
19	18.5	2.1	1.2	.55	4.2	1.80	1.23	7.1	1.23	.79	1.05	4.2
20	55	1.9	.95	.51	12.1	1.49	.98	2.3	.83	.65	.85	1.63
21	12.0	1.5	*.90	.51	4.4	1.29	.93	1.63	.74	.93	.95	1.10
22	10.2	1.3	5.4	1.29	1.63	1.16	2.3	4.3	4.1	2.05	2.8	.93
23	8.4	1.1	1.29	1.56	1.23	1.05	6.5	2.2	1.49	5.0	3.6	.98
24	15.9	1.5	.79	1.90	.98	1.63	*5.6	1.29	1.10	9.5	3.0	.88
25	6.9	2.3	.70	7.1	72	9.2	1.70	3.3	1.10	7.9	1.7	1.10
26	7.8	1.6	.65	7.3	31	7.9	1.85	6.7	.74	10.2	2.5	.83
27	14.8	6.5	.58	1.49	4.7	21.5	3.95	3.75	.62	10.6	4.0	.70
28	17.7	2.0	.55	.88	2.3	5.2	1.35	7.6	.55	5.2	1.3	.62
29	23	3.1	.55	.70	1.99	21	.98	-	.51	2.35	1.0	.62
30	7.4	2.1	.70	.65	1.35	7.1	.83	-	.51	1.70	2.3	.58
31	3.25	1.3	-	.62	-	6.1	.74	-	2.9	-	1.2	-
Total	269.99	155.65	52.56	54.51	244.87	376.32	108.58	162.31	55.77	93.05	85.84	89.70
Mean:												
mgd	8.71	5.02	1.75	1.76	8.16	12.1	3.50	5.80	1.80	3.10	2.77	2.99
cfs	13.5	7.77	2.71	2.72	12.6	18.7	5.42	8.97	2.79	4.80	4.29	4.63
Ac-ft	829	478	161	167	751	1,150	333	498	171	286	263	275

Calendar year 1950. Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
Fiscal year 1950-51: Max 72 Min 0.41 Mean(mgd) 4.79 Mean(cfs) 7.41 Ac-ft 5,360

Peak discharge (base, 200 mgd).--Aug. 14 (time unknown) 540 mgd (836 cfs), 3.38 ft; Nov. 9 (7 p.m.) 600 mgd (928 cfs), 3.62 ft; Nov. 25 (11 p.m.) 570 mgd (882 cfs), 3.48 ft.
* Discharge measurement made on this day.
Note.--No gage-height record July 1-15, Aug. 5 to Sept. 21, May 20 to June 7; discharge estimated on basis of records for stations on nearby streams.

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 1951.

Gage.--Water-stage recorder. Altitude of gage is 1,870 ft (by barometer).

Average discharge.--12 years, 4.14 mgd (6.41 cfs).

Extremes.--Maximum discharge during year, 128 mgd (198 cfs) Nov. 25 (gage height, 3.67 ft), from rating curve extended above 8 mgd as explained below; minimum, 0.16 mgd (0.25 cfs) Nov. 3.
1939-51: 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 except those above 8 mgd, which are fair.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.13	0.8	3.9
.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 a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.88	1.43	0.74	0.84	0.21	10.2	1.80	0.53	2.7	2.95	0.64	0.44
2	5.2	2.45	.84	1.86	.18	34.5	2.25	1.05	1.54	1.08	2.5	.46
3	1.33	2.2	.48	1.19	.20	7.3	2.7	2.3	.84	3.0	5.8	4.6
4	4.1	1.29	.41	.52	.44	4.8	1.29	1.81	.60	4.1	1.29	1.06
5	8.4	.90	.41	.76	.32	6.4	1.27	3.45	.56	1.80	7.8	.52
6	6.6	3.25	.35	.60	.21	44	2.35	1.84	1.03	.64	9.3	.41
7	3.95	8.0	.41	.44	.21	36.5	1.36	.64	1.08	.60	4.0	1.84
8	1.94	1.50	.60	6.7	.18	14.5	1.11	.44	.52	1.11	1.57	*1.00
9	2.1	1.02	.48	1.22	13.9	5.6	1.84	.35	.41	1.18	.95	.64
10	11.0	1.77	4.5	.52	12.7	10.4	.79	.32	.35	1.40	2.35	8.0
11	7.6	6.6	2.75	.38	13.2	7.2	.60	.27	.30	.41	.90	5.7
12	1.77	4.7	.64	.27	2.35	14.2	.60	1.99	.27	.30	.60	8.2
13	1.15	9.8	1.51	.23	1.02	19.3	.56	29.5	.27	.25	.48	5.4
14	1.08	29	2.4	.21	.64	4.6	2.95	15.8	13.5	.21	.41	2.3
15	.79	7.1	1.49	.58	5.2	6.5	1.69	15.3	1.11	.20	.35	2.45
16	1.41	3.15	1.45	.84	10.4	4.3	19.1	6.8	.84	.20	.30	3.3
17	3.55	3.5	1.99	.35	8.1	1.92	1.72	5.3	1.02	1.04	1.36	3.5
18	1.33	2.05	.90	.23	3.0	1.43	.96	6.3	.60	1.04	1.54	4.0
19	14.0	1.15	.56	.20	3.55	1.08	.69	6.2	.60	.44	.56	2.95
20	27.5	1.02	.44	.18	8.9	.84	.56	1.64	.38	.32	.38	1.22
21	10.2	.84	.41	.20	3.15	.74	.44	1.08	.32	.38	.44	.79
22	6.3	.69	3.2	.69	1.15	.64	1.33	2.65	2.65	1.16	1.04	.64
23	7.0	.56	*.83	.91	.79	.64	4.3	1.43	.95	4.8	2.05	.64
24	11.1	.83	.41	1.09	.60	1.29	3.9	.79	.48	7.1	2.2	.56
25	4.4	1.21	.35	5.3	16.4	6.3	*1.18	1.56	.56	6.2	.85	.69
26	4.1	.84	.27	4.6	25	5.2	1.11	5.4	.35	8.1	1.86	.52
27	9.0	2.95	.25	.90	3.6	17.9	2.75	1.94	.25	7.8	2.75	.41
28	15.5	1.21	.91	.44	1.71	3.3	.84	6.3	.21	3.4	.69	.35
29	17.0	1.76	.23	.30	1.36	17.0	.56	-	.20	1.50	.48	.32
30	5.9	1.29	.32	.27	.90	4.8	.41	-	.23	.96	1.23	.30
31	1.92	.69	-	.23	-	3.95	.35	-	1.69	-	.56	-
Total	196.10	104.75	29.83	33.05	139.57	297.33	63.36	122.98	36.41	63.67	57.23	63.21
Mean:												
mgd	6.33	3.38	0.994	1.07	4.65	9.59	2.04	4.39	1.17	2.12	1.85	2.11
cfs	9.79	5.23	1.54	1.66	7.19	14.8	3.16	6.79	1.81	3.28	2.86	3.26
Ac-ft	602	321	92	101	428	912	194	377	112	195	176	194

Calendar year 1950. Max 44 Min 0.18 Mean(mgd) 4.39 Mean(cfs) 6.79 Ac-ft 4,920
Fiscal year 1950-51: Max 44 Min 0.18 Mean(mgd) 3.31 Mean(cfs) 5.12 Ac-ft 3,700

Peak discharge (base, 100 mgd).--Aug. 14 (9 a.m.) 113 mgd (175 cfs), 3.52 ft; Nov. 9 (6 p.m.) 128 mgd (198 cfs), 3.66 ft; Nov. 25 (12 p.m.) 128 mgd (198 cfs), 3.67 ft.
* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder. Altitude of gage is 1,880 ft (by barometer).

Average discharge.--12 years, 0.708 mgd (1.10 cfs).

Extremes.--Maximum discharge during year not determined; minimum, 0.16 mgd (0.25 cfs) June 28, 29, 30.
1939-51: 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 for period of no gage-height record and those above 2 mgd, which are poor.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.15	0.11	0.6	2.4
.2	.18	.7	3.5
.3	.43	.9	6.4
.4	.78	1.2	13.4
.5	1.44	1.5	18.9

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.29	0.55	0.34	0.29	0.18	1.55	0.55	0.46	0.46	0.34	0.20	0.22
2	.46	.52	.32	.27	.18	12.5	.52	.46	.43	.27	.26	.24
3	.29	.49	.32	.27	.20	4.9	.52	.84	.43	.32	.48	.43
4	.50	.49	.32	.24	.20	3.4	.49	.49	.43	.27	.22	.22
5	.84	.46	.32	.24	.18	5.4	.52	1.82	.43	.24	1.19	.22
6	.71	.49	.32	.24	.18	a17.8	.49	.65	.43	.24	.77	*.20
7	.43	.95	.32	.24	.18	a12.5	.43	.52	.43	.22	.46	.20
8	.34	.46	.29	.62	.18	a3.0	.43	.46	.40	.22	.32	.20
9	.32	.43	.29	.27	4.0	a1.5	.43	.43	.40	.22	.29	.20
10	1.00	.46	.36	.24	2.45	a2.1	.43	.43	.37	.22	.29	.24
11	.64	.67	.32	.24	2.65	a1.4	.43	.40	.37	.22	.27	.24
12	.43	.52	.29	.22	.73	a2.0	.43	.63	.37	.22	.27	.45
13	.37	1.29	.29	.22	.52	a2.5	.43	3.95	.37	.20	.27	.34
14	.37	2.6	.32	.22	.43	a1.2	.43	1.59	1.98	.20	.24	.20
15	*.34	.73	.27	.24	.95	.94	.43	2.2	.43	.18	.24	.18
16	.34	.61	.24	.22	2.2	.73	1.69	1.00	.43	.20	.24	.25
17	.34	.55	.29	.22	1.18	.65	.43	.82	.37	.24	.27	.32
18	.37	.52	.24	.22	.61	.58	.40	1.01	.34	.22	.22	.35
19	1.51	.49	.24	.22	1.62	.58	.40	.96	.34	.20	.22	.29
20	3.85	.49	.24	.22	2.1	.55	*.37	.61	.32	.20	.22	.20
21	1.70	.46	.27	.22	.78	.52	.37	.58	.32	.20	.22	.20
22	1.24	.43	.27	.20	.58	.52	.46	.69	.44	.20	.22	.20
23	.97	.40	*.24	.20	.52	.49	1.10	.55	.32	.24	.32	.18
24	1.15	.48	.24	.20	.46	.59	.61	.52	.37	.34	.29	.18
25	.61	.43	.27	.25	3.3	.58	.43	.52	.29	.53	.24	.18
26	.55	.37	.27	.32	3.95	.52	.55	.69	.27	.58	.22	.18
27	1.05	.40	.27	.20	.82	2.2	.61	.49	.27	.42	.29	.18
28	1.49	.37	.24	.18	.61	.61	.43	.46	.24	.27	.22	.18
29	.78	.40	.29	.18	.55	1.33	.43	-	*.24	.22	.22	.18
30	.69	.37	.27	.18	.49	.69	.40	-	.30	.20	.22	.16
31	.55	.34	-	.18	-	.58	.40	-	.29	-	.22	-
Total	24.52	18.22	8.57	7.47	32.98	84.41	16.04	24.23	12.88	7.84	9.62	7.01
Mean:												
mgd	0.791	0.588	0.286	0.241	1.10	2.72	0.517	0.865	0.415	0.261	0.310	0.234
cfs	1.22	0.910	0.443	0.373	1.70	4.21	0.800	1.34	0.642	0.404	0.480	0.362
Ac-ft	75	56	26	23	101	259	49	74	40	24	30	22

Calendar year 1950: Max 17.8 Min 0.18 Mean(mgd) 0.815 Mean(cfs) 1.26 Ac-ft 911
Fiscal year 1950-51: Max 17.8 Min 0.16 Mean(mgd) 0.695 Mean(cfs) 1.08 Ac-ft 779

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for nearby streams.

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 upstream from mouth, and 1.9 miles west of Waimanu.

Drainage area.--0.6 sq mi.

Records available.--February 1939 to June 1951.

Gage.--Water-stage recorder. Altitude of gage is 1,910 ft (by barometer).

Average discharge.--12 years, 2.16 mgd (3.34 cfs).

Extremes.--Maximum discharge during year, 275 mgd (425 cfs) Nov. 9 (gage height, 4.61 ft), from rating curve extended above 8 mgd by test on model of station site; minimum, 0.12 mgd (0.19 cfs) Nov. 3, 8, 9.
1939-51: 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 except those for periods of no gage-height record and those above 8 mgd, which are poor.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

0.19	0.14	1.0	8.6
.3	.43	1.2	13.1
.4	.88	1.4	18.4
.5	1.52	1.7	28.5
.6	2.35	2.0	41
.8	4.9	2.5	68

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.37	0.83	0.40	0.28	0.16	5.8	0.93	0.56	0.75	1.14	0.28	0.20
2	2.45	.73	.37	.67	.14	39.5	1.05	.73	.60	.59	.76	.22
3	.43	.78	.37	.43	.16	13.5	1.54	2.2	.52	1.29	2.8	2.0
4	2.3	.73	.34	.31	.34	3.0	.73	1.01	.50	.74	.51	.34
5	4.6	.59	.34	.25	.25	6.0	.68	4.1	.47	.47	6.0	.22
6	3.0	1.31	.34	.25	.18	53	1.04	1.60	.46	.31	5.2	*.20
7	1.16	4.6	.34	.22	.14	65	.78	.63	.45	.28	1.81	.34
8	.59	.68	.31	3.05	.14	20	.60	.51	.43	.28	.78	.40
9	.47	.55	.31	.43	27.5	3.55	1.22	.43	.41	.28	.47	.28
10	4.4	.68	1.65	.28	11.6	6.1	.47	.40	.38	.34	.73	1.94
11	3.4	3.55	.93	.25	13	3.2	.43	.38	.37	.25	.43	1.34
12	.63	1.79	.37	.22	1.70	7.8	.40	1.5	.36	.22	.37	3.0
13	.55	5.8	.37	.20	.93	11.4	.37	50	.35	.22	.34	2.05
14	.55	15.4	.84	.18	.63	2.2	1.01	15	10	.20	.31	.59
15	.47	3.1	.43	.96	3.55	2.6	.75	16	.65	.20	.31	.43
16	.43	1.37	.37	.53	6.0	1.86	10.5	3.5	.56	.20	.31	1.13
17	.90	1.68	.74	.25	3.6	1.10	.68	2.5	.52	.37	.43	1.21
18	.75	.98	.40	.20	1.44	.93	.51	3.5	.45	.40	.51	1.71
19	8.8	.73	.31	.18	4.2	.78	.47	5.0	.40	.28	.37	1.37
20	19.4	.63	*.25	.18	6.4	.68	.40	1.2	.36	.22	.31	.43
21	6.2	.59	.28	.18	1.99	.63	.40	1.0	.35	.20	.31	.31
22	4.1	.55	1.07	.28	.93	.59	.68	1.5	1.3	.22	.31	.28
23	3.65	.51	.37	.28	*.59	.55	3.2	1.1	.45	1.60	1.55	.25
24	6.1	.63	.28	.31	.59	.80	2.15	.80	.42	3.45	.90	.25
25	1.62	.68	.25	1.83	15.4	1.94	.68	.90	.34	2.8	.34	.22
26	1.77	.55	.25	1.96	15.4	2.4	.82	3.0	.28	4.4	.40	.22
27	5.2	.68	.22	.40	2.1	10.9	1.49	.82	.25	2.4	.89	.20
28	7.4	.55	.22	.22	1.37	1.57	.59	1.3	.22	.85	.31	.20
29	5.1	.93	.25	.18	.93	8.2	.43	-	.15	.43	.25	.20
30	2.75	.73	.25	.18	.68	2.0	.40	-	*.28	.34	.25	.18
31	1.04	.47	-	.16	-	1.58	.37	-	.61	-	.22	-
Total	100.58	53.38	13.22	15.30	122.04	279.16	35.77	121.17	23.64	24.97	28.76	21.71
Mean:												
mgd	3.24	1.72	0.441	0.494	4.07	9.01	1.15	4.33	0.763	0.832	0.928	0.724
cfs	5.01	2.66	0.682	0.764	6.30	13.9	1.78	6.70	1.18	1.29	1.44	1.12
Ac-ft	309	164	41	47	375	857	110	372	73	77	88	67

Calendar year 1950. Max 65 Min 0.14 Mean(mgd) 2.77 Mean(cfs) 4.29 Ac-ft 3,110
Fiscal year 1950-51: Max 65 Min 0.14 Mean(mgd) 2.30 Mean(cfs) 3.56 Ac-ft 2,580

Peak discharge (base, 60 mgd).--Aug. 14 (9 a.m.) 74 mgd (114 cfs), 2.58 ft; Nov. 9 (6 p.m.) 275 mgd (425 cfs), 4.61 ft; Nov. 25 (11 p.m.) 112 mgd (173 cfs), 3.21 ft; Dec. 2 (8 a.m.) 98 mgd (152 cfs), 2.99 ft; Dec. 6 (2:30 p.m.) 92 mgd (142 cfs) 2.92 ft.
* Discharge measurement made on this day.
Note.--No gage-height record Nov. 11, 16, 19, Feb. 11 to Mar. 30; discharge estimated on basis of records for nearby streams.

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 1951.

Gage.--Water-stage recorder. Altitude of gage is 1,940 ft (by barometer).

Average discharge.--12 years, 1.28 mgd (1.98 cfs).

Extremes.--Maximum discharge during year, 56 mgd (87 cfs) Dec. 6 (gage height, 3.20 ft), from rating curve extended above 5 mgd by test on model of station site; minimum, 0.14 mgd (0.22 cfs) Nov. 7, 8.
1939-51: 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 station site; minimum, 0.13 mgd (0.20 cfs) Oct. 25, 1945.

Remarks.--Records fair except those for periods of no gage-height record and those above 5 mgd, which are poor.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day).

0.2	0.18	1.0	5.2
.3	.46	1.2	7.5
.4	.83	1.4	10.2
.6	1.87	1.8	17.0
.8	3.3	2.4	29.5

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.39	0.76	0.43	0.30	0.17	3.2	0.76	0.50	0.72	0.68	0.32	0.26
2	1.5	.68	.41	.40	.16	21	.74	.61	.61	.43	.43	.29
3	.45	.72	.39	.35	.17	3.7	.88	1.28	.53	.62	1.27	1.02
4	1.3	.67	.36	.28	.28	2.25	.64	.83	.53	.54	.46	.35
5	2.3	.65	.36	.25	.23	4.6	.61	3.45	.50	.38	2.9	.29
6	1.6	.90	.36	.25	.17	28.5	.68	1.24	.50	.35	2.4	*.26
7	1.0	2.0	.36	.23	.14	22	.64	.72	.50	.32	1.14	.29
8	.58	.68	.33	1.5	.14	5.2	.54	.57	.46	.32	.64	.38
9	.50	.60	.33	.50	10	2.4	.74	.50	.43	.32	.50	.29
10	2.4	.70	1.0	.31	4.5	3.55	.53	.46	.40	.32	.50	.77
11	1.8	1.3	.70	.28	4.8	2.2	.46	.43	.40	.29	.43	.64
12	.60	.90	.42	.25	1.2	3.9	.43	.80	.38	.29	.38	1.31
13	.53	3.5	.42	.22	.88	6.0	.40	11.2	.38	.26	.35	1.02
14	.53	9.0	.59	.20	.70	1.87	.59	4.3	4.8	.24	.35	.46
15	.50	1.5	.45	.60	2.0	1.70	.54	5.0	.61	.24	.32	.38
16	.50	.90	.41	.35	3.2	1.30	5.3	1.98	.57	.26	.32	.66
17	.60	1.0	.50	.26	1.9	1.02	.64	1.61	.53	.38	.38	.72
18	.58	.80	.35	.21	1.0	.88	.53	1.98	.46	.40	.35	.96
19	5.0	.70	.30	.20	2.5	.83	.43	2.3	.46	.38	.32	.78
20	10	.62	*.27	.20	3.5	.76	.43	.92	.40	.35	.26	.43
21	3.5	.58	.30	.22	1.4	.72	.38	.83	.38	.35	.26	.38
22	1.8	.55	.65	.27	*.83	.64	.53	1.10	.76	.38	.26	.38
23	1.6	.54	.38	.28	.72	.64	1.63	.88	.46	.49	.76	.38
24	2.5	.62	.29	.33	.64	.82	1.26	.72	.46	1.32	.53	.38
25	1.0	.68	.27	.90	8.5	1.06	.54	.81	.38	1.38	.32	.35
26	1.1	.58	.26	.95	8.4	1.03	.68	1.56	.32	1.88	.35	.32
27	2.5	.65	.24	.40	1.56	6.0	1.10	.69	.32	1.20	.56	.29
28	3.5	.58	.24	.24	1.06	1.09	.57	1.04	.32	.60	.32	.29
29	2.5	.80	.26	.20	.83	3.7	.50	-	.32	.40	.32	.29
30	1.8	.60	.26	.18	.72	1.33	.43	-	.35	.35	.29	.29
31	.90	.45	-	.17	-	.97	.43	-	.46	-	.29	-
Total	55.36	35.21	11.89	11.28	62.30	134.86	24.56	48.31	18.70	15.72	18.28	14.91
Mean:												
mgd	1.79	1.14	0.396	0.364	2.08	4.35	0.792	1.73	0.603	0.524	0.590	0.497
cfs	2.77	1.76	0.613	0.563	3.22	6.73	1.23	2.68	0.933	0.811	0.913	0.769
Ac-ft	170	108	36	35	191	414	75	148	57	48	56	46

Calendar year 1950. Max 28.5 Min 0.14 Mean(mgd) 1.56 Mean(cfs) 2.41 Ac-ft 1,750
Fiscal year 1950-51: Max 28.5 Min 0.14 Mean(mgd) 1.24 Mean(cfs) 1.92 Ac-ft 1,380

Peak discharge (base, 30 mgd).--Nov. 9 (time unknown) 48 mgd (74 cfs), 3.00 ft; Nov. 25 (12 m.) 54 mgd (84 cfs), 3.13 ft; Dec. 2 (8 a.m.) 56 mgd (87 cfs), 3.19 ft; Dec. 6 (2 p.m.) 56 mgd (87 cfs), 3.20 ft; Feb. 13 (1 p.m.) 32 mgd (50 cfs), 2.52 ft.
* Discharge measurement made on this day.
Note.--No gage-height record July 1-12, July 17 to Nov. 21; discharge estimated on basis of records for stations on nearby streams.

Awini ditch at East Honokaneiki Gulch, near Niulii

Location.--Lat 20°09'55", long. 155°43'10", at flume across East Honokaneiki Gulch, 4.5 miles southeast of Niulii.

Records available.--October 1927 to June 1949, July 1950 to June 1951.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--21 years (1928-38, 1939-49, 1950-51), 11.8 mgd (18.3 cfs).

Extremes.--1927-49, 1950-51: Maximum daily discharge, 33 mgd (51 cfs) Jan. 8, 1935, Aug. 10, 1938; no flow at times .

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

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.9	13.8	7.4	3.6	2.4	19.9	6.0	5.2	22.5	17.1	6.9	4.7
2	8.2	12.6	7.4	8.7	2.1	25.5	5.4	6.4	19.0	11.3	8.3	3.75
3	13.4	16.0	6.4	6.9	1.85	16.5	6.4	7.8	11.3	13.6	21.5	11.4
4	14.1	12.0	5.8	5.0	4.8	13.8	5.0	10.6	8.8	17.2	12.6	8.2
5	24.5	10.0	5.3	6.3	4.6	13.8	7.3	13.4	7.4	12.6	15.2	*4.7
6	24.5	16.8	5.1	6.0	3.15	23.5	14.0	15.8	11.0	8.3	23.5	3.6
7	21.5	22.5	5.1	4.7	2.35	20.5	14.5	7.8	13.8	8.0	20.5	8.5
8	15.7	14.5	5.6	20.5	1.90	15.2	10.5	6.0	7.8	10.6	12.6	10.6
9	15.2	10.6	5.6	9.9	9.1	12.0	14.5	5.0	6.4	8.3	7.8	7.9
10	24.5	10.0	7.3	5.4	12.6	13.2	9.0	4.4	5.6	8.8	12.0	22.5
11	25.5	19.7	17.0	4.1	13.2	11.3	7.4	4.0	5.2	5.5	8.3	22.5
12	16.0	22.5	7.8	3.15	7.8	13.2	8.0	8.2	4.8	4.4	6.0	23.5
13	10.6	23.5	7.2	2.65	5.6	16.0	7.8	25.5	4.6	3.75	5.1	20.5
14	9.4	25.5	12.6	2.35	4.9	10.0	13.6	23.5	21	3.25	4.5	18
15	7.8	21.5	10.0	3.5	15.2	10.6	16.1	24.5	15.1	2.95	3.95	16
16	10.6	17.5	12.0	4.7	14.6	9.4	22	20.5	10.0	2.95	3.55	19
17	19.0	21.5	14.5	3.25	22.5	7.4	12.0	19.0	12.6	4.7	8.9	21
18	12.0	19.8	9.4	2.6	20.5	6.4	7.4	19.0	8.8	6.0	13.2	18
19	25.5	13.2	6.4	2.2	16.0	5.6	5.4	19.8	8.8	4.7	7.4	14
20	26.5	12.0	5.0	1.94	21.5	5.1	5.2	13.8	8.4	3.7	5.0	10
21	24.5	10.0	4.4	2.2	18.2	4.9	5.2	11.3	7.9	3.25	5.3	8
22	23.5	8.8	10.1	4.3	11.3	4.7	11	18.7	15	5.7	5.6	7
23	25.5	7.8	8.8	6.1	8.3	4.6	20	15.4	14	8.8	7.2	8
24	25.5	10.6	*5.2	8.8	6.9	5.4	19	10.0	11	20.5	13.1	6
25	24.5	12.0	4.9	21.5	11.0	9.4	12	11.3	9	22.5	6.0	7
26	23.5	10.0	4.8	17.2	20.5	10.0	9	22.5	9	22.5	10.4	6
27	25.5	14.5	4.4	9.2	12.6	14.6	18.2	13.8	6.5	24.5	14.0	5.5
28	26.5	15.7	3.7	5.1	7.4	8.3	9.4	24.5	4.8	21.5	7.4	4.5
29	26.5	14.5	3.4	3.4	6.0	13.5	6.9	-	4.1	15.2	5.0	4.5
30	24.5	16.0	3.7	2.95	5.3	9.4	5.6	-	4.1	10.6	9.8	4.5
31	18.2	9.4	-	2.7	-	7.8	5.1	-	11.1	-	6.0	-
Total	599.6	464.8	216.1	190.89	294.15	361.5	318.9	387.7	309.4	312.75	296.60	329.35
Mean:												
mgd	19.3	15.0	7.20	6.16	9.80	11.7	10.3	13.8	9.98	10.4	9.57	11.0
cfs	29.9	23.2	11.1	9.53	15.2	18.1	15.9	21.4	15.4	16.1	14.8	17.0
Ac-ft	1,840	1,430	663	586	903	1,110	979	1,190	950	960	910	1,010

Calendar year 1950: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -
Fiscal year 1950-51: Max 26.5 Min 1.85 Mean(mgd) 11.2 Mean(cfs) 17.3 Ac-ft 12,530

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 3, 8-12, 22-26, Mar. 19-28, June 14-30; discharge estimated on basis of recorded range in stage and comparison with records of stations on nearby streams.

Kohala ditch at Pololu, near Niulii

Location.--Lat 20°10'20", long. 155°44'15", on right bank of open section of ditch in Pololu Valley just downstream from boundary between land of Honokane and land of Pololu, 2.8 miles upstream from mouth of Pololu Stream and 4 miles south of Niulii.

Records available.--August 1927 to June 1951.

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

Average discharge.--22 years (1928-38, 1939-51), 26.0 mgd (40.2 cfs).

Extremes.--1927-51: Maximum daily discharge, 62 mgd (96 cfs) Jan. 12, 1946; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 ft from Honokane and all streams west. Water is used for irrigation in vicinity of Kohala.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19.7	31.5	21.5	18.1	16.6	32.5	22.5	20.5	41	36	20.5	18.9
2	27	29.5	22.5	22.5	16.6	31.5	20.5	21.5	36	28	20.5	18.1
3	24	31.5	22.5	21.5	15.8	26	23	22.5	27	25	36	*24
4	27.5	27	21.5	20.5	18.9	26	21.5	26	24	33.5	27	22.5
5	38.5	24	20.5	20.5	18.9	24	23	28.5	22.5	26	29.5	18.1
6	43	33.5	20.5	21.5	17.4	29.5	33.5	32.5	26	20.5	43	17.4
7	38.5	46	20.5	19.7	16.6	27	a34.5	23	27	18.9	41	21.5
8	31.5	31.5	21.5	33	16.6	21.5	a30	20.5	20.5	23	27	25
9	31.5	25	20.5	29.5	27.5	22.5	a34	19.7	18.1	20.5	20.5	21.5
10	*50	24	22	20.5	36	26	a28	18.9	17.4	20.5	24	44
11	46	36	36	18.9	41	22	a25	18.1	16.6	17.4	21.5	46
12	31.5	46	23	18.1	28.5	a20	a26	23	16.6	15.8	18.1	43
13	25	46	22.5	17.4	21.5	a26	a25	43	15.8	17.4	17.4	43
14	23	41	27	16.6	20.5	a23	a31	43	37.5	19.7	16.6	36
15	21.5	31.5	*26	17.4	28	a24	a35	43	25	18.9	15.8	33.5
16	24.5	33.5	27	18.9	23	a23	a40	41	24	19.7	15.1	38.5
17	41	41	31.5	17.4	23	a21	a34	41	27	20.5	23	41
18	27	38.5	25	17.4	22.5	19.7	*29.5	41	20.5	22.5	31.5	38.5
19	45	31.5	22.5	16.6	24	18.9	25	41	20.5	21.5	21.5	31.5
20	54	27	20.5	16.6	25	18.9	23	33.5	18.1	19.7	17.4	25
21	45	25	19.7	15.8	24	18.1	22.5	29.5	17.4	19.7	16.6	20.5
22	41	24	24	17.4	24	17.4	29	38	29.5	21.5	17.4	18.9
23	46	22.5	24	19.7	22.5	17.4	38.5	38.5	26.5	23	18.1	19.7
24	49	25	20.5	22.5	20.5	17.4	38.5	27	21.5	41	26	18.1
25	41	26	18.9	37	22	31	29.5	27	19.7	43	18.1	18.9
26	41	25	18.9	41	26	33.5	26	38.5	*19.7	42	23	18.1
27	49	32.5	17.7	27	33	43	36	31.5	17.4	51	28.5	17.4
28	54	33.5	17.4	20.5	26	34	25	41	16.6	46	22.5	16.6
29	51	30	17.4	18.1	23	43	22.5	-	18.1	36	19.7	16.6
30	43	31.5	18.1	17.4	22.5	30.5	21.5	-	19.7	26	25	16.6
31	36	24	-	17.4	-	27	20.5	-	27	-	21.5	-
Total	1,165.7	974.5	671.1	656.4	701.4	803.3	873.5	872.2	714.2	794.2	723.3	788.4
Mean:												
mgd	37.6	31.4	22.4	21.2	23.4	25.9	28.2	31.2	23.0	26.5	23.3	26.3
cfs	58.2	48.6	34.7	32.8	36.2	40.1	43.6	48.3	35.6	41.0	36.1	40.7
Ac-ft	3,580	2,990	2,060	2,010	2,150	2,470	2,680	2,680	2,190	2,440	2,220	2,420

Calendar year 1950: Max 54 Min 15.8 Mean(mgd) 27.5 Mean(cfs) 42.5 Ac-ft 30,790
Fiscal year 1950-51: Max 54 Min 15.1 Mean(mgd) 26.7 Mean(cfs) 41.3 Ac-ft 29,890

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for stations on nearby streams and recorded range in stage.

Kehena ditch near Kohala

Location.--Lat 20°07'25", long. 155°45'05", on right bank at old Honokane weir, near head of West Branch of Honokanenui Gulch, and 8.5 miles southeast of Kohala.

Records available.--December 1917 to November 1919, April 1928 to June 1951.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,850 ft (from topographic map). Prior to Apr. 26, 1928, water-stage recorder at same site at different datum.

Average discharge.--23 years (1928-51), 7.55 mgd (11.7 cfs).

Extremes.--1917-19, 1928-51: Maximum daily discharge, 54 mgd (84 cfs) Mar. 23, 1919; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Intake on Honokanenui Stream 2 miles upstream from station, at altitude of about 4,200 ft. Water used for irrigation in vicinity of Hawi.

Revisions (fiscal years).--W 740: 1930.

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.80	4.1	2.4	0.42	0.79	26.5	4.1	0.65	16.1	15.5	3.1	1.50
2	4.2	4.1	2.2	2.0	.53	29	2.85	.53	10.9	6.7	2.85	.97
3	3.35	5.2	2.0	1.61	.42	22.5	3.1	.53	4.6	6.4	8.9	1.98
4	3.75	2.65	1.80	1.43	.65	25.5	2.2	.65	2.65	10.7	4.4	*2.1
5	11.5	2.2	1.80	6.3	.94	8.0	1.80	.79	2.4	4.9	7.4	1.36
6	15.2	7.8	1.43	4.1	.65	33.5	2.2	.79	8.1	2.4	16.1	1.10
7	13.9	16.5	1.80	2.85	.42	37	2.4	.53	6.8	4.1	11.2	1.50
8	9.2	5.4	2.4	16.7	.31	31.5	4.1	.42	2.85	5.4	3.35	4.0
9	11.0	3.1	2.4	6.2	.31	15.2	4.9	.31	1.61	3.1	1.50	3.85
10	40	2.4	6.0	2.2	5.5	21	2.65	.31	2.0	2.2	1.64	27.5
11	25	10.6	10.2	1.26	26	24	2.0	.21	1.43	2.4	1.64	22
12	6.8	17.8	3.1	.79	6.2	23.5	2.65	1.43	.94	2.4	1.23	20.5
13	4.9	22	2.4	.53	2.0	36.5	2.4	36.5	.94	1.26	.97	13.6
14	3.55	43	3.8	.42	1.43	15.8	11.4	36	33	.79	.72	8.9
15	2.65	52	4.7	.42	21.5	16.9	10.6	35.5	9.6	.65	.61	a7.2
16	10.3	20.5	7.4	.53	20	15.0	30	29	6.4	.53	.50	all
17	20.5	11.6	8.3	.42	*26	6.4	8.8	23	9.1	.79	8.0	a8
18	6.0	7.7	4.3	.42	15.3	3.8	4.3	22.5	3.35	.94	10.4	a6
19	24.5	3.35	2.4	.42	6.4	2.65	2.4	22	2.2	.65	4.2	a4.2
20	36.5	2.65	1.61	.31	14.6	1.80	1.61	6.1	1.61	.53	2.65	a3
21	23	2.2	1.10	.21	11.4	1.61	1.26	5.8	1.26	.53	3.25	a2.1
22	16.2	1.80	3.3	.53	3.55	1.26	10.7	30.5	19.4	2.4	2.65	a1.6
23	28.5	1.43	2.4	1.43	2.0	1.10	16.1	15.9	10.4	3.7	2.1	a1.2
24	25.5	1.43	1.26	4.5	1.26	.94	9.0	7.0	3.1	14.8	1.96	a1.5
25	17.8	1.61	.79	18.4	6.6	25.5	3.55	6.7	4.3	19.3	1.36	a1.8
26	16.1	2.0	.65	19.3	33.5	36.5	2.2	10.1	8.7	17.5	2.1	a1.4
27	19.3	11.8	.53	6.7	23	40	*2.0	7.3	2.4	34	3.25	a1.3
28	29	8.7	.42	2.85	5.8	16.5	1.43	24.5	1.43	24.5	2.3	a1.2
29	36	4.9	.31	1.43	2.85	40	1.10	-	.79	14.0	2.65	a1.2
30	19.1	5.8	.42	1.10	2.0	20	.79	-	.65	5.2	6.8	1.23
31	6.7	4.1	-	.94	-	8.0	.65	-	2.8	-	2.45	-
Total	491.80	290.42	83.62	106.72	241.91	589.46	155.24	325.55	181.81	208.27	122.23	164.79
Mean:												
mgd	15.9	9.37	2.79	3.44	8.06	19.0	5.01	11.6	5.86	6.94	3.94	5.49
cfs	24.6	14.5	4.32	5.32	12.5	29.4	7.75	17.9	9.07	10.7	6.10	8.49
Ac-ft	1,510	891	257	328	742	1,810	476	999	558	639	375	506

Calendar year 1950: Max 52 Min 0.21 Mean(mgd) 9.94 Mean(cfs) 15.4 Ac-ft 11,140
Fiscal year 1950-51: Max 52 Min 0.21 Mean(mgd) 8.11 Mean(cfs) 12.5 Ac-ft 9,090

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and comparison with records of stations on Waikoloa Stream.

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 1951.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,500 ft (from topographic map).

Extremes.--Maximum discharge during year, 300 mgd (464 cfs) Aug. 14 (gage height, 4.46 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 1.04 mgd (1.61 cfs) Nov. 6-10, Feb. 12.
1947-51: 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, that of Nov. 6-10, 1950, Feb. 12, 1951.

Remarks.--Records good except those above 10 mgd, which are poor.

Revisions (fiscal years).--W 1155: 1948(M).

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.28	1.04	1.9	10.5
1.3	1.17	2.1	16.2
1.4	1.96	2.3	24
1.5	3.1	2.6	40
1.6	4.6	2.9	61
1.7	6.3	3.1	80

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.96	3.55	2.9	2.9	1.17	9.0	4.0	1.24	2.7	2.25	2.35	1.46
2	6.5	3.1	3.15	3.5	1.10	11.2	2.7	1.31	2.05	1.70	2.55	*1.31
3	2.7	2.85	2.15	2.15	1.10	6.6	2.6	2.15	1.62	4.1	6.9	2.85
4	5.9	2.35	1.86	1.70	1.10	10.9	2.15	3.15	1.46	3.75	2.55	2.15
5	11.7	2.25	1.78	1.78	1.04	3.2	2.05	1.78	1.38	2.15	5.1	1.46
6	8.0	5.0	1.70	1.62	1.04	22.5	2.15	2.05	2.15	1.62	9.8	1.31
7	6.0	7.2	1.70	1.62	1.04	26	1.96	1.46	2.1	2.1	5.6	1.46
8	5.5	3.1	1.70	7.6	1.04	17.6	1.78	1.24	1.46	2.25	2.25	2.25
9	5.0	2.35	1.78	2.25	1.04	6.4	1.62	1.17	1.38	1.96	1.86	2.3
10	11.4	3.1	5.1	1.62	1.35	10.8	1.46	1.10	1.31	1.46	2.15	10.4
11	6.5	8.5	3.75	1.38	4.8	9.7	1.46	1.10	1.31	1.46	1.78	7.7
12	2.85	7.8	1.86	1.38	1.89	15.8	1.38	4.5	1.24	1.38	1.62	8.7
13	2.35	19.7	2.55	1.31	1.38	22.5	1.38	24	1.24	1.24	1.38	6.9
14	2.15	75	2.7	1.24	1.24	6.2	1.84	12.0	26.5	1.17	1.38	3.7
15	1.86	12.0	3.6	1.31	4.5	9.9	1.96	8.8	2.75	1.17	1.31	4.4
16	5.5	4.9	3.25	1.24	24.5	6.8	10.5	4.5	2.3	1.24	1.31	6.1
17	6.9	4.3	3.35	1.24	8.4	3.4	2.35	4.4	2.65	1.78	1.46	4.9
18	*2.95	3.85	2.15	1.17	2.05	2.5	1.78	6.0	1.78	2.15	1.62	4.6
19	16.9	2.7	1.78	1.17	1.70	2.05	1.46	6.2	1.62	1.46	1.46	3.65
20	32	2.35	1.62	1.17	6.2	1.78	1.38	2.25	1.46	1.31	1.62	2.15
21	13.7	2.05	1.78	1.17	3.9	1.62	1.31	2.05	1.46	2.15	1.88	1.70
22	7.2	1.86	3.85	1.17	1.70	1.54	3.25	5.1	7.6	3.25	2.05	1.54
23	9.1	1.78	2.05	1.17	1.38	1.46	3.4	2.95	3.3	5.9	1.78	1.46
24	15.3	1.78	1.70	1.17	1.24	2.45	2.7	1.78	*1.62	9.2	1.78	2.0
25	8.6	2.05	1.70	1.90	11.2	19.2	1.70	2.05	1.46	4.3	1.70	2.35
26	10.4	2.25	1.54	5.3	39.5	21	1.46	4.1	1.46	4.6	2.15	1.78
27	12.4	7.4	*1.31	1.96	5.0	13.2	1.46	2.05	1.38	8.4	2.25	1.46
28	21	3.1	1.31	1.46	2.15	14.6	1.38	2.5	1.31	5.7	1.62	1.46
29	39	4.9	1.31	1.31	1.70	60	1.24	-	1.24	3.4	2.35	1.54
30	12.1	4.6	1.24	1.24	*1.46	9.5	*1.17	-	1.24	2.35	3.65	2.0
31	4.6	2.5	-	1.17	-	6.0	1.17	-	1.54	-	1.78	-
Total	298.02	210.22	68.22	58.37	136.91	355.40	68.20	112.98	84.07	86.95	79.02	97.04
Mean:												
mgd	9.61	6.78	2.27	1.88	4.56	11.5	2.20	4.04	2.71	2.90	2.55	3.23
cfs	14.9	10.5	3.51	2.91	7.06	17.8	3.40	6.25	4.19	4.49	3.95	5.00
Ac-ft	915	645	209	179	420	1,090	209	347	258	267	243	298

Calendar year 1950. Max 75 Min 1.04 Mean(mgd) 5.95 Mean(cfs) 9.21 Ac-ft 6,670
Fiscal year 1950-51: Max 75 Min 1.04 Mean(mgd) 4.54 Mean(cfs) 7.02 Ac-ft 5,080

Peak discharge (base, 100 mgd).--Aug. 14 (9:30 a.m.) 300 mgd (464 cfs), 4.46 ft; Nov. 16 (4:30 p.m.) 260 mgd (402 cfs), 4.29 ft; Nov. 26 (1:30 a.m.) 230 mgd (356 cfs), 4.13 ft; Dec. 25 (11:30 p.m.) 105 mgd (162 cfs), 3.33 ft; Dec. 29 (11:30 a.m.) 250 mgd (387 cfs), 4.24 ft; Mar. 14 (6 a.m.) 105 mgd (162 cfs), 3.36 ft.
* Discharge measurement made on this day.

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 1951.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,450 ft (from topographic map).

Extremes.--Maximum discharge during year, 282 mgd (436 cfs) Aug. 14 (gage height, 4.34 ft), from rating curve extended above 10 mgd by logarithmic plotting; minimum, 0.84 mgd (1.30 cfs) Nov. 8, 9, Feb. 11, 12.
1947-51: 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 except those above 10 mgd, which are fair. Diversions above station for stock and domestic use.

Rating table, fiscal year 1950-51 (gage height, in feet, and discharge, in million gallons a day)

1.4	0.48	2.0	8.7
1.5	1.00	2.2	15.3
1.6	1.78	2.4	24.5
1.7	2.9	2.8	52
1.8	4.4	3.2	92

Discharge, in million gallons a day, fiscal year July 1950 to June 1951

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	3.95	2.8	2.85	1.00	11.8	5.3	1.00	2.8	2.0	2.55	1.23
2	7.5	3.35	3.2	3.85	.95	17.7	3.2	1.16	2.1	1.55	2.65	*1.16
3	2.9	3.2	2.0	2.1	.95	9.3	2.9	1.91	1.62	4.4	7.9	2.85
4	7.7	2.7	1.78	1.62	.95	16.4	2.55	3.35	1.39	4.3	2.65	2.2
5	16.6	2.25	1.62	1.62	.90	4.1	2.25	1.62	1.31	2.35	5.6	1.39
6	10.9	5.2	1.55	1.55	.90	37	2.35	2.0	2.05	1.55	12.7	1.23
7	7.4	8.5	1.55	1.55	.90	42	2.1	1.31	2.45	1.83	7.2	1.31
8	7.2	3.2	1.55	9.1	.90	27	1.78	1.08	1.55	2.1	2.55	2.35
9	6.8	2.45	1.55	2.45	.90	12.1	1.62	.95	1.31	1.89	1.78	2.25
10	17.0	3.05	5.0	1.62	1.18	14.0	1.47	.90	1.23	1.39	2.1	14.5
11	8.1	10.5	4.0	1.31	5.2	14.3	1.39	.90	1.16	1.47	1.62	11.0
12	3.35	9.8	1.78	1.23	1.98	23.5	1.39	4.4	1.08	1.23	1.39	12.2
13	2.7	28	2.2	1.16	1.39	36.5	1.39	39.5	1.16	1.00	1.23	10.1
14	2.35	86	2.45	1.16	1.23	8.4	1.70	19.2	40	.90	1.16	4.4
15	2.0	18.6	3.5	1.16	5.6	13.7	2.1	12.1	3.75	.90	1.16	5.3
16	6.6	5.4	3.4	1.16	30.5	9.5	14.5	5.3	2.55	.95	1.00	8.2
17	9.0	4.8	3.4	1.16	14.3	4.1	2.9	4.8	3.25	1.55	1.23	6.0
18	3.05	4.3	2.0	1.08	2.45	2.9	2.0	7.2	2.0	2.0	1.39	5.7
19	25	2.7	1.62	1.00	1.70	2.35	1.55	8.7	2.1	1.23	1.23	4.3
20	53	2.35	1.47	1.00	8.4	2.0	1.31	2.55	1.78	1.00	1.31	2.35
21	21.5	2.1	1.47	1.00	6.1	1.70	1.23	2.1	1.70	1.82	1.70	1.70
22	8.5	1.78	3.6	1.00	1.89	1.62	3.75	6.3	10.5	3.25	1.95	1.55
23	12.6	1.70	1.89	1.00	1.39	1.47	4.1	3.45	4.7	6.8	1.70	1.39
24	23	1.70	1.47	1.00	1.16	3.15	3.2	1.89	1.78	12.8	1.70	1.77
25	11.2	1.89	1.39	1.62	9.5	28.5	1.89	1.89	1.47	4.8	1.55	2.45
26	14.4	2.25	1.39	6.0	52	29	1.55	4.8	1.47	4.7	2.0	1.70
27	18.7	8.8	*1.16	2.0	7.0	19.3	1.55	2.1	1.16	10.9	2.1	1.47
28	32	3.3	1.16	1.39	2.45	17.4	1.31	2.5	1.08	6.9	1.47	1.47
29	59	5.2	1.16	1.16	1.70	77	1.23	-	1.00	3.95	1.83	1.55
30	18.9	5.2	1.16	1.16	1.47	14.1	*1.08	-	1.00	2.55	3.8	2.0
31	5.4	2.55	-	1.08	-	8.6	.95	-	1.31	-	1.62	-
Total	426.35	246.77	64.27	58.14	166.94	510.49	77.59	144.96	103.81	94.06	81.82	117.07
Mean:												
mgd	13.8	7.96	2.14	1.88	5.56	16.5	2.50	5.18	3.35	3.14	2.64	3.90
cfs	21.4	12.3	3.31	2.91	8.60	25.5	3.87	8.01	5.18	4.86	4.08	6.03
Ac-ft	1,310	757	197	178	512	1,570	238	445	319	289	251	359

Calendar year 1950. Max 86 Min 0.90 Mean(mgd) 7.61 Mean(cfs) 11.8 Ac-ft 8,530
Fiscal year 1950-51: Max 86 Min 0.90 Mean(mgd) 5.73 Mean(cfs) 8.87 Ac-ft 6,420

Peak discharge (base, 100 mgd).--July 29 (10 p.m.) 104 mgd (161 cfs), 3.28 ft; Aug. 14 (9:30 a.m.) 282 mgd (436 cfs), 4.34 ft; Nov. 16 (6 p.m.) 209 mgd (323 cfs), 4.00 ft; Nov. 26 (3 a.m.) 200 mgd (309 cfs), 3.93 ft; Dec. 25 (10:30 p.m.) 110 mgd (170 cfs), 3.37 ft; Dec. 29 (12 m.) 218 mgd (337 cfs), 4.04 ft; Mar. 14 (6:30 a.m.) 136 mgd (210 cfs), 3.57 ft.
* Discharge measurement made on this day.

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 1950 to June 1951

Date	Stream	Tributary to--	Locality	Discharge	
				Cubic feet per second	Million gallons a day
July 14	Lahomene.....	Pacific Ocean...	At altitude 3,250 ft, near Waimanu.	2.32	1.50
Sept.19	....do.....	....do.....	....do.....	1.54	.995
Nov. 24	....do.....	....do.....	....do.....	1.15	.743
Jan. 21	....do.....	....do.....	....do.....	.734	.474
Apr. 1	....do.....	....do.....	....do.....	10.0	6.46
June 7	....do.....	....do.....	....do.....	4.68	3.02
July 14	Kakaauki.....	....do.....	At altitude 2,930 ft, near Waimanu.	.937	.606
Sept.19	....do.....	....do.....	....do.....	.651	.421
Nov. 24	....do.....	....do.....	....do.....	.376	.243
Jan. 21	....do.....	....do.....	....do.....	.427	.276
Apr. 1	....do.....	....do.....	....do.....	5.54	3.58
June 7	....do.....	....do.....	....do.....	3.13	2.02

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