1963

Surface Water Records of Hawaii and other Pacific Areas

UNITED STATES DEPARTMENT OF THE INTERIOR-GEOLOGICAL SURVEY

Prepared in cooperation with the State of Hawaii, the Government of Guam, the Government of American Samoa, and with other State, county, and Federal Agencies

United States Department of Interior
Geological Survey - Water Resources Division

SURFACE WATER RECORDS OF HAWAII AND OTHER PACIFIC AREAS

1963

Prepared in cooperation with

Hawaii Department of Land and Natural Resources,
Division of Water and Land Development
Government of Guam
Government of American Samoa
City and County of Honolulu
Corps of Engineers, U.S. Army

Copies of this report may be obtained from
District Engineer, Surface Water Branch
U.S. Geological Survey
Room 330, First Insurance Bldg.
1100 Ward Avenue
Honolulu, Hawaii 96814

CALENDAR FOR FISCAL YEAR 1963

JULY 1962

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JANUARY 1963

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MAY 1963

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JUNE 1963

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SURFACE WATER RECORDS OF HAWAII AND OTHER PACIFIC AREAS, 1963

INTRODUCTION

The surface-water records for the 1963 fiscal year for gaging stations, partial-record stations, and miscellaneous sites within the State of Hawaii and other Pacific areas are given in this report. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey, under the direction of Mearle M. Miller, district engineer, Surface Water Branch.

Through June 30, 1960, the records of discharge and stage of streams and contents and stage of lakes or reservoirs were published in an annual series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Since 1951 there have been 20 volumes in the series; each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records in Hawaii are contained in the above series as "Surface Water Supply of Hawaii." Records for other Pacific areas are contained in a volume entitled "Surface Water Supply of Mariana, Caroline, and Samoa Islands."

Beginning with the 1961 fiscal year, streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis, except for Hawaii which includes other Pacific areas. Distribution of these basic-data reports is limited and primarily for local needs. Records will be published in Geological Survey water-supply papers at 5-year intervals.

COOPERATION

Cooperative agreements between the U.S. Geological Survey and organizations of the State of Hawaii for the systematic collection of streamflow records began in 1909. Cooperative agreements with the Territory of Guam began in 1953, and with the Territory of American Samoa in 1957. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

State of Hawaii, Department of Land and Natural Resources.
Government of Guam.
Government of American Samoa.
City and County of Honolulu, Division of Engineering.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 9 gaging stations and by the Public Works Center, U.S. Navy, Guam, in collecting records for 3 gaging stations published in this report.

The following organizations aided in collecting records:

Boards of Water Supply of the City and County of Honolulu and Maui County; Lihue Plantation Co., Ltd.; McBryde Sugar Co., Ltd.; Waiahole Water Co., Ltd.; East Maui Irrigation Co., Ltd.; B. P. Bishop Estate; Kohala Ditch Co., Ltd; and Pioneer Mill Co., Ltd.

DEFINITION OF TERMS AND ABBREVIATIONS

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

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations or gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Partial-record station is a particular site where limited streamflow data are collected systematically over a period of years for use in hydrologic analyses.

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.

Million gallons per day (mgd) is the rate of discharge of a stream measured in million gallons per day.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.

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

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

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

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

WSP is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBERS

Stations are listed in the same downstream order used in the water-supply papers. Records are listed in a downstream direction along the main stem with all stations on a tributary entering above a main-stem station listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention shows which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. The numbers have been assigned in the downstream order used in the annual series of water-supply papers. In assigning station numbers, no distinction is

made between partial-record stations and continuous-record gaging stations, so that the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive.

The complete number for each station, such as 40-2290.00, includes the district number "40" and a six-digit station number. In this report, only the essential digits of the station number are shown. For example, the complete number 40-2290.00 would appear as 2290, just to the left of the station name. Also, the records are listed in downstream order by islands.

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 determining the daily flow. Records of stage are obtained either from a water-stage recorder that gives a continuous chart of the fluctuations or from direct readings on a nonrecording gage. 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.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and 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 in effect the shifting-control method.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it

cannot be used to compute the daily discharge. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins.

The data in this report generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge of the stream. Records are published for the fiscal year which begins on July 1 and ends on June 30. A calendar for the 1963 fiscal year is shown on page II to facilitate finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Records available" are given periods for which there are published records for the present station or for stations generally equivalent to the present one. Under "Gage" are given the type of gage currently in use and the datum of the gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. The references to "datum of 1929" and adjustments of other years are to the datum and adjustments of the U.S. Coast and Geodetic Survey. 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, the minimum discharge if there is little or no regulation, and the minimum daily discharge if there is extensive regulation. In the first paragraph, the data given are for the complete current fiscal year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record is given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and to conditions which affect the natural flow at the gaging station is given under "Remarks."

Skeleton rating tables are published for all stations except those for which the daily discharge for the greater part of the period was determined by the shifting-control method or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables are not published for canals, ditches, or springs.

The daily table gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in discharge during a day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharges for several parts of a day. For stations equipped with nonrecording gages, the daily discharge corresponds to once-daily readings of the gage or to the mean of twice-daily readings; but for periods of rapidly changing stage the discharge is determined from a gage-height graph based on gage readings.

In the table for daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure 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 figures; it is the total cfs-days for the month for Guam and million gallons for Hawaii and Samoa. The line headed "Mean" gives the average flow in millions of gallons per day and cubic feet per second during the month. Discharge for the month is expressed in acre-feet (line headed "Ac-ft").

In the yearly summary below the monthly summary, the figures 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 for 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 can be presented. Peak discharges are not published for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour time, for example 12:30 a.m. is 0030, 1:30 p.m. is 1330.

Footnotes to the table of daily discharge indicate periods for which discharge was computed or estimated by unusual or special methods because of no gage-height record or other conditions that reduce the degree of accuracy of the records. The footnotes are either reference footnotes, with corresponding symbols used in the table of daily discharge to indicate the days included, or general footnotes, introduced by the word "Note," in which the days included are stated. The method used in computing data for such footnoted periods have been explained in preceding paragraphs.

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.

Discharge at some stations, as indicated by the monthly mean, may vary widely from natural runoff, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors.

SUPPLEMENTAL DATA

Data collected at those partial-record stations which are not included in the Hawaii District report, An Investigation of Floods in Hawaii, published separately, and measurements made at miscellaneous sites are given at the end of this report. Data for partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements at miscellaneous sites are given in a third table.

Information of a more detailed nature than that published for most of the gaging stations is on file in the district office, such as discharge measurements and recorder charts or nonrecording-gage readings. Most gaging-station records in the State through fiscal year 1960 have been analyzed with an electronic computer to give: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year. Information on the availability of electronic computer analyses and unpublished data may generally be obtained from the district office.

100. Kawaikoi Stream near Waimea

Location (revised).--Lat 22°08'09", long 159°37'22", on left bank at old trail crossing and 12.5 miles north of Waimea.

Drainage area.--4.1 sq mi, approximately.

Records available.--April 1909 to October 1912, December 1912 to March 1913, May 1913 to June 1915, August 1915 to May 1916, July to December 1916, July 1919 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

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.--47 years (1911-12, 1913-15, 1919-63), 22.1 mgd (34.2 cfs).

Extremes.--Maximum discharge during year, 1,640 mgd (2,540 cfs) Mar. 30 (gage height, 8.54 ft), from rating curve extended above 300 mgd as explained below; minimum, 1.31 mgd (2.03 cfs) Oct. 16, 17.

1909-16, 1919-63: Maximum discharge, 6,900 mgd (10,700 cfs) Dec. 18, 1916 (gage height, 15.2 ft), from rating curve extended above 300 mgd on basis of slope-area measurements at gage heights 12.12 and 13.43 ft; minimum, 0.74 mgd (1.15 cfs) Sept. 21, 22, 1953.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.97	1.31	3.4	55.5
2.1	2.45	3.7	97.0
2.3	5.05	4.0	155
2.5	8.50	4.5	255
2.8	17.1	5.0	355
3.1	31.5	5.5	475

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.77	101	2.10	2.10	49.8	11.8	4.62	22.5	17.8	23.5	15.5	9.46
2	3.28	38.2	2.01	1.75	127	13.5	4.06	17.5	8.74	22.0	12.9	7.95
3	3.16	13.8	1.83	3.38	22.5	6.49	4.06	18.7	6.65	102	14.3	7.39
4	2.92	10.3	1.66	6.49	32.8	5.37	25.5	14.6	5.53	29.3	22.5	7.39
5	8.11	10.9	1.66	2.69	18.8	4.48	8.13	17.9	5.53	15.5	19.0	10.4
6	7.02	19.8	3.16	1.92	15.5	3.91	12.2	27.8	24.9	13.2	87.7	7.21
7	9.22	21.8	2.19	1.75	7.76	6.65	149	15.5	9.70	12.4	80.3	8.13
8	7.95	6.84	6.40	1.75	5.69	4.62	14.5	14.5	13.3	*10.4	24.5	7.95
9	*5.37	4.62	10.8	4.06	4.62	4.06	9.70	14.1	18.3	9.70	68.0	6.33
10	14.4	4.34	6.49	3.77	4.20	40.4	10.5	11.5	19.0	10.4	32.8	*7.76
11	15.3	4.20	3.04	4.62	4.20	12.9	15.5	9.22	19.7	13.9	47.5	18.9
12	6.01	3.51	2.45	3.63	3.91	6.65	8.50	8.13	8.50	21.4	42.0	21.0
13	10.1	*4.34	3.04	2.36	3.28	13.8	7.21	7.39	10.3	35.0	19.1	9.46
14	4.62	14.1	2.92	1.75	2.92	21.0	6.33	6.65	14.1	26.6	29.6	12.5
15	3.39	18.3	2.19	1.48	2.57	10.4	24.3	6.49	136	143	15.9	42.0
16	2.80	7.76	1.83	1.31	2.57	12.9	*412	6.17	243	58.4	34.0	12.6
17	2.57	4.77	3.04	1.39	2.45	106	43.7	7.52	121	30.4	22.0	7.95
18	2.45	3.63	*2.45	32.0	2.45	15.5	17.9	10.9	48.3	23.0	13.8	7.39
19	2.36	2.92	2.01	103	2.45	34.3	12.6	6.84	16.4	34.8	10.9	30.4
20	2.27	2.45	1.75	13.2	2.19	*12.1	13.2	6.01	12.6	16.1	9.70	41.8
21	3.04	2.36	3.72	5.37	2.10	35.1	*10.7	5.69	11.2	20.2	8.98	48.3
22	2.69	3.39	5.53	*13.9	1.92	18.7	14.2	5.69	13.9	24.5	8.98	45.2
23	2.45	2.69	2.69	12.4	2.45	10.4	14.8	5.69	15.5	128	8.13	17.9
24	2.36	2.36	2.01	6.65	4.48	8.50	127	13.2	9.70	56.2	7.58	12.9
25	2.27	2.01	*2.45	3.91	2.92	7.58	16.8	*7.95	8.74	23.5	7.21	12.4
26	2.36	2.01	2.19	2.92	2.19	6.49	11.5	5.85	104	37.4	15.3	13.2
27	2.57	2.19	3.77	2.45	108	5.85	10.2	5.21	31.7	96.2	14.2	8.98
28	2.36	4.06	5.37	8.53	85.1	5.53	14.2	16.8	12.1	90.8	99.4	7.02
29	2.10	3.91	6.33	4.77	24.1	7.58	14.5	------	9.70	31.5	97.9	6.49
30	2.01	3.77	3.16	2.92	12.9	5.85	*45.9	------	208	17.9	63.8	8.98
31	2.01	2.45	------	2.19	------	4.91	163	------	48.9	------	12.9	------
TOTAL	143.29	328.78	100.24	260.41	563.82	463.32	1,246.31	316.00	1,232.79	1,177.2	966.38	465.34
MEAN												
MGD	4.62	10.6	3.34	8.40	18.8	14.9	40.2	11.3	39.8	39.2	3.12	15.5
CFS	7.15	16.4	5.17	13.0	29.1	23.1	62.2	17.5	61.5	60.7	4.83	24.0
AC-FT	440	1,010	308	799	1,730	1,420	3,820	970	3,780	3,610	2,970	1,430

CALENDAR YEAR 1962: MAX 395 MIN 1.31 MEAN MGD 20.3 MEAN CFS 31.4 AC-FT 22,710
FISCAL YEAR 1962-63: MAX 412 MIN 1.31 MEAN MGD 19.9 MEAN CFS 30.8 AC-FT 22,290

* Discharge measurement made on this day.

Peak discharge (base, 1,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-16	2330	8.40	1,570	2,430	3-30	0500	8.54	1,640	2,540

130. Mohihi Stream at altitude 3,420 ft, near Waimea
(Formerly published as Mohihi Stream at altitude 3,500 ft, near Waimea)

Location (revised).--Lat 22°07'13", long 159°36'14", on left bank at upper trail crossing, 3.8 miles northeast of confluence with Waihulu and Poomau Streams, and 12 miles northeast of Waimea.

Drainage area.--1.6 sq mi, approximately.

Records available.--June 1920 to October 1926, October 1936 to June 1963. Published as "at altitude 3,500 ft, near Waimea" prior to July 1947 and July 1952 to June 1962 and as "near Waimea" July 1947 to June 1952.

Gage.--Water-stage recorder. Altitude of gage is 3,420 ft (revised, from topographic map).

Average discharge.--32 years (1920-26, 1937-63), 5.26 mgd (8.14 cfs).

Extremes.--Maximum discharge during year, 450 mgd (696 cfs) Mar. 16 (gage height, 5.00 ft), from rating curve extended above 110 mgd; minimum, 0.41 mgd (0.63 cfs) Oct. 16, 17.

1920-26, 1936-63: Maximum discharge, 1,250 mgd (1,930 cfs) Aug. 15, 1950 (gage height, 7.23 ft), from rating curve extended above 50 mgd; minimum, 0.08 mgd (0.12 cfs) Sept. 21, 1953.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge in million gallons a day)

0.8	0.29	2.0	11.8
.9	.49	2.3	21.1
1.0	.77	2.6	35.9
1.1	1.15	3.0	68.5
1.2	1.65	3.5	128
1.4	2.98	4.0	204
1.7	6.15		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.55	3.33	0.69	0.74	2.24	2.62	1.20	12.6	6.14	a12	5.53	2.84
2	1.20	11.7	.63	.63	19.8	2.84	1.07	9.22	3.42	a10	4.28	2.26
3	1.04	3.33	.60	.55	5.53	2.08	1.04	8.27	2.62	a30	7.50	2.02
4	1.00	2.55	.57	1.11	3.86	1.65	3.08	6.15	2.14	a10	8.08	2.33
5	2.56	2.33	.57	1.04	3.24	1.40	2.55	6.46	2.02	a7.0	4.38	3.16
6	2.08	3.69	.69	.81	2.62	1.25	2.57	10.8	8.11	a6.0	9.99	2.76
7	1.60	5.78	.71	.71	1.77	1.65	49.4	7.70	6.44	a5.4	22.0	2.40
8	2.48	2.48	.69	.66	1.20	1.50	7.89	7.24	3.42	*a4.8	6.31	2.26
9	*1.89	1.65	.88	.81	1.00	1.55	4.59	8.08	3.07	4.48	12.3	1.96
10	2.42	1.35	1.30	1.04	.92	5.03	5.07	5.53	10.5	4.69	10.2	*2.08
11	4.38	1.20	1.20	1.20	.88	3.60	6.77	4.17	10.3	7.43	6.46	3.07
12	2.69	1.07	1.04	1.11	.81	2.14	3.77	3.68	4.28	10.9	8.27	4.17
13	3.86	*1.00	.92	.85	.69	4.66	2.91	3.24	3.65	16.6	5.03	2.33
14	2.08	1.25	.88	.63	.60	4.38	2.55	3.07	6.90	12.6	6.73	1.89
15	1.45	2.95	.74	.49	.60	2.76	19.6	2.84	94.0	51.2	4.48	5.03
16	1.15	2.20	.66	.41	.66	2.33	*97.9	2.69	136	29.4	3.86	3.33
17	1.00	1.55	.63	.43	.57	16.0	24.3	2.55	66.6	13.1	6.74	2.26
18	.92	1.20	*.69	7.12	.66	4.90	a6.0	2.76	22.5	10.7	3.96	1.96
19	.85	1.00	.69	21.5	.88	3.24	a4.5	2.48	10.7	20.4	3.16	7.42
20	.81	.85	.63	a3.0	.69	*2.76	a4.7	2.33	8.46	8.27	2.76	7.24
21	.96	.81	.57	a1.5	.60	6.06	a3.8	2.26	7.70	6.77	2.55	13.8
22	.96	.88	a.8	*a1.8	.52	6.15	a5.0	2.26	8.65	5.53	2.33	14.4
23	.81	.85	a.7	2.98	.49	2.98	*6.45	2.33	7.24	a35	2.14	5.78
24	.92	.77	.66	2.08	.60	2.33	50.7	a3.5	5.40	a15	2.02	3.68
25	.85	.71	.63	1.45	.57	2.20	8.65	*2.62	5.15	5.40	1.89	3.60
26	.81	.69	.63	1.15	.49	1.89	5.65	2.26	12.1	7.24	1.96	5.03
27	.81	.71	.60	.96	15.2	1.65	5.15	2.02	9.67	a25	2.02	3.33
28	.77	a1.0	.71	1.20	21.6	1.50	6.62	2.62	2.55	a20	4.90	2.40
29	.71	a.9	.92	1.30	7.08	1.50	8.08	------	2.33	a10	10.0	2.08
30	.66	a.8	.92	1.04	3.24	1.45	18.8	------	a50	5.53	12.6	2.20
31	.66	.74	------	.81	------	1.30	55.1	------	a25	------	3.86	------
TOTAL	45.93	61.32	22.55	61.11	99.61	97.35	425.46	131.73	547.06	410.44	188.29	119.07
MEAN												
MGD	1.48	1.98	0.752	1.97	3.32	3.14	13.7	4.70	17.6	13.7	6.07	3.97
CFS	2.29	3.06	1.16	3.05	5.14	4.86	21.2	7.27	27.2	21.2	9.40	6.14
AC-FT	141	188	69	188	306	299	1,310	404	1,680	1,260	578	365

CALENDAR YEAR	1962:	MAX	136	MIN	0.41	MEAN MGD	5.14	MEAN CFS	7.95	AC-FT	5,750
FISCAL YEAR 1962-63		MAX	136	MIN	0.41	MEAN MGD	6.05	MEAN CFS	9.36	AC-FT	6,790

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0200	4.17	238	368	3-16	2330	5.00	450	696
1-15	2400	4.23	251	388	4-15	1700	4.34	276	427

* Discharge measurement made on this day.
a No gage-height record.

ISLAND OF KAUAI

140. 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 1963.

Gage.--Water-stage recorder and suppressed weir. Altitude of gage is 3,310 ft (by barometer). Prior to July 1, 1962, at datum 0.07 ft higher.

Average discharge.--36 years (1927-63), 15.9 mgd (24.6 cfs).

Extremes.--1926-63: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

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

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	10.0	22.2	6.41	4.17	11.7	14.7	7.40	15.0	24.1	18.1	33.4	19.8
2	9.20	27.0	4.59	3.28	43.2	18.0	7.07	12.7	18.0	27.2	29.8	16.5
3	8.84	17.2	4.17	3.67	30.9	27.2	6.74	10.2	13.4	18.5	26.1	15.0
4	8.48	13.9	4.04	8.48	32.4	7.40	21.9	10.6	9.60	20.5	26.6	14.6
5	11.6	14.6	4.04	4.59	25.3	6.74	12.5	20.0	8.84	15.7	15.5	17.5
6	12.5	17.4	5.03	4.04	20.5	6.08	9.45	15.7	15.7	12.7	32.8	16.2
7	14.3	22.5	4.59	3.65	11.4	10.0	39.9	11.2	13.2	10.8	22.7	14.8
8	13.0	11.6	6.58	3.52	8.48	7.24	25.4	10.0	14.7	11.6	12.6	14.8
9	11.4	8.84	10.6	5.03	7.24	6.74	17.7	9.20	27.9	13.6	29.2	12.5
10	15.0	8.12	9.80	5.32	6.58	29.3	17.9	7.76	23.9	*13.2	17.7	13.6
11	*20.0	7.94	5.92	6.08	6.41	21.4	21.9	18.1	32.4	16.7	11.6	20.2
12	12.3	7.24	4.88	5.46	6.08	11.6	6.41	26.3	21.1	19.2	15.2	*30.8
13	14.8	6.91	5.17	4.30	5.32	19.4	7.13	24.5	17.7	25.1	17.8	17.2
14	10.8	14.7	5.03	3.65	5.03	27.2	11.9	22.8	28.0	23.0	36.5	13.2
15	8.66	*18.2	4.45	3.26	4.74	16.2	14.2	21.4	36.5	23.0	27.6	41.8
16	7.76	12.1	4.04	3.00	4.59	18.4	21.3	20.0	36.0	17.0	33.8	20.8
17	7.40	8.30	4.74	3.13	4.45	36.0	4.94	21.4	19.0	13.2	29.5	13.9
18	7.07	6.74	4.59	11.2	4.45	25.6	10.9	26.3	18.8	10.6	10.8	12.1
19	6.74	6.08	4.04	38.6	4.45	31.1	15.5	20.0	13.2	14.3	12.4	33.7
20	6.58	5.61	*3.78	21.6	4.17	*21.4	14.3	18.0	11.2	8.66	20.0	40.7
21	7.24	5.32	4.18	9.80	3.91	29.5	20.8	17.2	13.6	9.02	18.7	31.0
22	6.91	5.92	7.24	17.6	3.78	31.1	26.3	17.0	15.5	19.5	18.0	41.8
23	6.58	5.75	4.59	17.8	4.17	18.0	*21.0	16.7	19.0	25.7	17.0	27.2
24	6.58	5.46	3.91	*10.6	5.61	13.9	11.5	25.1	11.9	19.8	16.0	18.7
25	6.41	5.03	4.04	7.07	4.88	12.1	9.50	15.9	19.2	15.5	15.2	19.0
26	6.41	4.88	4.04	5.61	4.17	10.6	12.1	13.0	20.9	17.7	17.3	18.7
27	6.41	5.03	4.30	5.03	24.8	9.60	11.2	*11.1	12.7	19.0	24.0	15.0
28	6.08	6.25	6.41	9.82	40.4	9.02	11.2	21.2	11.5	19.0	36.9	12.1
29	5.92	6.08	7.07	7.24	28.5	10.4	10.4	------	16.7	19.0	46.3	11.0
30	5.75	6.25	5.03	5.32	17.2	9.02	11.5	------	8.99	23.3	41.8	13.0
31	5.61	5.17	------	4.45	------	7.94	15.0	------	1.10	------	23.3	------
TOTAL	286.33	318.32	157.30	246.37	384.81	522.98	454.94	478.36	554.33	520.18	736.1	607.2
MEAN												
MGD	9.24	10.3	5.24	7.95	12.8	16.9	14.7	17.1	17.9	17.3	23.7	20.2
CFS	14.3	15.9	8.11	12.3	19.8	26.1	22.7	26.4	27.7	26.8	36.7	31.3
AC-FT	879	977	483	756	1,180	1,600	1,400	1,470	1,700	1,600	2,260	1,860

CALENDAR YEAR	1962:	MAX	47.9	MIN	1.99	MEAN MGD	15.0	MEAN CFS	23.2	AC-FT	16,790
FISCAL YEAR 1962-63:		MAX	46.3	MIN	1.10	MEAN MGD	14.4	MEAN CFS	22.3	AC-FT	16,160

* Discharge measurement made on this day.

160. Waimea River at altitude 840 ft, near Waimea
(Formerly published as Waimea River at altitude 890 ft, near Waimea)

Location.--Lat 22°04'55" (revised), long 159°39'15", on right bank in Waimea Canyon, 0.5 mile upstream from 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 January 1949, September 1949 to July 1950, February 1951 to June 1963. Published as Waiahulu Stream near Waimea prior to July 1952 and as "at altitude 890 ft, near Waimea" July 1952 to June 1962.

Gage.--Water-stage recorder. Altitude of gage is 840 ft (revised, from topographic map). Prior to May 25, 1925, at datum 1.55 ft lower.

Average discharge.--35 years (1925-48, 1951-63), 32.6 mgd (50.4 cfs).

Extremes.--Maximum discharge during year, 2,650 mgd (4,100 cfs) Mar. 17 (gage height, 8.01 ft, from floodmarks), from rating curve extended above 130 mgd on basis of slope-area measurement at gage height 11.45 ft; minimum, 10.8 mgd (16.7 cfs) Oct. 31, Nov. 1, 14.

1916-18, 1925-63: Maximum discharge, 18,100 mgd (28,000 cfs) Aug. 17, 1950 (gage height, 18.3 ft, from floodmarks), from rating curve extended above 320 mgd; 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 (see preceding page) diverts above station for irrigation near Kekaha.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.7	11.1	3.5	170
2.1	25.0	4.0	280
2.5	49.0	5.0	600
3.0	96.0	6.0	1,100

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	13.1	a70	12.6	14.0	14.1	12.6	11.7	a130	35.4	a96	23.4	15.0
2	12.8	a97	12.6	13.7	146	12.6	11.7	45.8	18.4	77.0	21.4	14.3
3	12.6	19.2	12.6	13.4	21.4	12.0	11.7	43.4	15.3	a130	36.1	14.3
4	12.6	15.7	12.6	13.4	16.6	11.7	18.4	36.0	15.3	a115	38.5	14.3
5	13.1	15.0	12.6	14.0	16.5	11.1	14.7	36.0	14.7	55.4	21.8	14.3
6	14.7	14.6	12.6	13.4	12.8	11.1	a20	a100	a34	44.1	49.3	14.3
7	13.7	a29	12.6	13.1	*12.3	11.7	a330	55.4	28.0	39.0	128	14.3
8	13.7	15.0	12.8	13.1	11.7	11.7	33.6	43.4	18.4	32.4	23.4	14.3
9	14.0	13.4	14.3	13.1	11.4	11.8	19.5	45.5	21.4	29.5	55.4	14.3
10	13.7	12.8	14.3	13.4	11.1	39.9	33.2	36.0	a74	30.0	42.7	14.3
11	21.8	12.6	13.4	13.7	11.1	21.9	30.6	a30	a110	40.1	30.2	14.3
12	15.7	12.3	13.1	13.7	11.1	14.7	18.8	a20	23.4	47.6	42.0	17.7
13	16.0	12.3	13.1	13.4	11.1	13.9	a15	a17	17.7	a99	21.0	14.7
14	14.7	13.7	13.1	13.1	11.1	*19.2	13.7	*15.7	23.4	a75	28.3	14.3
15	13.7	15.7	13.1	13.1	11.4	15.3	20.5	15.3	a270	a250	19.9	25.4
16	13.1	15.0	13.1	13.1	11.1	15.7	a720	14.7	a850	a160	21.0	16.6
17	13.1	12.8	13.1	14.3	11.4	a97	a150	14.3	a470	83.0	27.0	*14.3
18	13.1	12.3	13.1	22.5	11.1	21.8	53.8	15.0	a120	61.5	18.0	14.3
19	*12.8	12.3	13.1	128	11.4	a31	31.2	14.0	53.8	a210	16.0	21.9
20	13.1	12.3	13.1	34.2	11.4	16.6	25.0	13.7	39.0	61.5	15.0	34.1
21	13.1	12.3	13.1	16.3	11.1	a35	20.6	14.3	34.2	50.6	14.3	42.1
22	13.4	*12.6	13.1	13.7	11.1	a31	25.4	14.0	30.6	45.5	14.3	61.2
23	13.4	12.6	13.4	14.3	11.1	16.3	28.0	14.7	28.5	*a140	14.3	20.3
24	13.4	12.6	13.4	12.8	11.1	14.7	a250	16.3	23.8	98.5	14.3	16.0
25	13.4	12.3	13.4	12.8	11.4	13.7	59.7	17.6	24.6	39.6	14.3	15.3
26	13.4	12.3	*13.4	11.4	11.4	13.1	36.6	16.0	a310	46.9	14.3	16.3
27	13.4	12.3	13.4	11.4	86.1	12.6	29.0	15.0	a220	116	15.7	16.0
28	13.4	12.3	13.7	11.1	197	12.3	32.8	23.8	46.9	123	66.7	14.7
29	13.4	12.6	13.7	11.4	23.8	12.0	40.2	------	30.6	46.9	76.7	14.7
30	13.4	12.6	14.0	11.4	14.3	12.0	a140	------	a640	25.5	79.3	14.7
31	13.4	12.6	------	11.1	------	12.0	a620	----	a320	------	18.0	------
TOTAL	428.2	571.1	395.5	620.0	684.5	604.0	2,865.4	876.9	3,961.4	2,468.6	1,020.6	562.6
MEAN												
MGD	13.8	18.4	13.2	20.0	22.8	19.5	92.4	31.3	128	82.3	32.9	18.8
CFS	21.4	28.5	20.4	30.9	35.3	30.2	143	48.4	198	127	50.9	29.0
AC-FT	1,310	1,750	1,210	1,900	2,100	1,850	8,790	2,690	12,160	7,580	3,130	1,730

CALENDAR YEAR	1962:	MAX	1,070	MIN	10.5	MEAN MGD	45.4	MEAN CFS	70.2	AC-FT	50,790
FISCAL YEAR 1962-63:		MAX	850	MIN	11.1	MEAN MGD	41.3	MEAN CFS	63.9	AC-FT	46,200

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	About 0400	-	About 1,500	About 2,300	3-30	About 0700	-	About 1,600	About 2,500
1-16	About 0400	-	About 2,600	About 4,000	4-15	About 1800	-	About 1,500	About 2,300
3-17	About 0200	8.01	2,650	4,100					

* Discharge measurement made on this day.
a No gage-height record.

170. Koaie Stream at altitude 3,770 ft, near Waimea
(Formerly published as Koaie Stream at altitude 3,700 ft, near Waimea)

Location (revised).--Lat 22°06'57", long 159°33'53", on left bank 3 miles upstream from Left Branch, 6.5 miles east of Kokee ranger station, and 12.7 miles northeast of Waimea.

Drainage area.--3.33 sq mi.

Records available.--July 1919 to July 1932, June 1954 to June 1963. Prior to July 1962, published as "at altitude 3,700 ft, near Waimea."

Gage.--Water-stage recorder. Altitude of gage is 3,770 ft (revised, from topographic map).

Average discharge.--22 years, 17.5 mgd (27.1 cfs).

Extremes.--Maximum discharge during year, 3,070 mgd (4,750 cfs) Mar. 16 (gage height, 5.02 ft), from rating curve extended above 700 mgd; minimum, 1.30 mgd (2.01 cfs) July 31, Oct. 16, 17.

1919-32, 1954-63: Maximum discharge, 4,210 mgd (6,510 cfs) Oct. 23, 1956 (gage height, 5.88 ft), from rating curve extended above 350 mgd; minimum, 0.6 mgd (0.9 cfs) May 21, 22, 1929.

Remarks.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.47	1.30	1.1	62.0
.5	1.69	1.3	112
.6	3.91	1.6	220
.7	8.50	2.0	435
.8	16.5	3.0	1,120
.9	28.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	4.23	72.5	2.37	2.37	5.34	10.5	2.59	25	6.30	12.0	37.5	8.50
2	2.59	32.8	1.99	1.83	47.8	14.5	2.37	11	4.23	15.5	6.30	4.58
3	2.17	12.8	1.83	10.2	7.91	5.82	2.17	9.1	3.34	68.2	57.0	6.30
4	4.23	6.30	1.69	7.91	12.8	3.91	4.23	8.5	2.59	23.4	18.8	23.4
5	48.2	7.35	1.83	3.62	14.5	3.34	2.83	5.8	2.37	6.30	7.91	18.8
6	5.82	9.12	2.83	3.34	7.35	2.83	36.1	16.5	47.8	6.30	35.3	5.37
7	7.35	12.8	2.59	3.91	4.23	3.08	132	14	11.2	6.30	43.0	10.5
8	7.91	4.58	2.83	7.35	3.34	2.59	25.0	9.0	4.23	*4.23	10.5	8.50
9	4.23	2.83	3.62	8.50	3.08	3.08	5.82	16	3.91	4.23	43.0	9.55
10	*18.9	2.37	2.83	10.5	2.83	7.91	6.81	7.0	24.5	6.30	24.6	*20.0
11	24.6	2.17	2.37	4.58	2.59	5.37	9.77	4.5	18.8	5.37	24.6	10.5
12	28.8	2.17	1.99	3.08	2.59	3.62	4.58	3.5	5.37	12.8	52.5	7.91
13	31.6	2.83	3.62	2.17	2.37	6.81	3.62	3.0	4.23	17.7	10.5	3.62
14	5.82	*9.77	3.34	1.83	2.83	10.5	2.83	2.7	70.2	18.9	40.4	3.91
15	3.62	25.7	2.37	1.56	2.37	6.81	82.5	2.3	453	355	7.91	23.4
16	2.59	7.35	2.37	1.30	2.83	5.37	352	2.2	750	141	7.91	6.30
17	2.17	4.23	2.83	1.43	3.08	22.8	45.4	2.1	146	137	14.5	4.58
18	1.99	3.08	*3.34	48.0	10.5	9.12	8.50	2.0	50.0	83.6	6.81	4.58
19	2.17	2.37	2.59	115	4.23	5.82	4.96	1.8	11.2	158	4.23	25.7
20	3.62	2.17	1.99	9.77	3.34	4.58	4.23	1.6	9.12	21.1	3.34	24.6
21	6.30	1.99	2.17	3.62	3.62	11.6	3.34	1.7	47.8	25.7	2.83	81.1
22	3.34	1.99	3.34	3.62	4.58	7.91	*7.35	1.9	52.5	22.3	2.37	77.1
23	3.34	1.69	3.08	*5.37	5.37	4.58	21.8	2.2	21.1	44.9	2.17	16.5
24	2.83	3.62	2.37	3.62	4.58	3.91	136	2.5	6.30	38.5	1.99	8.50
25	2.37	3.34	2.17	2.83	3.34	3.62	8.50	2.2	7.35	23.4	1.69	9.12
26	2.17	2.83	1.69	2.17	3.08	3.34	4.58	*1.69	73.2	60.1	1.99	38.1
27	1.99	4.23	1.83	1.83	42.2	3.08	5.37	1.56	32.5	54.4	2.37	6.30
28	1.69	4.58	1.99	2.37	51.9	2.83	9.77	4.23	6.30	34.0	9.12	4.96
29	1.56	4.23	3.62	1.99	22.3	2.83	13	--------	4.23	22.3	21.1	4.23
30	1.43	4.58	3.62	1.69	11.2	2.37	35	--------	109	9.77	23.4	4.58
31	1.30	3.08	------	1.56	------	2.37	120	--------	32.5	------	10.5	------
TOTAL	240.93	261.45	77.10	278.92	298.08	186.80	1,103.02	165.58	2,021.17	1,438.60	536.14	481.09
MEAN												
MGD	7.77	8.43	2.57	9.00	9.94	6.03	35.6	5.91	65.2	48.0	17.3	16.0
CFS	12.0	13.0	3.98	13.9	15.4	9.32	55.1	9.14	101	74.2	26.8	24.8
AC-FT	739	802	237	856	915	573	3,390	508	6,200	4,410	1,650	1,480

CALENDAR YEAR	1962:	MAX	529	MIN	0.98	MEAN MGD	15.3	MEAN CFS	23.7	AC-FT	17,100
FISCAL YEAR	1962-63:	MAX	750	MIN	1.30	MEAN MGD	19.4	MEAN CFS	30.0	AC-FT	21,760

Peak discharge (base, 900 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	0030	2.82	976	1,510	4-15	1800	3.94	1,940	3,000
3-16	2230	5.02	3,070	4,750					

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 29 to Feb. 25.

190. Waialae Stream at altitude 3,700 ft, near Waimea

Location (revised).--Lat 22°05'20", long 159°34'18", on left bank 5.0 miles northeast of mouth and 10.6 miles northeast of Waimea.

Drainage area.--2.5 sq mi, approximately.

Records available.--January 1920 to July 1932, June 1952 to June 1963. Prior to July 1954, published as Waialae River at atltitude 3,700 ft, near Waimea. See also Note below.

Gage.--Water-stage recorder. Altitude of gage is 3,840 ft (revised, from topographic map).

Average discharge.--23 years, 13.8 mgd (21.4 cfs).

Extremes.--Maximum discharge during year, 1,680 mgd (2,600 cfs) Mar. 16 (gage height, 6.37 ft), from rating curve extended above 720 mgd as explained below; minimum, 1.12 mgd (1.73 cfs) Sept. 26.

1920-32, 1952-63: Maximum discharge, 2,930 mgd (4,530 cfs) Jan. 16, 1921 (gage height, 8.44 ft), from rating curve extended above 720 mgd on basis of slope-area measurement at gage height 4.60 ft; minimum, 0.7 mgd (1.1 cfs) Mar. 18-20, 1925, June 14, 15, 1931.

Remarks.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

Note.-- Published records for high-water periods in fiscal years 1921 and 1954, and figures of maximum discharge for the fiscal years 1921-32, 1953-54, have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.8	0.76	1.4	17.5
.9	1.58	1.6	35.5
1.0	2.85	2.0	96.0
1.1	4.70	2.5	205
1.2	7.30	3.0	341
1.3	11.4	4.0	655

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.87	45	1.39	1.58	2.42	7.04	2.42	13.8	4.96	16.3	32.4	7.71
2	2.70	12	1.20	1.39	15.4	10.2	2.42	13.2	3.78	18.3	7.30	4.70
3	2.42	8.0	1.20	6.35	5.74	5.22	2.28	9.76	2.85	58.6	54.6	4.70
4	2.85	5.5	1.20	5.48	6.26	3.96	2.85	7.04	2.28	24.7	15.7	12.6
5	31.5	6.0	1.29	2.56	8.94	3.04	2.56	6.78	1.91	8.94	7.30	13.8
6	4.96	6.5	1.39	2.85	5.22	2.70	37.9	23.7	50.8	8.53	18.8	5.48
7	5.74	7.2	1.39	3.59	3.59	2.70	123	11.4	9.73	7.04	35.9	11.4
8	6.00	4.0	1.39	6.54	2.85	2.85	27.9	9.76	4.15	5.74	8.12	8.94
9	3.78	2.2	1.49	5.48	2.56	3.59	6.78	19.2	3.59	*5.74	29.5	9.11
10	*9.62	1.9	1.39	5.48	2.56	7.30	17.6	6.52	32.5	8.94	19.1	13.8
11	16.9	1.8	1.20	3.96	2.56	4.70	12.6	4.96	13.9	14.4	13.2	*10.8
12	22.0	1.7	1.29	2.70	2.28	3.96	6.52	3.96	4.96	13.8	32.5	6.52
13	20.4	2.2	1.69	2.03	2.15	6.52	4.96	3.41	3.78	15.7	8.12	3.96
14	4.70	*4.70	1.69	1.69	2.28	6.26	4.33	3.04	47.4	8.12	34.6	3.78
15	2.7	13.6	1.39	1.49	2.15	4.52	107	2.56	342	244	7.71	9.35
16	2.0	4.70	1.20	1.39	2.42	4.52	291	2.42	543	137	6.52	5.22
17	1.7	2.85	1.49	1.39	2.56	7.71	48.0	2.42	112	141	8.12	4.15
18	1.6	2.03	1.58	69.0	6.52	6.26	17.5	2.15	52.2	80.8	6.52	3.96
19	1.7	1.69	*1.39	127	3.96	4.70	7.30	2.03	14.0	166	4.96	18.3
20	2.0	1.49	1.20	9.35	3.04	3.96	6.00	1.91	8.12	26.5	4.15	16.9
21	3.0	1.49	1.39	4.96	3.41	5.48	4.96	1.91	41.1	29.2	3.78	65.4
22	2.5	1.49	1.49	4.52	3.78	5.48	*10.2	2.03	30.4	24.3	3.41	65.2
23	2.3	1.39	1.58	*4.33	4.33	3.96	25.9	2.28	12.0	49.5	3.04	13.2
24	2.0	2.42	1.49	3.96	4.15	3.96	125	2.70	5.48	36.8	2.85	6.78
25	1.7	2.03	1.39	3.41	3.04	3.78	8.53	2.42	7.04	23.1	2.70	6.52
26	1.6	1.80	1.20	2.70	2.70	3.41	6.00	*2.03	88.8	48.0	3.04	25.9
27	1.5	2.03	1.29	2.56	26.1	3.04	5.74	1.80	44.3	29.5	3.22	6.26
28	1.4	2.15	1.49	2.56	37.0	2.85	8.53	4.15	7.30	23.1	4.15	4.70
29	1.4	2.03	1.91	2.28	15.9	2.56	13.8	---------	5.74	18.3	6.78	4.33
30	1.4	2.15	1.91	2.15	6.52	2.56	39.4	---------	111	8.53	9.35	4.52
31	1.3	1.80	------	2.15	------	2.42	127	---------	36.8	------	7.04	------
TOTAL	169.24	155.84	42.59	296.88	192.39	141.21	1,105.98	169.34	1,647.87	1,300.48	404.48	377.99
MEAN												
MGD	5.46	5.03	1.42	9.58	6.41	4.56	35.7	6.05	53.2	43.3	13.0	12.6
CFS	8.45	7.78	2.20	14.8	9.92	7.05	55.2	9.36	02.2	67.1	20.2	19.5
AC-FT	519	478	131	911	590	433	3,390	520	5,060	3,990	1,240	1,160

CALENDAR YEAR 1962: MAX 431 MIN 1.20 MEAN MGD 13.0 MEAN CFS 20.1 AC-FT 14,530
FISCAL YEAR 1962-63: MAX 543 MIN 1.20 MEAN MGD 16.4 MEAN CFS 25.4 AC-FT 18,420

Peak discharge (base, 840 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	0030	4.52	849	1,310	4-15	1800	5.23	1,130	1,750
3-16	2200	6.37	1,680	2,600					

* Discharge measurement made on this day.
Note.--No gage-height record July 15 to Aug. 13.

220. 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.--May 1908 to February 1909, April, June, September, November 1909, January 1910 to June 1915, March 1916 to August 1917, October 1917 to June 1963. Prior to January 1910 and August 1932 to June 1933 monthly discharge only, published in WSP 1319; figures of daily discharge for latter period published in WSP 755 are unreliable. Published as "at intake, near Waimea" January 1910 to December 1911 and as "at Flume No. 4, near Waimea" March 1916 to June 1917.

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

Average discharge.--50 years (1910-15, 1916-17, 1918-24, 1925-63), 36.6 mgd (56.6 cfs).

Extremes.--1908-63: 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 from Waimea River 1 mile downstream from Waialae Stream for irrigation in vicinity of Kekaha.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	37.2	36.5	31.2	29.6	33.3	39.9	29.1	31.2	31.4	20.9	48.4	36.5
2	41.3	47.0	29.6	28.2	44.3	41.1	28.9	31.6	31.9	20.5	48.0	38.3
3	33.7	48.9	30.3	28.0	36.2	42.9	28.4	31.6	31.4	20.5	43.4	48.2
4	29.8	43.4	29.1	44.1	38.8	36.5	32.6	31.4	42.2	20.5	30.9	49.1
5	45.2	47.5	29.1	34.4	48.0	33.0	36.2	31.4	44.5	20.5	36.0	43.9
6	43.5	46.8	29.3	31.2	47.3	30.5	32.6	31.4	47.0	20.0	48.2	48.7
7	36.5	49.8	29.6	32.1	*39.9	31.9	31.6	31.6	47.0	19.3	48.0	45.7
8	39.2	47.5	30.7	36.2	34.2	31.6	31.9	31.9	42.7	19.6	43.0	40.4
9	46.4	39.2	31.9	44.3	31.6	33.2	30.7	31.4	31.2	20.0	48.7	42.4
10	43.8	36.7	33.7	44.3	31.4	46.8	30.7	31.4	36.0	20.2	41.1	49.3
11	48.7	35.1	31.4	33.5	30.3	24.8	30.7	31.4	35.5	21.1	31.6	43.7
12	48.2	33.7	30.0	34.4	29.8	39.9	31.9	31.4	30.7	21.7	36.0	49.1
13	49.6	33.2	29.8	30.9	29.1	33.9	30.9	31.4	35.9	20.9	44.5	48.2
14	48.0	41.8	31.4	28.6	29.1	*31.9	28.0	*31.4	35.0	20.0	41.3	44.3
15	43.4	48.4	30.3	28.0	30.0	31.6	31.4	30.9	30.5	19.5	48.0	41.1
16	39.0	47.3	29.1	27.3	30.5	33.5	29.1	31.4	28.0	15.1	48.7	41.5
17	30.6	40.6	29.8	28.0	29.8	46.1	30.9	31.4	30.0	.03	40.6	*48.9
18	2.03	36.0	31.2	35.1	35.5	47.7	31.9	44.1	29.8	.94	31.6	45.7
19	*1.16	33.5	30.3	33.2	37.4	35.7	31.4	46.8	27.7	14.0	35.1	48.7
20	*2.86	32.3	29.1	31.4	31.9	35.8	31.4	46.6	23.9	22.6	44.7	49.1
21	2.77	32.1	28.4	33.9	30.7	34.6	31.9	47.3	23.3	22.6	48.7	46.4
22	2.49	*32.3	29.3	45.4	30.9	32.1	31.4	39.5	24.8	23.3	48.7	40.6
23	2.12	31.6	30.3	45.9	31.6	31.2	31.4	31.2	23.5	23.1	48.7	42.2
24	2.40	31.9	29.6	42.0	32.6	31.9	31.4	36.0	22.0	*22.8	41.1	49.3
25	14.0	34.2	28.9	36.2	30.9	31.6	31.2	47.0	22.4	21.7	31.6	49.6
26	33.7	31.6	*28.2	33.5	30.0	31.4	31.9	46.1	20.9	22.8	34.4	49.6
27	32.1	32.8	27.7	31.9	17.7	31.2	31.9	45.2	20.2	23.5	49.3	49.3
28	32.1	34.6	28.0	31.6	15.3	30.7	28.0	42.0	20.9	29.0	49.1	45.9
29	31.4	33.2	29.1	31.6	31.6	30.7	18.5	------	20.6	47.5	49.1	40.6
30	30.9	33.7	30.9	30.7	39.5	30.3	31.4	------	19.8	48.0	48.4	42.9
31	31.4	33.0	------	29.8	------	29.6	32.1	------	21.7	------	43.6	------
TOTAL	924.73	1,191.2	897.3	1,061.3	986.2	1,073.6	951.4	1,006.0	934.4	643.37	1,335.5	1,369.7
MEAN												
MGD	29.8	38.4	29.9	34.2	32.9	34.6	30.7	35.9	30.1	21.4	43.1	45.7
CFS	46.1	59.4	46.3	53.0	50.9	53.6	47.5	55.6	46.6	33.2	66.6	70.6
AC-FT	2,840	3,660	2,750	3,260	3,030	3,290	2,920	3,090	2,870	1,970	4,100	4,200

CALENDAR YEAR	1962:	MAX	49.8	MIN	0	MEAN MGD	34.3	MEAN CFS	53.1	AC-FT	38,410
FISCAL YEAR	1962-63:	MAX	49.8	MIN	0.03	MEAN MGD	33.9	MEAN CFS	52.5	AC-FT	37,980

* Discharge measurement made on this day.

291. Waimea ditch below wasteway, near Waimea

Location (revised).--Lat 21°59'10", long 159°39'59", on left bank at tunnel No. 4 outlet and below wasteway, 1.3 miles downstream from intake, and 2 miles north of Waimea.

Records available.--February 1960 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 125 ft (from topographic map).

Extremes.--1960-63: Maximum daily discharge, 8.50 mgd (13.2 cfs) Nov. 12, 13, 1960, Jan. 26, 1961; no flow at times.

Remarks.--Records good. Water used for irrigation of sugar cane.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	5.76	3.68	2.90	2.97	1.91	3.88	1.27	0.02	6.32	0.05	0	2.54
2	4.14	6.96	2.66	2.60	5.94	.08	2.13	.02	6.00	.05	1.37	2.73
3	3.16	6.56	2.08	2.48	6.80	1.72	2.54	.02	3.06	.03	3.89	2.30
4	4.83	6.00	2.13	3.29	3.37	2.02	2.77	.02	1.52	.05	7.04	4.20
5	4.90	4.90	2.36	2.72	4.44	2.67	3.94	.02	1.22	.03	5.43	5.68
6	6.24	4.83	2.42	2.30	3.01	2.97	2.43	.02	4.91	.02	2.36	*5.53
7	5.68	5.84	2.54	2.30	.21	2.90	2.50	.16	7.65	.02	3.23	4.07
8	5.68	5.76	2.66	2.84	1.11	2.90	.12	.46	4.99	.01	2.30	5.60
9	*5.39	4.20	2.66	2.75	2.13	2.10	.03	.35	2.60	.01	5.17	5.11
10	4.01	3.42	3.16	4.01	2.54	*5.00	.08	.18	.94	.01	4.87	4.96
11	6.16	3.36	2.84	3.38	2.48	6.48	.27	.14	4.76	.01	4.20	5.32
12	6.32	3.10	2.60	3.03	2.42	4.07	.29	.24	*6.96	.01	1.74	5.32
13	6.40	2.97	2.60	2.66	2.42	4.76	.12	.27	6.56	.01	3.87	4.34
14	6.08	3.42	2.60	2.48	2.30	6.40	.05	.18	6.56	.01	5.84	2.42
15	4.48	5.25	2.78	2.30	2.60	5.76	.06	2.22	4.55	*.12	6.00	4.00
16	3.36	6.00	2.60	2.30	2.90	3.17	.18	5.32	.05	.03	5.68	3.52
17	2.90	4.62	2.72	2.36	2.78	2.30	.10	4.90	.05	.02	2.71	2.31
18	5.50	3.55	2.90	3.03	2.99	3.16	.03	3.99	.05	.02	.84	2.42
19	6.16	3.10	2.84	4.51	4.01	2.84	.02	2.48	.03	.02	2.19	3.46
20	6.32	*2.85	2.66	2.32	3.23	2.66	.02	1.53	.03	.02	2.06	5.76
21	6.40	2.72	2.54	0	2.84	1.74	.02	1.14	.05	.02	1.43	6.00
22	6.40	2.84	2.48	0	2.90	1.51	.02	2.15	.08	.02	2.58	4.16
23	6.40	2.90	2.60	0	3.29	.53	.02	4.01	.03	.02	3.36	2.12
24	6.32	2.78	*2.60	0	1.83	.39	.02	2.33	.02	.01	2.87	4.79
25	6.16	3.10	2.48	.16	.03	.32	*.01	2.29	.02	.01	4.62	5.92
26	3.49	3.10	1.48	1.05	1.62	.57	.01	2.63	.14	.01	4.55	6.08
27	3.16	2.72	1.32	1.48	2.78	1.17	.01	1.41	.14	.01	3.44	6.16
28	2.97	3.16	2.48	1.48	5.40	1.53	.01	2.35	.08	.01	3.63	4.83
29	3.03	3.16	2.54	*1.81	2.98	1.43	.01	------	.02	.01	5.60	4.62
30	2.84	3.03	2.84	1.91	3.52	1.38	.01	------	.12	.01	4.27	3.94
31	2.78	3.10	------	1.80	------	1.27	.02	------	.03	------	1.80	------
TOTAL	153.42	122.98	75.07	67.82	87.98	80.73	20.11	40.85	69.54	0.68	108.94	130.33
MEAN												
MGD	4.95	3.97	2.54	2.19	2.93	2.60	0.649	1.46	2.24	0.023	3.51	4.34
CFS	7.66	6.14	3.92	3.38	4.54	4.03	1.00	2.25	3.47	0.035	5.44	6.72
AC-FT	471	377	233	206	270	248	62	125	213	2.1	334	400

CALENDAR YEAR	1962:	MAX	7.29	MIN	0	MEAN MGD	2.45	MEAN CFS	3.79	AC-FT	2,740
FISCAL YEAR 1962-63:		MAX	7.65	MIN	0	MEAN MGD	2.63	MEAN CFS	4.07	AC-FT	2,940

* Discharge measurement or observation of no flow made on this day.

310. Waimea River near Waimea

Location (revised).--Lat 21°59'02", long 159°39'46", on right bank 1.2 miles upstream from Makaweli River and 1.8 miles north of Waimea.

Drainage area.--57.8 sq mi.

Records available.--July 1910 to June 1918, July to October 1919, November 1943 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 25 ft (by hand levels from mouth of Makaweli River). Prior to Oct. 5, 1911, staff gage at site 1 mile downstream at different datum. Oct. 5, 1911, to Oct. 31, 1919, staff gage at present site at different datum.

Average discharge.--26 years (1911-18, 1944-63), 86.8 mgd (134 cfs).

Extremes.--Maximum discharge during year, 7,710 mgd (11,900 cfs) Mar. 17 (gage height, 11.82 ft), from rating curve extended above 3,400 mgd as explained below; minimum, 0.34 mgd (0.53 cfs) Oct. 17, 18.

1910-19, 1943-63: Maximum discharge, 24,000 mgd (37,100 cfs) Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 3,400 mgd on basis of slope-area measurements at gage heights 10.28 and 18.7 ft; practically no flow occasionally owing to upstream diversions.

Remarks.--Records good. Several upstream diversions for power and irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 18-30,
Feb. 1 to Mar. 15, Mar. 18-30, Apr. 1 to June 3)

2.9	0.22	3.5	5.30	5.0	160
3.0	.45	3.7	10.2	5.5	320
3.1	.80	3.8	14.2	6.0	560
3.2	1.40	4.0	25.0	7.0	1,320
3.3	2.30	4.3	48.3	8.0	2,310
3.4	3.60	4.6	84.0	9.0	3,550

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	17.2	60.6	3.47	0.66	1.22	11.0	1.34	334	62.8	300	111	45.0
2	4.96	120	3.34	.52	125	17.2	.77	153	38.3	265	68.8	39.2
3	3.47	19.2	3.34	.63	36.6	10.6	.38	128	28.9	417	109	30.9
4	7.06	9.12	2.03	5.00	13.8	4.96	.36	96.8	20.4	410	151	28.0
5	31.9	3.47	1.04	2.21	20.4	2.82	2.18	92.0	13.8	185	76.7	41.7
6	15.7	2.03	.63	.86	13.0	1.85	.86	161	87.9	149	65.2	*30.2
7	9.66	18.3	.73	.80	7.06	1.49	914	140	98.2	136	269	16.2
8	10.6	7.06	.86	.59	2.95	1.28	168	114	36.6	111	71.4	38.0
9	*6.40	1.76	.98	1.94	1.58	1.16	52.2	130	39.2	105	115	22.1
10	3.34	1.16	1.34	1.76	.98	*14.8	61.1	93.6	100	107	136	31.6
11	32.4	1.16	.80	1.76	.80	17.2	81.2	68.8	194	157	81.2	26.3
12	27.0	1.10	.66	.63	.73	3.08	40.8	55.1	*66.4	170	147	31.4
13	45.0	.98	.63	.59	.73	8.30	28.3	48.3	40.8	211	71.4	18.7
14	13.3	1.04	.63	.52	.80	17.2	22.1	45.0	73.6	198	106	12.2
15	4.45	13.6	.63	.49	.73	9.93	39.0	39.2	952	*1,030	61.6	32.6
16	2.30	15.2	.52	.43	.98	8.04	2,870	30.9	2,120	912	45.0	37.5
17	1.85	2.21	.56	.40	.73	56.1	526	28.9	1,810	480	68.8	17.7
18	20.4	1.34	.63	12.2	.75	27.6	151	23.8	462	358	65.2	12.6
19	25.7	1.76	.73	576	3.77	20.1	90.4	18.7	198	726	52.2	30.0
20	23.3	*1.67	.77	98.0	.98	15.3	68.8	16.2	149	238	32.4	54.1
21	27.0	1.67	.63	32.4	.86	12.4	55.1	14.7	128	214	27.6	95.5
22	27.6	1.76	.52	11.0	3.08	38.3	68.8	17.7	151	163	22.7	222
23	25.7	1.76	.56	7.28	6.62	14.7	74.2	25.0	130	277	17.7	62.8
24	25.7	1.67	*.52	6.18	7.77	7.50	945	32.4	84.0	261	16.7	30.9
25	22.4	1.67	.52	4.11	10.2	6.84	*163	22.7	87.2	147	24.4	23.8
26	3.47	1.76	1.22	2.95	7.28	4.62	96.8	17.7	573	203	22.7	47.7
27	2.56	1.76	1.58	1.67	33.1	3.08	77.0	14.7	526	234	19.8	34.9
28	2.21	1.76	.52	1.49	178	1.94	81.2	19.2	165	226	43.1	16.2
29	2.21	2.21	.52	*1.40	57.0	1.67	122	---------	114	138	82.6	15.7
30	2.21	1.85	.56	1.22	16.2	1.49	231	---------	1,560	82.6	140	13.0
31	2.03	2.43	------	1.10	------	1.34	1,130	---------	560	------	48.3	------
TOTAL	449.08	303.06	31.47	776.79	553.70	343.89	8,162.89	1,981.4	10,670.1	8,610.6	2,369.5	1,158.5
MEAN												
MGD	14.5	9.78	1.05	25.1	18.5	11.1	263	70.8	344	287	76.4	38.6
CFS	22.4	15.1	1.62	38.8	28.6	17.2	407	109	532	444	118	59.7
AC-FT	1,380	930	97	2,380	1,700	1,060	25,050	6,080	32,750	26,430	7,270	3,560

CALENDAR YEAR	1962:	MAX	3,430	MIN	0.40	MEAN MGD	99.9	MEAN CFS	155	AC-FT	111,900
FISCAL YEAR	1962-63:	MAX	2,870	MIN	0.36	MEAN MGD	97.0	MEAN CFS	150	AC-FT	108,700

* Discharge measurement made on this day.

Peak discharge (base, 5,600 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
3-17	0100	11.82	7,710	11,900

360. Makaweli River near Waimea

Location.--Lat 21°58'31" (revised), long 159°38'55", on left bank 0.7 mile upstream from mouth and 1.9 miles northeast of Waimea.

Drainage area.--25 sq mi, approximately.

Records available.--July 1943 to June 1963. Records for October 1911 to June 1917 at site 0.2 mile downstream not equivalent owing to diversion.

Gage.--Water-stage recorder. Datum of gage is 18.2 ft above mean sea level (by stadia survey). July 27, 1943, to June 15, 1959, at datum 1.00 ft higher.

Average discharge.--19 years (1944-63), 53.8 mgd (83.2 cfs).

Extremes.--Maximum discharge during year, 10,300 mgd (15,900 cfs) Apr. 15 (gage height, 12.25 ft), from rating curve extended above 2,100 mgd on basis of slope-area measurement at gage height 10.65 ft; minimum, 4.18 mgd (6.47 cfs) Sept. 23.

1943-63: Maximum discharge, that of Apr. 15, 1963; minimum recorded, 2.05 mgd (3.15 cfs) July 19, 1951.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Olokele ditch diverts all low flow from Olokele River 9 miles above station for irrigation near Makaweli.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Mar. 15

0.4	4.60	2.0	107
.6	8.60	2.5	195
1.0	25.0	3.0	320
1.5	53.5	4.0	690

Mar. 16 to June 30

0.6	16.9	3.0	325
1.1	39.0	4.0	690
1.5	68.0	5.0	1,240
2.0	123	6.0	1,930
2.5	210	8.0	3,830

Note.--Same as following table above 4.0 ft.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	a16	145	5.96	4.94	7.68	15.6	8.60	108	26.0	76.8	157	29.3
2	a13	95.2	5.96	4.94	20.3	34.6	8.93	66.3	19.1	102	54.3	31.1
3	a14	25.4	5.79	17.4	11.9	14.4	8.37	54.3	16.9	155	209	41.2
4	a12	15.2	7.45	16.6	9.26	9.92	8.60	43.6	16.4	139	115	84.5
5	a100	27.2	5.96	5.45	16.9	8.60	9.59	46.6	17.3	63.2	61.2	49.4
6	a15	13.7	5.96	5.96	11.9	8.14	11.6	79.5	117	57.6	90.2	*21.8
7	a13	15.6	5.96	5.28	8.60	7.91	479	59.6	59.9	53.6	131	44.0
8	a15	10.3	6.30	9.04	7.91	7.68	190	58.3	33.5	a47.8	42.6	36.4
9	*a12	8.37	6.30	11.2	7.45	9.26	58.3	86.4	23.2	50.6	84.5	26.8
10	27.9	7.91	6.84	7.45	7.45	*19.5	83.6	52.1	63.9	49.2	66.9	66.3
11	40.9	7.91	9.26	6.76	7.45	14.0	97.9	38.3	64.0	58.4	78.6	31.6
12	50.7	7.91	6.13	5.96	7.22	10.6	58.3	30.4	*32.5	57.6	197	25.0
13	74.3	8.14	6.30	5.45	6.76	15.6	50.7	27.5	23.6	56.0	40.8	18.0
14	20.4	10.5	6.30	5.62	6.99	16.0	46.6	27.0	208	47.8	238	17.3
15	13.5	34.3	6.13	5.45	7.91	23.4	78.3	25.5	977	*1,980	58.2	30.5
16	10.9	14.8	6.13	5.45	12.3	13.5	1,280	24.1	2,870	1,090	36.7	24.3
17	9.92	9.92	6.53	5.45	8.37	12.7	176	22.7	1,210	798	*44.8	18.7
18	11.7	7.91	14.0	34.1	28.6	12.3	68.2	20.0	368	669	40.3	16.9
19	9.26	7.45	5.96	247	11.6	11.6	46.6	19.1	120	904	29.5	37.8
20	13.1	*7.68	5.45	49.0	8.60	10.6	38.9	19.5	77.0	216	25.8	37.9
21	18.4	7.68	5.79	17.8	7.91	11.2	34.5	19.5	267	188	25.1	127
22	8.60	8.14	5.28	14.0	7.68	12.7	62.6	22.7	300	156	22.4	282
23	12.7	8.14	5.28	11.6	7.45	10.9	44.2	22.2	94.3	152	20.4	77.2
24	8.37	8.14	*4.94	10.3	7.91	10.3	353	27.0	52.8	144	19.4	32.9
25	7.45	7.68	4.60	9.59	7.22	11.2	*62.5	24.1	52.8	122	18.7	34.4
26	7.45	5.96	4.60	8.93	6.76	10.6	40.0	21.3	248	*199	18.5	203
27	7.22	6.76	4.60	8.60	26.8	9.92	35.6	20.0	228	175	23.7	34.2
28	6.99	7.22	4.77	8.37	71.8	9.92	35.0	24.1	60.8	127	20.2	21.0
29	6.99	8.82	4.94	*7.22	63.9	9.59	65.2	------	a47.1	108	18.7	18.0
30	6.76	7.22	4.94	7.22	20.1	9.59	72.5	------	362	78.6	20.4	17.3
31	6.76	6.30	------	7.45	------	9.59	356	------	124	------	49.4	------
TOTAL	590.27	562.46	184.41	569.58	442.68	391.42	3,969.19	1,089.7	8,180.1	8,121.2	2,058.3	1,535.8
MEAN												
MGD	19.0	18.1	6.15	18.4	14.8	12.6	128	38.9	264	271	66.4	51.2
CFS	29.4	28.1	9.51	28.4	22.8	19.5	198	60.2	408	419	103	79.2
AC-FT	1,810	1,730	566	1,750	1,360	1,200	12,180	3,340	25,100	24,920	6,320	4,710

CALENDAR YEAR 1962: MAX 2,220 MIN 4.60 MEAN MGD 59.8 MEAN CFS 92.5 AC-FT 66,980
FISCAL YEAR 1962-63: MAX 2,870 MIN 4.60 MEAN MGD 75.9 MEAN CFS 117 AC-FT 84,990

* Discharge measurement made on this day.
a No gage-height record.

Peak discharge (base, 1,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	0400	6.03	1,950	3,020	3-16	2330	11.19	8,390	13,000
1-16	0430	7.74	3,540	5,480	4-15	1830	12.25	10,300	15,900
1-24	0730	5.90	1,860	2,880	4-19	0830	6.14	2,040	3,160
1-31	1600	5.50	1,570	2,430	5-14	0900	6.94	2,730	4,220
3-14	1700	6.16	2,060	3,190					

490. Hanapepe River below Manuahi Stream, near Eleele

Location (revised).--Lat 21°57'29", long 159°33'13", on left bank just downstream from Manuahi Stream and 4 miles northeast of Eleele.

Drainage area.--18.8 sq mi.

Records available.--July 1917 to January 1921, December 1926 to June 1963. Prior to July 1952, published as "at Koula, near Eleele." Records for August 1910 to December 1916 at site half a mile upstream not equivalent owing to inflow. See also Note below.

Gage.--Water-stage recorder. Datum of gage is 222 ft above mean sea level (by stadia survey). July 1, 1917, to Jan. 22, 1921, staff gage at same site at different datum. Dec. 16, 1926, to June 30, 1951, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge.--39 years (1917-20, 1927-63), 54.2 mgd (83.9 cfs).

Extremes.--Maximum discharge during year, 25,200 mgd (39,000 cfs) Apr. 15 (gage height, 14.87 ft), from rating curve extended above 4,900 mgd on basis of slope-area measurement of peak flow; minimum, 6.64 mgd (10.3 cfs) Oct. 31.

1917-21, 1929-63: Maximum discharge, that of Apr. 15, 1963; minimum, 3.3 mgd (5.1 cfs) May 21, 1954.

Remarks.--Records good. Hanapepe ditch diverts 3 miles above station for irrigation in vicinity of Makaweli.

Note.--The figures of maximum discharge for fiscal years 1918-21, 1927-61 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.9	211	9.56	7.96	8.18	30.6	12.7	54.5	11.3	73.9	200	39.5
2	12.0	116	8.98	7.96	22.2	31.0	10.1	29.8	11.3	79.6	58.3	23.6
3	13.9	53.4	8.98	37.4	9.27	16.8	9.85	22.8	10.1	148	279	56.5
4	13.2	31.1	8.98	9.85	31.1	13.5	10.1	20.7	9.56	109	152	92.9
5	217	42.7	8.98	8.18	34.9	12.0	10.1	20.1	9.56	38.8	76.7	62.1
6	20.2	20.2	8.98	9.27	12.0	11.7	31.9	43.9	338	33.5	165	29.4
7	14.3	19.6	8.69	8.98	8.40	11.3	471	*26.2	59.7	23.9	120	70.4
8	15.5	12.4	16.4	10.8	7.52	11.3	187	21.8	33.8	20.7	44.0	40.6
9	12.0	11.3	14.5	10.4	7.52	11.3	71.6	38.0	18.7	28.2	114	45.4
10	25.0	11.0	*13.4	16.3	7.30	20.4	87.9	21.2	49.4	21.2	82.3	68.5
11	31.0	11.3	11.2	10.7	7.08	12.4	77.4	17.8	30.3	21.2	176	80.0
12	79.1	11.3	9.56	8.98	7.08	11.7	53.0	15.9	15.9	30.2	334	30.0
13	104	13.6	9.85	8.40	7.08	16.4	47.0	14.3	*13.2	29.2	62.5	21.0
14	21.2	18.4	8.95	8.40	7.08	16.8	43.6	13.5	338	86.0	573	38.4
15	16.4	30.5	8.69	*8.40	15.0	63.8	43.4	12.4	720	*3,150	86.0	48.3
16	12.4	13.9	8.69	8.40	8.03	17.3	700	11.3	1,980	*886	64.9	59.7
17	13.2	11.0	20.7	8.18	8.06	13.9	65.8	11.3	702	682	56.3	26.6
18	15.4	10.1	16.3	81.3	18.5	12.4	26.8	11.0	314	607	57.8	21.0
19	10.1	10.1	8.18	154	8.69	11.7	20.7	10.4	91.1	765	66.4	42.9
20	12.0	9.85	7.74	22.1	8.40	10.1	18.2	10.4	51.0	230	58.8	36.7
21	12.8	9.85	7.96	12.4	8.18	10.1	16.4	10.4	221	189	67.7	193
22	9.85	10.1	7.96	10.7	7.52	10.1	35.4	11.0	429	142	58.8	221
23	13.4	9.56	7.74	8.69	7.52	9.56	30.0	12.0	137	186	52.6	82.5
24	10.4	9.27	7.74	7.74	7.30	9.85	130	11.3	51.0	176	38.5	46.6
25	10.1	8.98	7.96	7.52	7.30	9.85	25.6	10.1	44.4	*155	14.7	47.0
26	10.4	9.85	7.96	7.30	7.30	9.56	19.1	9.85	236	264	14.6	216
27	10.4	11.3	8.18	7.30	88.8	9.56	18.2	9.56	120	377	22.7	*47.6
28	10.1	9.85	8.18	7.30	73.2	*9.56	19.6	12.0	38.8	246	14.2	26.0
29	9.85	13.5	8.40	7.30	46.1	17.1	23.9	--------	26.8	162	12.4	20.5
30	9.85	11.6	8.18	6.86	23.4	16.5	22.3	--------	112	151	13.5	22.2
31	*9.85	9.85	----------	6.86	---------	13.2	250	--------	54.0	---------	33.9	---------
Total	790.80	782.46	297.57	535.93	520.01	481.34	2,588.65	513.51	6,276.92	9,111.4	3,170.6	1,855.9
Mean												
Mgd	25.5	25.2	9.92	17.3	17.3	15.5	83.5	18.3	202	304	102	61.9
Cfs	39.5	39.0	15.3	26.8	26.8	24.0	129	28.3	313	470	158	95.8
Ac-ft	2,430	2,400	913	1,640	1,600	1,480	7,940	1,580	19,260	27,960	9,730	5,700

Calendar Year 1962: Max 1,290 Min 6.86 Mean mgd 46.3 Mean cfs 71.6 Ac-ft 51,860
Fiscal Year 1962-63: Max 3,150 Min 6.86 Mean mgd 73.8 Mean cfs 114 Ac-ft 82,630

* Discharge measurement made on this day.

Peak discharge (base, 2,300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-6	0300	7.71	4,010	6,200	4-15	1700	14.87	25,200	39,000
3-14	1000	6.86	2,950	4,560	5-14	0700	9.73	8,480	13,100
3-16	2230	9.32	6,690	10,400					

600. South Fork Wailua River near Lihue

Location (revised).--Lat 22°02'24", long 159°22'58", 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 April 1919, June 1919 to March 1921, May 1921 to June 1957, August, September 1957, November 1957 to February 1958, June 1958 to June 1963. Monthly discharge only for some periods, published in WSP 1319. Published as "above Waiehu Falls, near Lihue" 1912-13. See also Note below.

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. Nov. 18, 1918, to June 30, 1957, at site 10 ft downstream from present site at datum 2.50 ft higher and July 1, 1957, to June 23, 1958, at present datum.

Average discharge.--47 years (1912-18, 1919-20, 1921-24, 1925-57, 1958-63), 75.7 mgd (117 cfs).

Extremes.--Maximum discharge during year, 56,400 mgd (87,300 cfs) Apr. 15 (gage height, 22.90 ft), from rating curve extended above 8,400 mgd on basis of slope-area measurement of peak flow; minimum, 1.90 mgd (2.94 cfs) Oct. 2, 3, 14-18, 27, 28, Oct. 30 to Nov. 1.

1911-63: Maximum discharge, that of Apr. 15, 1963; minimum, 1.09 mgd (1.69 cfs) Sept. 21, 1953.

Remarks.--Records good. Lihue and Hanamaulu ditches divert upstream for irrigation of cane lands in vicinity of Lihue.

Note.--The figures of maximum discharge for fiscal years 1959 and 1960 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	42.4	55.5	2.89	*2.12	2.01	28.3	22.6	92.2	*3.84	91.6	*167	35.0
2	9.56	*50.2	2.67	2.01	3.70	48.4	*5.30	54.6	3.56	*138	105	17.9
3	*5.02	13.2	2.45	5.39	4.26	23.6	3.00	40.5	3.28	193	188	*38.4
4	13.2	7.29	2.45	7.67	3.55	16.1	2.78	*26.5	2.89	300	281	90.6
5	194	56.5	2.45	2.67	4.58	10.9	2.78	28.3	2.78	169	295	43.4
6	15.1	23.8	2.34	2.34	4.40	*9.01	3.42	28.7	327	130	336	17.2
7	20.5	9.33	2.34	2.34	3.28	9.28	1,000	28.3	7.40	100	232	46.3
8	35.5	4.58	9.93	2.23	2.78	13.7	317	14.6	4.58	29.2	113	40.5
9	14.9	4.12	13.6	2.23	2.67	12.8	85.2	4.76	3.84	11.8	126	52.9
10	4.94	3.84	4.40	2.45	2.56	8.47	38.0	4.12	3.55	65.0	123	116
11	6.60	3.84	6.22	2.78	2.56	3.98	25.1	3.84	3.28	63.1	208	112
12	19.2	3.56	3.42	2.45	2.56	3.00	14.0	3.70	3.28	51.4	556	45.8
13	112	3.56	3.14	2.12	2.45	2.56	13.1	3.70	3.00	144	160	42.8
14	42.7	3.84	2.89	2.01	2.45	3.00	12.8	3.70	231	382	455	91.0
15	46.3	4.76	2.78	1.90	2.45	43.2	63.3	3.56	207	*5,710	158	160
16	13.1	4.26	2.78	1.90	2.78	14.0	1,020	3.56	747	1,940	175	179
17	4.76	3.98	28.0	1.90	2.56	27.5	130	3.42	565	400	224	76.0
18	4.12	3.42	11.4	2.89	2.89	22.4	63.7	3.42	224	295	146	36.1
19	3.98	3.28	3.28	74.5	8.00	4.94	38.5	3.28	68.8	396	84.0	42.2
20	3.84	3.14	2.67	10.1	21.3	3.00	28.3	3.28	57.9	185	58.4	29.2
21	4.12	3.00	2.56	3.00	30.5	2.78	14.0	3.14	126	167	57.0	110
22	3.84	3.00	2.56	2.45	27.8	8.74	20.5	3.14	471	122	49.6	245
23	4.12	2.89	2.34	2.34	20.5	9.01	31.5	3.14	194	151	41.6	124
24	4.40	2.78	2.45	2.23	14.7	19.8	293	3.14	55.9	154	34.0	61.3
25	3.70	2.67	2.56	2.12	8.74	22.2	88.1	3.00	59.2	129	24.9	74.4
26	3.70	2.67	2.45	2.01	3.70	5.12	26.9	3.00	424	212	18.5	161
27	3.56	3.00	2.56	2.01	6.58	3.00	23.3	2.89	299	589	61.7	57.0
28	3.56	3.28	2.45	1.90	27.1	2.78	18.7	3.14	95.6	314	42.2	34.0
29	3.42	3.28	2.45	2.23	26.0	4.96	45.6	--------	50.2	242	31.0	31.5
30	3.56	*3.84	2.23	2.01	21.9	4.12	40.0	--------	276	179	31.5	38.3
31	3.42	3.00	------	*1.90	------	16.9	312	--------	138	------	39.9	------
TOTAL	653.12	299.41	136.71	158.20	271.32	407.55	3,802.48	382.63	4,661.89	13,053.1	4,622.3	2,248.8
MEAN												
MGD	21.1	9.66	4.56	5.10	9.04	13.1	123	13.7	150	435	149	75.0
CFS	32.6	14.9	7.05	7.89	14.0	20.3	190	21.1	233	673	231	116
AC-FT	2,000	919	420	485	833	1,250	11,670	1,170	14,310	40,060	14,190	6,900

CALENDAR YEAR 1962: MAX 1,710 MIN 1.90 MEAN MGD 68.9 MEAN CFS 107 AC-FT 78,300
FISCAL YEAR 1962-63: MAX 5,710 MIN 1.90 MEAN MGD 84.1 MEAN CFS 130 AC-FT 94,210

* Discharge measurement made on this day.

Peak discharge (base, 3,700 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-15	1600	22.90	56,400	87,300

610. North Wailua ditch near Lihue

Location (revised).--Lat 22°03'55", long 159°28'12", on left bank 300 ft downstream from intake, 8.3 miles west of Wailua, and 8.8 miles northwest of Lihue.

Records available.--July 1932 to June 1963.

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.--31 years, 12.1 mgd (18.7 cfs).

Extremes.--1932-63: Maximum daily discharge, 38 mgd (59 cfs) Dec. 21, 1933, Apr. 24, 1934; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Ditch diverts from North Fork Wailua River for power and irrigation in vicinity of Lihue.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	11.1	*15.6	12.0	*11.1	*12.6	12.6	12.3	11.7	*10.8	13.5	0.03	12.9
2	11.1	14.7	11.7	11.1	15.0	12.3	*12.0	12.6	12.0	*12.0	0	12.6
3	*12.0	14.7	12.0	14.1	11.7	11.4	11.4	11.7	9.97	13.5	.08	13.2
4	12.0	14.7	*12.3	12.9	12.6	11.7	13.5	*11.7	9.68	13.2	.03	*13.5
5	12.9	14.7	12.9	12.9	13.2	12.3	12.3	11.7	10.3	12.3	.08	13.5
6	12.3	13.8	12.0	13.5	12.0	*12.0	14.4	12.6	15.0	12.3	.62	12.9
7	13.2	13.5	12.3	13.2	12.0	12.0	13.6	12.0	11.1	11.7	.03	13.8
8	12.9	13.5	13.5	12.9	12.0	11.7	10.8	11.7	10.8	11.4	.35	13.2
9	12.3	13.2	13.5	12.6	12.6	11.7	12.0	12.3	10.6	11.4	.15	13.2
10	13.8	13.5	15.3	12.3	12.6	13.5	12.3	11.1	13.5	11.1	.08	13.5
11	14.4	13.5	14.1	12.0	12.0	11.7	12.3	10.8	11.4	11.1	.22	13.2
12	15.0	13.5	12.9	11.4	11.7	11.4	12.0	10.6	10.6	11.7	.30	12.9
13	13.8	13.5	13.2	10.8	11.4	11.7	11.7	10.6	10.6	12.0	0	13.2
14	13.2	13.8	12.6	10.6	11.7	15.0	11.7	10.3	14.1	13.2	.15	13.2
15	12.9	13.5	12.0	10.6	12.9	17.5	14.5	9.97	14.7	12.4	a.03	13.5
16	12.6	13.5	12.6	10.3	12.6	13.8	15.3	9.68	15.9	.74	a.03	13.8
17	12.3	12.3	15.3	10.6	13.5	14.7	12.0	9.68	13.5	.22	a.03	13.2
18	12.9	12.3	14.1	15.3	13.2	13.2	12.0	9.68	9.10	4.70	a.03	13.2
19	12.3	12.0	12.9	14.7	13.8	12.6	11.7	9.68	5.66	11.1	0	13.2
20	12.6	12.0	12.3	11.1	12.9	12.3	11.7	9.68	9.97	8.29	a.03	12.9
21	12.3	12.3	12.9	10.8	12.6	12.3	12.0	9.68	11.1	6.67	a.08	13.5
22	12.3	12.0	12.6	11.7	12.3	11.7	12.9	9.68	11.7	3.11	a.03	14.1
23	13.5	12.0	12.0	12.0	12.3	11.4	13.5	10.3	10.6	.30	a.03	13.5
24	12.3	12.3	12.0	11.1	12.0	11.4	15.9	10.3	9.68	.30	a.03	13.8
25	12.3	12.0	11.7	11.1	11.4	11.1	12.9	11.4	9.68	a.51	a.03	13.5
26	12.3	12.3	11.7	10.8	12.0	10.8	12.6	9.68	10.3	a.51	a.08	14.1
27	12.3	12.3	11.7	11.1	15.6	10.8	12.6	9.68	9.97	.30	a.30	13.8
28	12.6	12.0	12.0	12.3	15.6	11.1	13.2	11.4	9.68	.15	9.05	13.2
29	12.3	12.6	12.6	12.3	14.4	15.6	13.5	------	11.1	.03	11.1	12.6
30	12.3	12.0	11.4	10.8	13.2	15.0	14.7	------	15.6	.08	13.2	12.6
31	12.3	12.6	------	10.6	------	13.2	14.7	------	13.2	------	13.2	------
TOTAL	392.4	406.2	380.1	368.6	383.4	389.5	398.0	301.89	351.89	219.81	49.40	399.3
MEAN												
MGD	12.7	13.1	12.7	11.9	12.8	12.6	12.8	10.8	11.4	7.33	1.59	13.3
CFS	19.6	20.3	19.6	18.4	19.8	19.4	19.9	16.7	17.6	11.3	2.46	20.6
AC-FT	1,200	1,250	1,170	1,130	1,180	1,200	1,220	926	1,080	675	152	1,230

CALENDAR YEAR	1962:	MAX	17.5	MIN	7.62	MEAN MGD	12.4	MEAN CFS	19.2	AC-FT	13,860
FISCAL YEAR	1962-63:	MAX	17.5	MIN	0	MEAN MGD	11.1	MEAN CFS	17.2	AC-FT	12,410

* Discharge measurement made on this day.
a No gage-height record.

620. Stable storm ditch near Lihue

Location (revised).--Lat 22°04'09", long 159°26'46", 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 1963.

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

Average discharge.--26 years (1937-63), 7.15 mgd (11.1 cfs).

Extremes.--1936-63: 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 sugar cane in vicinity of Lihue.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.12	*31.1	11.9	*11.1	*19.7	0.19	0	0.02	18.4	0.07	(*)	0
2	.12	27.2	9.86	10.9	25.8	.19	0	.02	20.4	.07		0
3	.12	9.01	11.1	15.6	23.0	.19	*0	.02	16.8	.12		*0
4	0	.12	*12.2	15.6	24.4	.12	.02	.02	*15.6	.19		0
5	0	.07	12.2	18.4	25.4	.12	0	.12	17.2	.19		0
6	0	.07	10.9	20.0	23.0	.12	.02	.26	29.6	.19		0
7	0	.02	11.9	19.7	6.52	.12	.12	.26	21.3	.19		0
8	0	0	19.4	20.0	.34	.12	.12	.19	19.4	.19		0
9	0	0	18.7	19.0	.26	.19	.07	.19	19.0	.12		0
10	0	.02	20.7	19.4	.26	.19	.07	.19	22.7	0		0
11	0	.02	20.0	18.4	.26	.19	.07	10.3	19.4	0		0
12	0	.02	17.8	17.2	12.7	.19	.07	14.2	17.5	0		.01
13	0	10.4	17.8	16.2	17.8	1.15	.07	13.9	17.8	0		0
14	0	20.4	16.2	15.9	19.0	.26	.07	13.6	10.7	.07		0
15	0	20.4	15.0	15.9	22.0	.19	.07	13.3	.19	7.29		.03
16	0	18.7	16.2	15.6	21.0	.07	.07	15.6	.60	.12		.03
17	0	5.50	20.0	15.9	22.0	.07	.07	17.5	.12	.12		0
18	0	.12	20.7	20.7	22.7	.07	.07	17.2	.12	.07		0
19	15.9	.12	18.4	22.0	23.7	.07	.02	17.2	.12	.07		0
20	17.7	.12	16.2	20.0	6.89	.07	.02	17.2	.12	.02		0
21	16.2	11.3	17.8	19.4	.26	.07	0	16.5	.12	0		.07
22	14.2	14.7	16.8	19.4	.19	.07	0	16.2	.12	0		.14
23	23.7	12.7	15.0	19.7	.19	.07	0	15.3	.12	0		0
24	14.7	13.9	14.7	15.6	.19	.07	0	17.8	.26	0		.02
25	14.2	12.2	15.0	15.9	.19	.07	0	19.0	.34	0		.02
26	15.0	14.4	14.2	15.9	13.4	.07	0	16.5	.26	0		.02
27	14.2	13.9	14.7	15.9	23.7	.07	0	16.2	.19	0		.02
28	16.7	13.0	14.4	20.0	8.46	.07	0	20.4	.12	0		0
29	14.2	15.0	12.4	20.4	.34	.07	0	--------	.12	0		0
30	14.4	13.3	10.9	16.5	.26	.07	0	--------	.12	0		0
31	14.2	14.7	--------	15.9	--------	.02	.02	--------	.07	--------		--------
Total	205.66	292.51	463.06	542.10	363.91	4.60	1.04	289.19	268.91	9.09	0	0.36
Mean												
Mgd	6.63	9.44	15.4	17.5	12.1	0.148	0.034	10.3	8.67	0.303	0	0.012
Cfs	10.3	14.6	23.8	27.1	18.7	0.229	0.053	15.9	13.4	0.469	0	0.019
Ac-ft	631	898	1420	1660	1120	14	3.2	887	825	28	0	1.1

Calendar Year 1962:			Max	31.1	Min	0	Mean mgd	5.51	Mean cfs	8.53	Ac-ft	6170
Fiscal Year 1962-63:			Max	31.1	Min	0	Mean mgd	6.69	Mean cfs	10.4	Ac-ft	7490

* Discharge measurement or observation of no flow made on this day.

630. North Fork Wailua River at altitude 650 ft, near Lihue

Location (revised).--Lat 22°04'02", long 159°26'21", on right bank 0.5 mile downstream from intake of Stable storm ditch and 7.8 miles northwest of Lihue.

Drainage area.--6.6 sq mi, approximately.

Records available.--September 1914 to March 1915, May 1915 to October 1918, December 1918, March 1919, June 1919 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 650 ft (from topographic map). Prior to Sept. 9, 1944, at datum 2.0 ft higher.

Average discharge.--47 years (1915-18, 1919-63), 46.7 mgd (72.3 cfs).

Extremes.--Maximum discharge during year, 6,380 mgd (9,870 cfs) Apr. 15 (gage height, 12.11 ft), from rating curve extended above 75 mgd as explained below; minimum recorded, 0.59 mgd (0.91 cfs) Mar. 4, 5, but may have been less during period of no gage-height record in March.

1914-63: Maximum discharge, 8,550 mgd (13,200 cfs) Nov. 12, 1955 (gage height, 13.53 ft), from rating curve extended above 470 mgd on basis of slope-area measurement at gage height 10.65 ft; minimum, 0.22 mgd (0.34 cfs) Oct. 27, 1953.

Remarks.--Records fair. Since 1925 Hanalei tunnel (see p. 41) has diverted from Hanalei River basin into North Fork Wailua River above station; North Wailua and Stable storm ditches (see preceding pages) divert water above station for power development and irrigation in vicinity of Lihue.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 14

1.6	0.44	2.6	31.7
1.7	.94	3.0	64.0
1.8	1.80	3.5	121
1.9	3.20	4.0	201
2.0	5.20	4.5	312
2.1	7.90	5.0	460
2.3	15.4	6.0	845

Apr. 15 to June 30

2.7	24.0	4.5	260
3.0	41.0	5.0	400
3.5	86.0	6.0	785
4.0	158	7.0	1,320

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	22.3	56.1	1.20	*1.03	3.84	43.8	25.0	*41.0	a0.7	*42.6	*74.0	33.2
2	21.7	*23.7	1.11	.89	35.9	42.5	18.2	33.1	a.6	38.7	56.0	33.2
3	*32.5	33.2	1.03	5.86	5.74	33.8	*15.4	27.4	a.6	79.0	109	*52.8
4	29.1	40.1	1.26	1.27	12.7	31.1	47.1	24.4	*.59	56.6	92.0	60.0
5	85.7	49.5	*1.11	1.03	20.9	28.6	20.1	22.3	.69	40.2	104	35.6
6	24.4	33.1	1.03	4.82	6.12	26.1	116	26.3	53.6	37.8	138	26.0
7	22.8	31.1	1.03	3.26	15.4	26.1	329	20.6	a.7	28.0	88.4	51.8
8	20.6	25.0	5.81	3.94	21.2	25.5	79.3	19.6	a.6	22.8	63.2	35.0
9	16.8	21.7	5.96	1.37	21.3	24.4	41.8	22.3	a.6	21.7	71.0	37.5
10	30.8	23.9	21.9	2.34	20.9	29.8	35.2	17.3	a2.9	19.6	67.0	59.3
11	43.5	24.4	6.30	1.20	19.2	25.0	28.6	6.51	a.8	19.2	76.1	52.3
12	66.2	24.1	.74	1.03	6.97	25.5	24.4	.89	.79	21.7	138	30.8
13	46.4	14.5	.79	1.03	.84	19.5	22.3	.84	1.03	38.1	59.6	33.2
14	28.6	7.24	.79	1.03	.79	49.5	20.1	.79	134	57.6	140	40.8
15	23.9	9.07	.79	1.11	20.8	120	68.4	.79	212	883	56.0	58.0
16	20.1	5.51	.94	1.20	3.16	36.6	282	.74	475	246	92.9	62.9
17	19.2	12.8	47.4	1.11	10.1	59.0	59.5	.84	275	156	94.0	35.6
18	26.2	17.8	13.8	26.8	9.25	34.5	36.6	.79	123	108	58.7	32.8
19	8.62	16.3	1.03	50.5	20.0	29.2	30.5	.69	72.7	216	43.8	33.2
20	4.31	16.3	1.03	7.30	22.0	25.5	27.4	.69	54.0	76.1	38.6	29.0
21	1.54	6.57	1.45	2.50	28.0	25.5	24.4	.69	171	60.5	44.5	60.6
22	1.37	1.54	1.20	a3.2	26.1	23.3	25.5	.74	214	62.3	37.4	103
23	8.64	1.37	1.28	a2.2	26.1	21.7	33.7	.79	86.1	61.4	32.0	48.0
24	1.28	1.37	1.28	a1.0	25.5	21.7	107	.79	50.6	58.7	29.0	57.4
25	1.20	1.37	1.28	a.8	23.3	20.6	28.0	.84	51.4	60.5	27.5	50.3
26	1.20	1.67	1.20	a.7	9.00	20.1	23.3	.84	169	81.6	32.0	88.9
27	1.20	1.37	1.28	a.8	33.1	20.1	21.2	.79	88.0	160	56.7	53.1
28	1.78	1.37	1.37	a1.0	54.5	20.6	22.5	1.72	44.9	104	44.5	36.2
29	1.11	3.38	1.28	a1.2	47.0	55.7	30.1	------	39.5	83.8	36.8	28.5
30	1.03	1.28	1.37	a.8	*41.7	46.4	43.0	------	200	89.8	45.9	27.0
31	1.03	1.46	------	*.69	------	31.8	162	------	55.7	------	43.1	------
TOTAL	615.11	508.17	128.04	133.01	591.41	1,043.5	1,847.6	275.07	2,580.10	3,031.3	2,089.7	1,386.0
MEAN												
MGD	19.8	16.4	4.27	4.29	19.7	33.7	59.6	9.82	83.2	101	67.4	46.2
CFS	30.7	25.4	6.60	6.64	30.5	52.1	92.2	15.2	129	156	104	71.5
AC-FT	1,890	1,560	393	408	1,810	3,200	5,670	844	7,920	9,300	6,410	4,250

CALENDAR YEAR	1962:	MAX	575	MIN	0.69	MEAN MGD	35.9	MEAN CFS	55.5	AC-FT	40,240
FISCAL YEAR	1962-63:	MAX	883	MIN	0.59	MEAN MGD	39.0	MEAN CFS	60.3	AC-FT	43,670

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-16	2330	7.67	1,790	2,770	4-15	1500	12.11	6,380	9,870
3-26	2300	6.95	1,330	2,060					

* Discharge measurement made on this day.
a No gage-height record.

680. East Branch of North Fork Wailua River near Lihue

Location.--Lat 22°04'19" (revised), 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, approximately.

Records available.--July 1912 to September 1914, December 1914 to March 1915, May 1915 to March 1919, June 1919 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (from topographic map). Prior to Dec. 31, 1914, staff gage at site 725 ft downstream at different datum. Dec. 31, 1914, to May 10, 1934, water-stage recorder at site 75 ft upstream at present datum.

Average discharge.--48 years (1913-14, 1915-18, 1919-63), 30.8 mgd (47.7 cfs).

Extremes.--Maximum discharge during year, 4,230 mgd (6,540 cfs) Apr. 15 (gage height, 9.31 ft), from rating curve extended above 590 mgd; minimum, 7.30 mgd (11.3 cfs) Oct. 26, 27, Nov. 14, 15, Mar. 4, 5, 13.

1912-63: Maximum gage height, 14.7 ft, from floodmarks, Nov. 12, 1955 (discharge not determined); minimum discharge, 4.4 mgd (6.8 cfs) July 3, 13, 1926.

Remarks.--Records good except those above 1,200 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.2	7.30	2.5	145
1.4	15.5	3.0	260
1.6	28.0	4.0	600
2.0	66.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	15.1	51.5	13.7	9.15	8.78	15.5	9.89	*18.9	9.52	*45.0	48.0	28.0
2	*14.6	50.7	12.4	9.15	27.0	16.1	8.78	13.7	8.41	42.3	41.4	28.0
3	18.2	37.5	11.9	11.6	13.3	13.3	8.41	12.4	8.04	98.5	60.9	36.0
4	18.7	30.9	11.5	11.0	17.2	11.5	26.6	11.5	7.67	73.8	54.9	47.0
5	60.4	34.4	11.5	9.15	19.5	10.6	10.6	10.6	8.04	47.0	98.0	37.8
6	17.8	26.6	11.5	11.5	13.3	10.3	52.7	10.3	43.9	36.9	143	28.0
7	16.1	35.9	11.5	10.6	10.3	9.89	416	9.89	10.3	32.0	91.6	41.4
8	15.5	23.9	19.3	10.3	9.89	9.52	87.1	9.52	9.15	28.0	54.0	33.6
9	14.2	19.5	13.3	9.89	9.52	9.15	33.6	9.15	8.41	28.0	59.4	32.0
10	22.5	24.2	14.6	9.52	9.15	8.78	24.6	9.15	8.04	40.2	56.1	45.0
11	25.3	21.2	12.8	8.78	8.78	8.78	19.5	8.78	8.04	34.4	72.3	40.5
12	18.9	18.9	12.4	8.78	8.41	8.41	16.6	8.78	7.67	28.0	98.9	36.0
13	25.3	23.2	12.8	8.78	8.41	8.41	14.6	8.41	7.30	87.0	55.0	36.0
14	20.7	21.9	11.5	8.41	8.04	21.3	13.3	8.41	37.5	105	*97.8	40.5
15	16.6	27.3	11.0	8.04	22.1	38.1	14.6	8.41	40.5	568	52.0	60.5
16	14.6	20.1	11.0	7.67	12.8	14.6	69.4	8.41	85.6	239	98.0	40.5
17	14.6	17.2	14.3	8.04	10.6	38.1	21.2	8.78	78.8	97.2	69.3	34.4
18	15.5	15.5	13.7	13.6	12.8	15.5	16.1	9.52	65.3	60.5	50.0	33.6
19	16.1	15.1	10.6	19.2	22.4	11.9	14.6	8.41	69.5	52.0	40.5	47.0
20	16.2	14.6	9.89	9.52	11.5	10.6	14.2	8.41	41.4	41.4	35.2	33.6
21	16.1	15.1	10.3	8.41	9.89	10.3	13.3	8.41	42.3	37.8	36.0	50.0
22	14.2	15.1	10.3	9.15	8.78	9.89	12.8	8.41	85.3	39.6	35.2	47.0
23	33.2	13.7	9.89	9.52	9.15	9.52	13.3	8.41	52.0	55.8	28.8	38.7
24	16.1	13.3	9.89	8.41	8.78	9.15	21.0	8.41	33.6	50.0	26.0	40.5
25	14.2	12.8	9.89	7.67	8.41	8.78	12.8	8.41	36.0	37.8	23.9	42.3
26	14.6	13.7	9.52	7.67	8.78	8.41	11.9	9.04	125	63.8	22.6	55.0
27	13.3	14.6	9.89	7.30	37.9	8.41	11.0	8.04	101	133	23.2	36.0
28	13.7	13.3	10.3	8.04	34.4	8.78	10.6	*9.15	43.2	97.2	53.0	33.6
29	12.8	16.8	11.0	8.78	23.7	24.0	10.3	------	34.4	68.6	40.5	30.4
30	12.4	*14.2	*9.52	7.67	*18.9	17.2	11.5	------	151	55.0	55.0	32.0
31	*12.4	14.6	------	*7.67	------	*11.9	59.3	------	58.3	------	*32.8	------
TOTAL	569.9	687.3	351.69	292.97	432.47	416.68	1,080.18	268.71	1,325.19	2,422.8	1,753.3	1,164.9
MEAN												
MGD	18.4	22.2	11.7	9.45	14.4	13.4	34.8	9.60	42.7	80.8	56.6	38.8
CFS	28.4	34.3	18.1	14.6	22.3	20.8	53.9	14.8	66.1	125	87.5	60.1
AC-FT	1,750	2,110	1,080	899	1,330	1,280	3,310	825	4,070	7,440	5,380	3,570

CALENDAR YEAR 1962:	MAX	381	MIN	7.30	MEAN MGD	26.9	MEAN CFS	41.6	AC-FT	30,090
FISCAL YEAR 1962-63:	MAX	568	MIN	7.30	MEAN MGD	29.5	MEAN CFS	45.6	AC-FT	33,040

* Discharge measurement made on this day.

Peak discharge (base, 1,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	1700	5.34	1,250	1,930	4-15	1500	9.31	4,230	6,540

690. Wailua ditch near Kapaa

Location (revised).--Lat 22°04'34", long 159°24'04", 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 1963.

Gage.--Water-stage recorder. Datum of gage is 462.3 ft above mean sea level (by stadia survey).

Average discharge.--26 years (1937-63), 10.2 mgd (15.8 cfs).

Extremes.--1936-63: Maximum daily discharge, 41 mgd (63 cfs) June 4, 1937; no flow at times.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Ditch diverts water from North Fork Wailua River to reservoir 2,000 ft above station and thence to fields for irrigation of sugar cane.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	6.73	12.3	8.00	*15.8	10.5	1.43	2.28	0.02	6.62	0.88	*0.53	9.80
2	*6.73	*5.19	7.06	16.4	*7.64	1.50	2.70	.03	9.00	.82	.65	9.70
3	6.64	1.69	8.00	15.8	3.58	3.34	*3.02	.03	8.80	.82	.74	9.70
4	6.73	1.69	11.4	17.8	3.50	6.79	3.58	.04	8.50	.82	.82	8.80
5	6.82	1.75	13.2	18.2	3.66	9.00	4.06	.05	8.30	.82	.99	7.70
6	6.73	1.81	16.5	17.5	2.14	12.8	4.06	.05	5.28	.74	1.04	7.70
7	6.82	1.75	18.2	16.7	1.75	14.7	2.01	.07	1.04	.78	1.10	7.80
8	6.82	7.73	17.9	18.7	1.75	7.93	*.69	5.95	*1.04	.74	1.10	7.70
9	6.73	10.2	17.7	18.9	1.75	3.98	.69	10.0	.88	.74	1.15	7.70
10	6.73	10.2	17.7	17.1	6.56	3.98	.69	10.7	.88	.74	1.15	7.80
11	6.73	5.95	18.1	14.7	8.80	6.05	.74	11.2	.93	.74	1.21	7.80
12	6.64	3.82	13.6	12.1	8.80	8.80	.69	16.4	5.32	.69	1.26	7.80
13	6.73	3.90	11.6	10.3	8.60	8.80	.69	19.9	10.5	.69	1.32	7.80
14	6.82	3.98	11.7	9.40	8.60	6.73	.74	18.8	14.5	.57	1.37	7.80
15	6.73	3.98	11.7	9.00	8.40	4.22	2.84	17.2	16.4	*.61	1.37	9.20
16	*6.73	3.90	11.6	8.60	8.10	4.14	2.00	16.1	10.9	.57	1.37	9.90
17	6.82	3.90	11.7	8.50	8.10	4.14	1.10	14.7	11	.40	1.43	9.80
18	10.1	6.82	12.1	4.14	8.10	3.90	1.04	13.4	8.8	.36	1.50	9.80
19	11.8	8.30	12.2	2.11	8.20	3.66	1.10	11.8	3.7	.32	1.62	9.90
20	11.9	8.20	12.2	3.10	8.20	3.34	1.10	10.4	3.7	.36	2.51	10.0
21	8.50	8.20	12.2	3.18	4.86	3.18	.93	9.00	3.7	.32	3.74	10.1
22	7.20	11.0	12.1	3.26	1.56	3.02	4.41	8.20	3.7	.32	6.25	10.1
23	7.50	12.1	12.0	3.42	1.50	2.94	8.30	8.10	3.7	.32	9.20	10.2
24	7.70	12.1	12.0	7.39	5.83	2.86	3.73	8.00	3.7	.40	9.50	10.2
25	13.3	12.0	12.0	12.1	7.90	2.63	1.32	8.10	3.7	.40	9.70	6.29
26	19.7	12.0	11.9	11.8	*8.00	2.42	5.68	7.90	10	.40	9.80	4.39
27	21.4	9.00	14.1	11.7	7.90	2.14	8.80	7.60	2.0	.44	*9.80	4.48
28	15.3	7.90	14.9	11.4	3.67	1.94	8.90	5.26	2.0	.53	9.80	7.56
29	11.9	7.90	14.6	11.1	*1.37	1.81	8.49	------	2.0	.53	9.70	9.00
30	12.0	7.90	14.4	11.0	1.43	1.43	8.80	------	2.0	.53	9.80	8.90
31	12.1	*7.90	------	10.8	------	2.00	*5.13	------	2.0	------	9.90	------
TOTAL	285.08	215.06	392.36	352.00	170.75	145.60	100.31	239.00	174.59	17.40	121.42	255.42
MEAN												
MGD	9.20	6.94	13.1	11.4	5.69	4.70	3.24	8.54	5.63	0.580	3.92	8.51
CFS	14.2	10.7	20.2	17.6	8.81	7.27	5.01	13.2	8.71	0.897	6.06	13.2
AC-FT	875	660	1,200	1,080	524	447	308	733	536	53	373	784

CALENDAR YEAR	1962:	MAX	21.4	MIN	0.26	MEAN MGD	5.30	MEAN CFS	8.20	AC-FT	5,930
FISCAL YEAR	1962-63:	MAX	21.4	MIN	0.02	MEAN MGD	6.76	MEAN CFS	10.5	AC-FT	7,570

* Discharge measurement made on this day.
Note.--No gage-height record Mar. 17-31.

710. North Fork Wailua River near Kapaa

Location (revised).--Lat 22°03'08", long 159°22'22", on right bank 1.1 miles upstream from confluence with South Fork, 3.5 miles southwest of Kapaa, and 5.0 miles north of Lihue.

Drainage area.--18.7 sq mi.

Records available.--July 1952 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 18 ft (revised, from topographic map).

Average discharge.--11 years, 77.5 mgd (120 cfs).

Extremes.--Maximum discharge during year, 13,600 mgd (21,000 cfs) Apr. 15 (gage height, 13.67 ft), from rating curve extended above 2,400 mgd on basis of slope-area measurement at gage height 20.8 ft; minimum, 3.95 mgd (6.11 cfs) Oct. 12-18, Jan. 3, 4.

1952-63: Maximum discharge, 34,400 mgd (53,200 cfs) Nov. 12, 1955 (gage height, 19.88 ft in gage well, 20.8 ft from flood-marks), from rating curve extended above 2,400 mgd on basis of slope-area measurement of peak flow; minimum, 1.37 mgd (2.12 cfs) Oct. 28, 1953.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Wailua ditch (see preceding page) diverts above station for irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 9 to Mar. 15)

1.16	3.95	2.5	103
1.2	4.47	3.0	195
1.3	6.22	3.5	328
1.5	12.0	4.0	500
1.7	21.5	5.0	1,000
2.0	45.0	6.0	1,730

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	45.0	71.7	9.69	6.47	5.27	61.9	28.8	120	8.45	128	191	70.5
2	39.6	88.8	7.96	5.45	35.6	72.7	15.7	73.8	7.96	131	151	70.5
3	50.8	80.3	7.46	5.83	16.0	52.0	4.33	64.0	7.71	227	233	94.4
4	49.7	83.1	7.46	6.72	14.6	33.6	28.9	58.0	7.71	233	228	109
5	147	100	6.72	5.45	41.3	21.5	10.8	54.0	5.45	161	286	75.7
6	57.0	76.0	6.22	5.27	39.6	17.1	30.8	58.0	a80	121	372	57.0
7	51.0	81.2	7.21	5.09	23.5	11.3	950	40.5	a8.0	98.8	280	98.8
8	46.0	61.0	12.4	5.09	24.1	16.5	336	25.8	a7.0	85.1	187	76.0
9	40.5	48.0	20.8	5.09	32.0	28.8	147	9.03	a6.4	78.6	208	75.9
10	58.7	43.5	21.4	4.92	32.1	32.8	108	8.20	a15	114	208	129
11	81.7	43.2	14.0	4.20	22.8	26.1	86.4	7.96	*a9.0	97.4	230	99.9
12	88.4	45.0	7.96	4.07	19.0	16.6	63.0	7.21	5.83	83.8	372	76.0
13	106	45.7	7.71	4.07	9.69	14.8	56.0	7.21	5.27	144	a200	79.8
14	62.0	29.6	7.46	4.07	8.18	46.8	*51.0	6.72	147	263	a400	86.2
15	54.0	50.0	6.72	3.95	37.7	185	63.2	6.47	263	*1,670	a200	145
16	*43.2	32.6	7.21	3.95	20.9	63.3	457	6.47	554	758	a300	138
17	38.7	32.0	32.1	*3.95	7.21	102	139	6.72	385	397	a250	89.0
18	43.2	34.4	29.7	4.95	22.7	61.0	89.0	6.96	206	263	a150	67.2
19	27.7	29.6	8.20	45.9	38.1	59.9	70.5	6.47	157	365	a100	79.9
20	11.7	28.0	7.71	6.43	23.5	41.4	65.0	6.47	125	175	a60	62.0
21	17.5	24.8	6.96	4.76	33.6	39.6	43.7	6.47	238	155	*a70	111
22	10.4	14.0	7.21	4.76	33.6	37.8	32.0	6.72	356	150	62.0	185
23	35.6	9.69	7.21	5.95	33.6	35.2	48.0	7.21	181	165	58.0	105
24	14.0	8.70	7.71	8.70	26.7	34.4	163	7.21	106	154	60.0	115
25	11.0	8.20	7.21	4.92	21.5	33.6	61.0	7.21	98.4	139	62.0	125
26	9.69	8.20	7.21	4.76	*17.5	32.8	48.0	7.46	316	197	63.8	177
27	7.46	10.4	6.96	4.76	48.1	31.2	36.0	7.46	290	409	95.7	105
28	7.21	14.0	6.96	4.92	99.2	32.0	33.6	7.96	115	286	105	79.9
29	6.96	18.0	6.96	6.22	95.6	80.3	51.6	------	93.2	238	79.9	66.1
30	6.96	*14.0	6.96	5.09	69.1	66.1	61.5	------	414	219	108	64.0
31	6.96	11.0	------	4.92	------	38.7	277	----	171	------	89.0	------
TOTAL	1,275.64	1,244.69	307.44	200.68	952.35	1,426.8	3,655.83	637.69	4,389.38	7,705.7	5,459.4	2,912.8
MEAN												
MGD	41.1	40.2	10.2	6.47	31.7	46.0	118	22.8	142	257	176	97.1
CFS	63.7	62.1	15.9	10.0	49.1	71.2	182	35.2	220	397	272	150
AC-FT	3,910	3,820	944	616	2,920	4,380	11,220	1,960	13,470	23,650	16,750	8,940

CALENDAR YEAR	1962:	MAX	1,130	MIN	3.30	MEAN MGD	73.9	MEAN CFS	114	AC-FT	82,750
FISCAL YEAR	1962-63:	MAX	1,670	MIN	3.95	MEAN MGD	82.7	MEAN CFS	128	AC-FT	92,580

Peak discharge (base, 2,300 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-15	1600	13.67	13,600	21,000

* Discharge measurement made on this day.
a No gage-height record.

715. Left Branch Opaikaa Stream near Kapaa

Location.--Lat 22°04'43" (revised), long 159°23'55", on left bank 0.1 mile upstream from confluence with Right Branch and 5 miles west of Kapaa.

Drainage area.--0.7 sq mi, approximately.

Records available.--May 1960 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 458.4 ft above mean sea level (by stadia survey).

Extremes.--Maximum discharge during year, 236 mgd (365 cfs) Apr. 15 (gage height, 5.21 ft), from rating curve extended above 7.9 mgd; minimum, 0.20 mgd (0.31 cfs) Jan. 14, 15.

1960-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Jan. 14, 15, 1963.

Remarks.--Records fair. No diversion above station. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Nov. 27 to Dec. 7, Dec. 14 to Jan. 20, Mar. 31 to May 12)

0.78	0.20	1.5	7.50
.8	.26	2.0	18.3
.9	.69	2.5	33.5
1.0	1.33	3.0	55.0
1.2	3.25		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.27	0.95	0.49	0.41	0.37	0.33	0.37	0.88	0.54	1.26	4.50	2.31
2	1.27	1.14	.49	.41	.49	.41	.37	.69	.49	1.37	4.25	2.11
3	1.20	1.14	.45	.45	.45	.33	.37	.64	.49	3.73	4.25	2.11
4	1.20	1.14	.45	.45	.45	.33	.64	.59	.45	3.48	4.13	2.20
5	1.77	1.42	.49	.49	.64	.29	.45	.59	.45	1.77	7.15	1.94
6	1.27	1.14	.45	.45	.45	.29	.58	.59	1.28	1.33	7.81	1.85
7	1.27	1.07	.49	.45	.33	.29	*25.3	.59	.59	1.01	5.90	2.03
8	1.20	1.01	.59	.45	.29	.29	*6.13	.59	*.41	.75	4.92	1.85
9	1.20	.82	1.07	.41	.33	.29	.88	.59	.45	.75	4.78	1.85
10	1.14	.82	.88	.41	.41	.29	.45	.54	.41	9.43	4.64	2.32
11	1.14	.82	.64	.45	.33	.29	.29	.54	.41	1.80	5.08	1.94
12	1.14	.82	.64	.45	.33	.29	.23	.54	.37	1.20	5.48	1.85
13	1.14	.82	.64	.41	.29	.29	.23	.54	.33	3.19	4.38	2.20
14	1.58	.82	.59	.41	.29	.37	.20	.49	.64	8.45	5.46	2.46
15	1.27	.82	.54	.41	.29	.64	.20	.49	.41	*47.6	4.50	3.04
16	*1.07	.75	.59	.41	.37	.45	1.21	.49	.37	23.5	5.93	2.31
17	1.07	.69	.59	.41	.33	.54	.41	.49	.54	10.7	5.34	2.31
18	1.07	.69	.54	*.69	.37	.45	.33	.54	.69	7.34	4.50	2.11
19	1.01	.69	.49	.75	1.01	.37	.33	.54	3.64	*6.06	4.13	2.03
20	1.01	.64	.49	.41	.45	.37	.33	.54	1.01	5.34	3.88	1.94
21	1.01	.69	.49	.33	.37	.37	.37	.49	.64	4.78	3.75	2.11
22	1.01	.69	.49	.37	.33	.37	.37	.49	.88	4.64	3.50	2.03
23	1.14	.64	.45	.37	.37	.37	.45	.49	.75	4.78	3.25	1.77
24	1.07	.59	.45	.37	.29	.37	.59	.49	.49	4.25	3.04	2.03
25	.95	.54	.49	.37	.29	.37	.45	.49	.54	3.88	3.04	2.11
26	.95	.54	.49	.37	*.29	.37	.45	.49	4.14	4.44	2.83	2.31
27	.95	.54	.49	.33	.37	.37	.45	.49	5.16	9.57	*2.73	2.03
28	.88	.54	.49	.37	.54	.37	.45	.49	1.27	6.54	2.73	1.85
29	.88	.59	.54	.41	.41	.37	.49	------	.95	5.90	2.62	1.68
30	.82	.54	.45	.37	.37	.37	.54	------	3.77	4.92	2.91	1.68
31	.82	*.54	------	.37	------	.37	*1.68	------	1.50	------	2.41	------
TOTAL	34.77	24.65	16.43	13.21	11.90	11.27	45.59	15.41	34.06	193.76	133.82	62.36
MEAN												
MGD	1.12	0.795	0.548	0.426	0.397	0.364	1.47	0.550	1.10	6.46	4.32	2.08
CFS	1.74	1.23	0.847	0.659	0.614	0.562	2.27	0.851	1.70	9.99	6.68	3.22
AC-FT	107	76	50	41	37	35	140	47	105	595	411	191

CALENDAR YEAR 1962:	MAX	19.3	MIN	0.29	MEAN MGD	1.73	MEAN CFS	2.68	AC-FT	1,940
FISCAL YEAR 1962-63	MAX	47.6	MIN	0.20	MEAN MGD	1.64	MEAN CFS	2.54	AC-FT	1,840

* Discharge measurement made on this day.

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	2100	3.86	94.2	146	4-15	1430	5.21	236	365

770. Makaleha ditch near Kealia

Location (revised).--lat 22°07'00", long 159°22'04", on left bank at end of last tunnel from which flow enters Mimino Reservoir, 3.9 miles northwest of Kealia, and 4.1 miles northwest of Kapaa.

Records available.--December 1936 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 518 ft above mean sea level (by stadia survey).

Average discharge.--26 years (1937-63), 4.44 mgd (6.87 cfs).

Extremes.--1936-63: Maximum daily discharge, 20.2 mgd (31.3 cfs) Aug. 1, 1961; no flow at times.

Remarks.--Records good. Ditch diverts from Makaleha Stream for irrigation of sugar cane.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	7.71	*16.3	6.27	5.12	*9.53	3.69	0.03	0.25	*5.36	*0.88	*0.39	7.90
2	*6.99	16.0	6.27	*5.04	15.9	.14	.03	.12	4.96	3.58	.25	7.62
3	8.60	16.0	5.52	7.58	7.77	2.94	.02	.10	4.40	5.74	.25	*8.00
4	9.00	13.4	*5.44	6.27	2.52	5.28	.02	.08	3.88	2.64	.22	8.10
5	13.3	15.6	5.92	6.36	2.22	5.04	.02	.06	5.16	1.66	1.29	8.00
6	7.80	12.2	5.92	6.54	2.05	*4.64	.02	.06	11.6	1.06	1.50	7.62
7	7.35	14.8	5.44	6.09	1.55	4.48	7.36	.06	5.12	.75	1.15	8.00
8	7.71	10.4	10.8	7.17	1.55	4.40	3.96	1.69	3.04	.57	.61	7.90
9	6.63	8.00	8.50	6.09	1.76	4.33	1.11	3.37	.03	6.43	.42	8.00
10	12.0	9.80	9.30	5.84	1.99	3.11	.57	3.44	.02	12.2	.31	8.20
11	13.2	10.0	7.71	5.52	2.10	.03	.34	3.44	.02	7.12	.36	8.10
12	11.3	9.20	7.26	5.92	1.82	.02	.25	3.44	1.91	.88	.39	8.50
13	11.6	10.4	6.72	5.20	3.52	1.16	.17	3.44	3.58	1.11	.31	8.60
14	10.8	12.0	6.54	5.12	4.88	8.38	.12	3.44	14.7	2.52	.36	8.90
15	8.30	14.8	5.84	4.96	5.84	9.10	.12	3.37	5.77	10.8	.31	9.60
16	6.99	10.8	5.84	4.80	6.90	8.00	.12	3.30	.20	4.89	.78	8.60
17	6.45	8.20	10.2	4.96	6.19	8.90	.14	4.58	.25	1.71	1.06	7.53
18	7.26	6.81	8.30	8.70	6.54	4.29	.12	4.96	.25	.79	.68	7.44
19	8.20	6.27	5.92	11.0	9.00	.14	.10	3.80	3.08	.46	.42	7.35
20	8.96	5.92	5.52	6.27	6.18	.08	.08	3.73	.49	.31	.31	7.17
21	9.10	6.36	5.76	5.76	3.83	.05	.37	3.65	.39	.22	4.71	7.17
22	6.54	6.18	6.18	6.99	.06	.03	.22	3.65	.31	.17	8.00	7.17
23	13.1	5.68	5.52	8.60	.05	.03	.12	3.58	.28	.17	6.99	6.90
24	8.10	5.52	5.68	5.92	.05	.03	1.67	4.56	.25	.17	3.04	7.17
25	6.81	5.36	6.18	5.76	.05	.03	3.65	6.63	.25	.14	.14	7.26
26	7.44	5.52	5.28	5.52	3.34	.03	3.58	4.18	1.03	.17	.12	7.35
27	6.99	7.62	6.09	5.28	11.8	.03	3.58	3.80	1.66	.46	.10	6.99
28	7.90	5.92	5.60	8.00	14.8	.02	3.21	4.88	.75	.93	.31	6.90
29	6.81	8.38	7.53	9.43	12.1	.06	2.57	------	.39	1.02	4.79	6.72
30	6.99	6.99	5.44	5.68	10.2	.10	2.72	------	.88	.64	8.90	6.72
31	6.72	7.80	------	5.28	------	.06	2.62	------	1.20	------	8.40	------
TOTAL	266.65	298.23	198.49	196.77	156.09	78.62	39.01	81.66	81.21	70.19	56.87	231.48
MEAN												
MGD	8.60	9.62	6.62	6.35	5.20	2.54	1.26	2.92	2.62	2.34	1.83	7.72
CFS	13.3	14.9	10.2	9.82	8.05	3.92	1.95	4.51	4.05	3.62	2.84	11.9
AC-FT	818	915	609	604	479	241	120	251	249	215	175	710

CALENDAR YEAR	1962:	MAX	17.0	MIN	0.02	MEAN MGD	5.27	MEAN CFS	8.15	AC-FT	5,900
FISCAL YEAR	1962-63	MAX	16.3	MIN	0.02	MEAN MGD	4.81	MEAN CFS	7.44	AC-FT	5,390

* Discharge measurement made on this day.

790. Kapahi ditch near Kealia

Location (revised).--Lat 22°06'09", long 159°22'28", on right bank 500 ft downstream from intake and 4.0 miles west of Kealia.

Records available.--April 1909 to February 1911, May 1911, July 1911 to May 1914, July 1915 to April 1917, June 1917 to June 1963. Published as "at Kapahi, near Kapaa" prior to January 1913 and as "at Kapahi, near Kealia" January to December 1913.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 377.1 ft above mean sea level (by stadia survey). Prior to Nov. 26, 1936, at site 61 ft upstream at datum 2.52 ft higher.

Average discharge.--45 years (1917-20, 1921-63), 4.65 mgd (7.19 cfs).

Extremes.--1909-63: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

Remarks.--Records good. Ditch diverts from Kapaa River for irrigation in vicinity of Kapaa.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.19	4.82	2.71	1.92	3.64	0.16	6.61	0.46	2.49	0.23	0.16	4.71
2	.19	*2.10	2.60	*1.92	*3.92	.13	6.75	.23	2.38	.23	.16	7.02
3	.34	3.74	2.38	2.79	.16	2.45	*6.47	.23	2.10	.73	.19	10.8
4	.23	5.01	*2.29	2.38	.13	2.60	7.33	.56	2.01	.23	.16	4.79
5	4.57	4.88	2.38	2.20	.13	2.38	2.86	.23	2.10	.23	.44	.31
6	4.16	5.53	2.29	2.20	.10	2.29	.53	.19	6.91	.19	.37	3.90
7	3.70	8.77	2.29	2.10	4.06	2.20	1.60	.19	.31	.19	.16	8.35
8	3.47	5.27	5.43	2.10	6.47	2.10	.19	2.31	3.09	.16	.13	8.20
9	3.14	4.16	4.96	2.01	6.75	2.10	.13	2.71	3.21	.16	.10	8.35
10	4.91	4.62	4.17	1.92	3.16	1.43	.13	2.60	.19	.75	.10	8.65
11	5.92	2.53	2.92	1.92	.35	.27	1.01	2.38	4.01	.16	.13	8.35
12	1.64	.27	2.82	1.92	.19	.23	.16	2.49	3.47	.16	.10	6.64
13	.50	3.60	3.03	1.83	1.30	3.86	.10	2.49	2.07	.69	.10	3.05
14	.50	5.32	2.60	1.83	1.92	3.50	.19	2.49	3.48	.53	.13	.23
15	.40	6.43	2.29	1.83	3.17	.27	1.28	2.38	.27	1.76	.19	.23
16	2.33	4.39	2.38	1.83	1.95	.19	.16	2.38	.27	.23	.40	.19
17	3.03	3.93	3.61	1.92	.16	.31	.16	2.49	.27	.16	.16	.19
18	3.03	3.36	2.55	3.84	.13	.19	.16	2.38	.23	.13	.16	3.76
19	3.14	3.14	2.29	4.81	.13	.19	.16	2.20	1.63	.13	.16	5.92
20	3.64	2.92	2.10	2.38	.13	.19	.16	2.20	3.88	.13	.16	5.92
21	3.47	2.92	2.20	2.10	.13	.19	.16	2.20	5.79	.13	.16	5.92
22	2.82	2.82	1.71	2.20	.13	.19	.16	2.01	1.88	.13	7.33	5.92
23	2.03	2.71	.74	2.20	.13	.19	5.82	2.10	.23	.16	6.61	5.79
24	2.08	2.60	1.49	2.10	.13	.19	3.65	2.20	.19	.16	7.75	2.65
25	2.82	2.49	2.20	1.55	.13	.19	.16	2.20	.19	.13	3.30	.16
26	2.71	2.49	2.01	1.55	1.94	3.73	.16	2.01	.66	.16	.23	.16
27	2.49	2.71	2.10	1.64	6.20	6.47	.16	2.10	.26	.31	.19	.13
28	2.71	2.71	2.01	2.01	6.20	7.57	2.52	*2.40	.16	.27	.27	3.84
29	2.71	3.47	2.38	3.08	*5.14	1.83	3.89	--------	.16	.19	.19	6.06
30	2.60	2.92	2.10	2.01	1.64	10.8	1.23	--------	.49	.16	.23	5.66
31	2.60	2.92	--------	1.92	--------	4.92	.31	--------	.27	--------	.19	--------
Total	78.07	115.55	77.03	68.01	59.72	63.31	54.36	50.81	54.65	8.98	30.11	135.85
Mean												
Mgd	2.52	3.73	2.57	2.19	1.99	2.04	1.75	1.81	1.76	0.299	0.971	4.53
Cfs	3.90	5.77	3.98	3.39	3.08	3.16	2.71	2.80	2.72	0.463	1.50	7.01
Ac-ft	240	355	236	208	183	194	167	156	168	28	92	417

Calendar Year 1962:	Max	10.8	Min	0.10	Mean mgd	1.86	Mean cfs	2.88	Ac-ft	2090
Fiscal Year 1962-63:	Max	10.8	Min	0.10	Mean mgd	2.18	Mean cfs	3.37	Ac-ft	2440

* Discharge measurement made on this day.

800. Kapaa Stream at Kapahi ditch intake, near Kapaa

Location (revised).--Lat 22°06'15", long 159°22'29", on right bank at Kapahi ditch intake, 4 miles northwest of Kapaa, and 4.5 miles northwest of Wailua.

Drainage area.--3.3 sq mi, approximately.

Records available.--July 1936 to June 1963. Prior to July 1959, published as Kapaa River at Kapahi ditch intake, near Kapaa.

Gage.--Water-stage recorder and masonry control. Datum of gage is 381.8 ft above mean sea level (by stadia survey).

Average discharge.--27 years, 13.2 mgd (20.4 cfs).

Extremes.--Maximum discharge during year, 2,440 mgd (3,780 cfs) Apr. 15 (gage height, 4.00 ft); no flow for many days.

1936-63: Maximum discharge, 4,960 mgd (7,670 cfs) Jan. 25, 1956 (gage height, 5.34 ft), from rating curve extended above 1,800 mgd by logarithmic plotting; no flow at times.

Remarks.--Records good prior to Apr. 11, fair thereafter. Entire low flow is diverted above station for irrigation of sugar cane. Records do not include flow of Kapahi ditch (see preceding page).

Rating table (gage height, in feet, and discharge, in million gallons a day)

0	0	0.7	35.2
.1	.28	.8	49.5
.2	1.41	1.1	105
.3	4.20	1.5	220
.4	8.90	2.0	445
.5	15.6		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.85	22.8	0	0	0.88	7.20	1.62	*9.52	0	*20.1	21.8	3.85
2	*3.50	*13.1	0	*0	*26.4	10.9	.46	7.96	0	16.5	*15.6	1.00
3	4.20	6.69	0	0	10.4	3.16	*0	7.49	0	59.8	30.9	3.36
4	4.67	3.34	*0	0	16.5	0	11.3	7.02	0	39.5	25.6	*18.8
5	17.9	4.25	0	0	23.6	0	6.55	7.02	.91	24.5	80.8	15.6
6	0	.37	0	0	11.6	0	49.0	7.02	12.9	14.3	96.8	3.76
7	0	1.02	0	0	3.78	0	360	7.49	2.90	12.3	42.4	10.0
8	0	0	1.23	0	0	0	49.8	2.62	.97	10.2	23.6	1.90
9	0	0	0	0	.02	0	19.2	0	3.75	10.9	29.9	7.81
10	.20	.03	0	0	3.55	2.12	14.3	0	7.49	66.9	24.5	15.5
11	1.24	1.78	0	0	6.08	7.49	10.9	0	2.50	40	40.6	8.39
12	2.80	1.62	0	0	6.08	7.02	10.2	0	0	22	46.6	10.2
13	4.20	1.06	0	0	2.53	1.21	9.57	0	0	35	23.6	16
14	5.49	.21	0	0	0	21.4	9.57	0	10.1	54	44.5	25
15	4.20	.63	0	0	.46	34.1	8.38	0	10.6	250	23.6	36
16	1.29	.28	0	0	1.31	6.08	28.6	0	26.7	90	73.1	25
17	0	0	5.61	0	3.20	41.0	12.9	0	32.3	35	42.4	20
18	0	0	.71	.72	2.90	10.2	10.2	0	36.3	20.1	26.6	14
19	0	0	0	.04	7.27	10.2	9.57	0	18.0	18.3	19.2	25
20	0	0	0	0	2.90	8.90	9.57	0	15.6	15.6	17.4	11
21	0	0	0	0	4.63	8.90	7.96	0	10.9	14.9	16.5	28
22	0	0	.62	0	7.96	8.43	8.90	0	37.0	16.5	5.98	23
23	12.4	0	1.85	0	7.96	7.96	3.43	0	20.1	30.0	.09	16
24	1.52	0	.68	0	7.96	7.96	6.27	0	13.6	25.6	1.94	22
25	0	0	0	0	7.96	7.96	5.14	0	17.9	18.3	10.2	27
26	0	0	0	0	2.65	3.65	3.85	0	60.6	27.7	14.9	37
27	0	0	0	0	12.0	0	3.50	0	37.6	72.6	21.2	21
28	0	0	0	0	7.89	0	1.21	*.01	14.9	54.2	48.8	13
29	0	.53	0	0	*.98	4.57	0	-----	12.3	34.1	38.8	6.2
30	0	0	0	0	3.25	2.44	2.92	------	77.3	25.6	42.4	8.6
31	0	0	------	0	------	3.85	27.5	------	25.6	------	19.2	------
TOTAL	67.46	57.71	10.70	0.76	192.70	226.70	702.37	56.15	508.82	1,174.5	969.51	473.97
MEAN												
MGD	2.18	1.86	0.357	0.025	6.42	7.31	22.7	2.01	16.4	39.2	31.3	15.8
CFS	3.37	2.88	0.552	0.038	9.94	11.3	35.1	3.10	25.4	60.7	48.4	24.4
AC-FT	207	177	33	2.3	591	696	2,160	172	1,560	3,600	2,980	1,450

CALENDAR YEAR 1962: MAX 235 MIN 0 MEAN MGD 11.4 MEAN CFS 17.6 AC-FT 12,810
FISCAL YEAR 1962-63: MAX 360 MIN 0 MEAN MGD 12.2 MEAN CFS 18.9 AC-FT 13,630

Peak discharge (base, 1,400 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-15	-	4.00	2,440	3,780

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Apr. 11-17, June 13-30.

870. Anahola ditch wasteway near Kealia

Location (revised).--Lat 22°08'16", long 159°22'28", on right bank 300 ft downstream from wasteway gates on Anahola ditch, 500 ft north of Kaneha Reservoir, 3.8 miles west of Anahola, and 4.9 miles northwest of Kealia.

Records available.--July 1936 to June 1963.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 825 ft (corrected) above mean sea level (by stadia survey).

Average discharge.--27 years, 3.31 mgd (5.12 cfs).

Extremes.--1936-63: Maximum daily discharge, 54 mgd (84 cfs) Nov. 12, 1955; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water that passes station flows into Kaupaku Stream and thence into Anahola Stream 2 miles below the Anahola Stream gaging station.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.17	0.11	0.38	0.23	0.34	0.18	0.34	*2.50	0.12	*7.58	*9.96	6.51
2	.11	.07	.30	.26	.62	.18	.34	1.58	.18	7.80	8.76	6.08
3	.03	.11	.23	.26	.52	.18	.34	1.45	.12	14.4	12.7	*6.51
4	.07	.17	.23	.34	.62	.26	.34	1.32	.12	15.2	9.96	8.28
5	.07	.17	.30	.43	4.60	.26	.26	1.20	.26	12.2	19.1	2.62
6	.03	.17	.23	.52	4.45	.44	1.45	1.20	.34	9.72	16.1	.96
7	.07	.17	.23	.52	3.16	.26	35.7	1.08	.26	7.16	14.4	1.20
8	.03	.17	.30	.52	2.66	.18	12.8	.62	.26	5.87	11.3	.96
9	.03	.17	.76	.52	2.50	.26	6.94	.26	.26	7.99	13.8	1.9
10	.03	.23	.17	.43	2.33	.26	4.25	.26	.26	15.6	12.4	2.5
11	.03	.23	.17	.43	2.00	.34	3.49	.26	.26	11.3	14.1	2.1
12	.07	.17	.23	.43	.97	.34	2.99	.26	.34	9.96	14.7	1.7
13	.07	.23	.17	.43	.34	.34	2.66	.26	.43	13.3	11.9	1.7
14	.07	.23	.17	.43	.34	6.64	2.50	.26	.43	16.2	13.6	2.0
15	.11	.23	.17	.43	.34	13.9	1.22	.26	.34	30.0	9.48	4.5
16	.07	.17	.17	.34	.26	5.65	5.92	.26	.34	17.4	16.1	12
17	.03	.23	.23	.34	.26	16.5	5.29	.34	7.96	15.5	13.8	5.0
18	.03	.30	.17	.34	.26	7.16	1.86	.18	9.88	11.6	9.96	1.7
19	.07	.38	.17	.26	.34	5.05	.52	.12	3.71	9.24	7.80	2.0
20	.07	.30	.17	.18	.34	3.65	.52	.12	5.45	8.04	6.73	1.5
21	.07	.30	.17	.34	.34	3.16	.43	.12	5.05	7.80	9.00	2.4
22	.07	.23	.17	.34	.34	2.99	.52	.12	11.9	7.16	11.6	1.9
23	.07	.23	.23	.06	.34	2.33	1.67	.12	6.51	14.5	6.30	1.6
24	.07	.30	.23	.02	.34	2.17	2.50	.18	4.25	12.7	5.65	2.0
25	.07	.30	.30	.02	.34	2.00	1.85	.12	4.85	8.28	5.05	2.0
26	.11	.30	.30	.06	.34	1.85	1.71	.12	11.5	15.2	4.85	2.1
27	.11	.38	.38	.12	.34	1.71	1.71	.12	9.96	17.0	5.73	1.5
28	.11	.30	.30	.12	.26	4.72	1.58	.12	5.65	16.4	14.4	1.0
29	.17	.38	.23	.12	.18	9.43	1.58	------	4.25	13.8	13.0	.9
30	.17	.23	.23	.06	.18	6.51	1.85	------	20.7	12.2	13.6	.9
31	.11	.30	------	.02	------	1.77	11.7	------	13.0	------	9.00	------
TOTAL	2.39	7.26	7.49	8.92	30.25	100.67	116.83	14.81	128.94	371.10	344.83	88.02
MEAN												
MGD	0.077	0.234	0.250	0.288	1.01	3.25	3.77	0.529	4.16	12.4	11.1	2.93
CFS	0.119	0.362	0.386	0.445	1.56	5.02	5.83	0.818	6.43	19.1	17.2	4.53
AC-FT	7.3	22	23	27	93	309	359	45	396	1,140	1,060	270

CALENDAR YEAR	1962:	MAX	28.9	MIN	0.02	MEAN MGD	2.60	MEAN CFS	4.02	AC-FT	2,910
FISCAL YEAR	1962-63	MAX	35.7	MIN	0.02	MEAN MGD	3.35	MEAN CFS	5.18	AC-FT	3,750

* Discharge measurement made on this day.
Note.--No gage-height record June 9-30.

880. Anahola ditch above Kaneha Reservoir, near Kealia

Location (revised).--Lat 22°08'10", long 159°22'28", 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 1953. Records for May 1915 to December 1921 at site 520 ft upstream 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 bench mark). Dec. 9, 1921 to June 2, 1934, at site 480 ft upstream at different datum.

Average discharge.--39 years (1922-25, 1927-63), 3.00 mgd (4.64 cfs).

Extremes.--1921-63: Maximum daily discharge, 40 mgd (62 cfs) Nov. 12, 1947; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.09	*9.67	2.78	1.34	*6.13	3.44	2.18	*a 0	*2.00	0.06	0.09	a 0.04
2	*1.73	8.04	1.73	*1.11	14.8	3.00	*1.73	a 0	1.91	.06	.06	a .02
3	2.00	6.05	1.50	1.66	9.40	2.00	1.50	a 0	1.26	.30	.12	.06
4	1.73	5.14	*1.34	1.50	10.5	1.82	6.56	a 0	.90	.20	.09	.09
5	4.13	8.18	3.21	1.26	3.38	1.64	2.09	a 0	2.36	.16	.44	4.03
6	2.00	7.65	2.00	2.10	.12	1.36	3.49	a 0	11.7	.34	.16	3.67
7	3.89	7.45	1.73	1.50	.12	1.42	.99	.05	3.33	.09	.16	6.89
8	3.50	4.03	6.25	1.64	.12	1.26	.12	.43	2.27	.06	.12	4.15
9	1.73	2.78	8.77	1.50	.12	1.18	.06	.83	2.18	.12	.12	9.86
10	3.70	3.11	3.67	1.18	.12	1.26	.04	.83	1.82	.29	.12	9.54
11	6.63	3.91	2.56	1.11	.12	1.11	a .02	.83	1.58	.16	.16	9.02
12	6.69	3.44	3.11	1.11	.97	1.04	a .01	.83	1.50	.16	.16	6.33
13	7.58	6.61	3.00	1.11	1.50	4.11	a 0	.77	1.50	.26	.12	6.19
14	3.22	6.19	1.82	1.04	1.50	8.19	a 0	.77	12.5	.36	.16	8.01
15	3.00	9.78	1.58	.97	4.31	.09	1.01	.83	6.75	.93	.09	5.60
16	2.00	3.79	1.50	.97	2.89	a .04	1.83	.83	8.24	.28	.28	.12
17	1.82	3.33	5.94	.97	2.40	.12	.06	4.60	6.26	.20	.12	3.80
18	3.64	2.45	4.10	2.27	3.47	.06	.76	2.88	3.27	.12	.09	7.03
19	2.67	2.18	1.82	4.26	3.22	a .04	1.64	1.11	3.15	.06	.04	7.96
20	2.20	2.00	1.50	1.50	2.09	a .04	4.46	.97	.09	.06	.04	4.39
21	2.98	2.78	1.58	1.26	1.64	a .02	1.73	.83	.09	.04	.09	9.23
22	1.73	2.67	1.58	5.87	1.50	a .02	2.23	.83	.12	.04	.12	7.74
23	8.20	1.82	1.42	3.44	1.42	a .01	1.03	.90	.06	.16	a .04	5.53
24	2.67	1.64	2.00	1.73	1.34	a .01	a 0	3.58	.06	.12	a .02	8.13
25	2.00	1.58	2.09	1.34	1.34	0	a 0	3.22	.06	.06	a .01	7.89
26	2.45	1.64	1.82	1.18	1.42	a 0	a 0	1.26	.16	.16	a 0	8.90
27	2.00	2.56	4.51	1.11	9.47	a 0	a 0	.97	.12	.24	a .04	5.40
28	2.09	1.64	2.89	4.79	11.7	.06	a 0	1.50	.06	.20	.20	4.39
29	1.73	4.89	3.11	4.69	*6.41	.09	a 0	--------	.06	.12	.20	3.79
30	1.64	2.27	1.58	1.50	5.85	.09	a 0	--------	.38	.12	.16	3.79
31	1.64	2.67	--------	1.26	--------	1.92	.16	--------	.16	--------	.09	--------
Total	95.08	131.94	82.49	58.27	109.37	35.44	33.70	29.65	75.90	5.53	3.71	161.59
Mean												
Mgd	3.07	4.26	2.75	1.88	3.65	1.14	1.09	1.06	2.45	0.184	0.120	5.39
Cfs	4.75	6.59	4.25	2.91	5.65	1.76	1.69	1.64	3.79	0.285	0.186	8.34
Ac-ft	292	405	253	179	336	109	103	91	233	17	11	496

Calendar Year 1962:	Max	16.4	Min	0	Mean mgd	2.27	Mean cfs	3.51	Ac-ft	2540
Fiscal Year 1962-63:	Max	14.8	Min	0	Mean mgd	2.25	Mean cfs	3.48	Ac-ft	2520

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

890. Anahola Stream near Kealia

Location (revised).--Lat 22°09'05", long 159°21'17", on right bank just upstream from intake of Lower Anahola ditch and 4.5 miles northwest of Kealia.

Drainage area.--5.5 sq mi, approximately.

Records available.--August to December 1910, January 1913 to November 1918, January 1919, March 1919 to June 1963. Monthly discharge only for some periods, published in WSP 1319. Published as Anahola River above dam at Kiokala, near Kealia prior to July 1913 and as Anahola River near Kealia July 1913 to June 1958.

Gage.--Water-stage recorder and concrete dam-orifice control. Datum of gage is 295.11 ft above mean sea level (Highway Department bench mark). Prior to May 4, 1934, at site 0.1 mile upstream at different datum.

Average discharge.--49 years (1913-18, 1919-63), 14.1 mgd (21.8 cfs).

Extremes.--Maximum discharge during year, 1,520 mgd (2,350 cfs) Apr. 15 (gage height, 5.48 ft), from rating curve extended above 280 mgd; minimum, 2.14 mgd (3.31 cfs) Sept. 4, 5.

1910, 1913-63: Maximum discharge, 12,700 mgd (19,600 cfs) Jan. 25, 1956 (gage height, 14.6 ft, from floodmarks), from rating curve extended above 380 mgd; minimum, 1.28 mgd (1.98 cfs) Oct. 27, 1953.

Remarks.--Records poor. Records include flow in Lower Anahola ditch (see following page). Anahola ditch (see preceding page) diverts 3 miles above station for irrigation in vicinity of Kealia.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Sept. 8 to Dec. 13, Dec. 19 to Jan. 2, Jan. 11, Feb. 10 to Mar. 5, Mar. 10-13)

1.3	1.30	1.9	30.0
1.4	2.35	2.1	56.0
1.5	4.20	2.5	130
1.6	7.00	3.0	265
1.7	12.0	3.5	440

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.83	*18.9	3.09	2.72	*5.47	4.02	4.76	*7.21	*4.48	*20.0	*14.4	10.5
2	*3.65	17.8	2.72	*2.54	31.0	3.83	*4.48	5.60	3.65	14.4	12.8	10.0
3	3.83	7.00	2.35	2.72	15.4	3.46	4.48	5.04	2.91	142	30.0	*9.50
4	3.83	6.72	2.14	2.72	16.6	3.46	9.90	5.04	2.54	72.0	21.1	12.0
5	5.60	9.88	*2.72	2.72	12.8	3.09	5.32	4.76	3.63	42.0	104	12.0
6	3.83	6.95	3.65	3.46	7.00	*2.91	36.5	4.48	69.9	22.0	116	8.50
7	5.32	9.86	2.91	2.91	5.88	3.46	*399	4.20	5.60	15.2	52.5	11.0
8	4.76	4.76	6.16	2.72	4.76	2.72	72.3	4.02	4.48	12.8	23.0	8.00
9	3.46	3.83	40.2	2.35	5.04	2.54	22.0	4.02	4.20	16.0	26.0	12.8
10	3.83	4.02	9.12	2.35	4.20	3.46	15.2	4.02	4.02	122	20.0	21.0
11	5.32	4.20	5.32	2.35	3.83	2.72	10.5	3.83	3.65	27.0	30.0	14.4
12	6.16	3.65	6.06	2.35	3.46	2.35	11.5	3.65	3.46	20.0	47.4	10.0
13	7.04	6.88	5.32	2.35	3.09	4.58	10.0	3.65	4.81	40.0	23.0	9.50
14	3.46	5.82	4.48	2.35	3.09	53.1	8.50	3.46	39.5	67.2	39.8	12.8
15	3.28	11.6	3.83	2.35	4.79	25.0	7.50	3.28	6.44	427	14.4	28.0
16	2.91	4.48	3.83	2.35	4.20	11.5	23.1	3.28	20.9	138	82.3	12.8
17	2.72	3.83	6.52	2.35	3.46	78.6	11.5	11.1	16.0	56.0	34.8	11.0
18	3.46	3.28	5.46	4.20	4.20	13.6	6.72	6.41	22.8	34.8	19.2	12.0
19	2.91	3.09	3.83	5.60	8.15	8.50	6.16	3.65	5.88	25.9	14.4	14.4
20	3.09	2.91	3.28	3.28	4.02	5.88	7.50	3.28	5.32	19.2	12.8	9.50
21	3.46	3.09	3.46	2.91	2.91	5.60	5.88	3.09	5.04	16.0	13.6	20.0
22	2.91	3.28	3.46	11.3	2.72	5.32	6.72	2.91	11.4	14.4	27.3	14.4
23	22.4	2.72	3.09	4.02	2.54	4.48	6.44	3.28	5.60	28.0	12.0	10.5
24	4.48	2.91	3.83	2.54	2.54	4.20	5.88	5.60	4.48	22.0	12.0	13.6
25	3.46	2.72	3.65	2.35	2.54	4.02	5.32	4.48	5.04	12.0	10.5	14.4
26	3.28	2.91	3.65	2.35	2.54	4.02	4.76	3.46	35.3	37.6	10.0	18.4
27	3.09	3.09	4.20	2.35	17.5	3.83	4.48	2.91	23.8	103	14.6	10.0
28	3.09	2.72	4.33	2.72	14.5	16.9	4.48	3.65	11.0	83.5	39.5	9.00
29	2.91	5.63	5.32	3.09	8.44	22.0	4.20	------	7.00	32.4	22.8	8.00
30	2.72	3.09	3.46	2.54	5.87	8.00	5.11	------	182	20.0	38.7	7.50
31	2.54	3.28	------	2.35	------	5.32	37.8	------	36.0	------	12.8	------
TOTAL	136.63	174.90	161.44	95.26	212.54	322.47	767.99	123.36	560.83	1,702.4	951.7	375.50
MEAN												
MGD	4.41	5.64	5.38	3.07	7.08	10.4	24.8	4.41	18.1	56.7	30.7	12.5
CFS	6.82	8.73	8.33	4.75	11.0	16.1	38.3	6.82	28.0	87.8	47.5	19.4
AC-FT	419	537	495	292	652	990	2,360	379	1,720	5,220	2,920	1,150

CALENDAR YEAR	1962:	MAX	343	MIN	2.14	MEAN MGD	13.9	MEAN CFS	21.5	AC-FT	15,550
FISCAL YEAR	1962-63	MAX	427	MIN	2.14	MEAN MGD	15.3	MEAN CFS	23.7	AC-FT	17,130

* Discharge measurement made on this day.

Peak discharge (base, 900 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	1200	5.01	1,200	1,860	4-15	1500	5.48	1,520	2,350
3-30	0700	4.57	934	1,450					

910. Lower Anahola ditch near Kealia

Location (revised).--Lat 22°08'13", long 159°19'31", on left bank 100 ft downstream from last wasteway, 1.3 miles southwest of mouth of Anahola Stream, and 2.5 miles northwest of Kealia.

Records available.--December 1936 to June 1963.

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

Average discharge.--26 years (1937-63), 2.19 mgd (3.39 cfs).

Extremes.--1936-63: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times each year.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts from Anahola Stream for irrigation of sugar cane.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.03	*3.68	2.40	2.10	*1.92	2.16	0.01	0.03	*3.47	*0.01	0.01	0.06
2	.03	4.98	2.28	*1.92	1.60	2.10	.01	.03	3.05	.03	.01	.03
3	.03	4.35	2.16	1.98	.04	.69	.01	.03	2.79	.03	.01	.03
4	.03	3.61	*2.10	2.10	.03	.03	.01	.04	2.66	.03	.01	.03
5	.03	3.82	2.10	2.04	.03	.03	.01	.03	2.72	.03	.01	.03
6	.03	1.09	2.34	2.04	.03	.03	.03	.03	3.26	.03	.01	.03
7	.03	.03	2.22	2.04	.03	.01	.14	.03	.03	.03	.01	.03
8	.03	.03	2.40	1.98	.03	.01	.03	1.12	.03	.03	.01	.01
9	2.59	1.26	2.24	1.86	.03	.01	.03	1.69	.03	.03	.01	.01
10	3.47	2.92	2.63	1.74	.03	.01	.03	1.58	.03	.03	.01	.01
11	3.54	2.66	3.97	1.69	.03	.01	.03	2.16	.03	.03	.01	0
12	3.68	2.86	3.70	1.74	.03	a .01	.01	3.26	.03	.03	.01	1.76
13	4.41	2.92	3.53	1.74	.01	a .01	.01	3.19	.01	.03	0	4.12
14	3.54	1.17	3.40	1.64	.01	a .01	.01	3.12	2.68	.03	0	2.90
15	3.33	.04	2.66	1.58	.01	a .01	.01	3.12	3.90	.04	0	.03
16	3.80	.03	2.53	1.58	.01	a .01	.01	3.05	3.82	.03	0	.03
17	3.54	.86	3.08	1.64	.01	a .01	.01	3.19	1.26	.03	0	.03
18	3.96	2.60	2.72	2.40	.01	a .01	.01	3.26	.01	.01	0	.03
19	3.47	2.60	2.46	1.88	.01	a .01	.01	3.05	1.05	.01	0	.01
20	3.73	2.53	2.22	.03	.01	a .01	.01	2.98	.01	.01	0	.01
21	3.19	2.06	2.22	.03	.01	a .01	1.25	2.79	.01	.01	0	.01
22	3.05	1.42	2.22	1.60	.01	a .01	2.92	2.92	.01	.01	0	.01
23	4.28	1.30	2.22	3.42	.01	a .01	1.30	2.98	.01	.01	0	.01
24	3.98	1.02	2.22	2.71	.01	a 3.0	.01	3.54	.01	.01	0	.01
25	3.61	.73	2.34	2.44	.01	a 4.3	.01	3.47	.03	.01	0	.01
26	3.47	.69	2.34	2.63	.98	4.35	.01	3.19	.04	.01	0	.01
27	3.26	.76	2.34	1.86	1.80	4.20	0	2.92	.03	.01	3.32	.01
28	3.26	.94	2.34	1.98	2.28	1.65	0	3.05	.01	.01	5.14	1.47
29	3.12	.94	2.53	2.57	*2.28	.03	0	---------	.01	.01	4.66	.04
30	2.98	.76	2.34	2.16	2.16	.01	0	---------	.01	.01	5.06	.04
31	2.92	1.56	---------	1.80	---------	.01	.01	---------	0	---------	2.33	---------
Total	80.42	56.22	76.25	58.92	13.46	22.76	5.94	59.85	31.04	0.63	20.63	10.81
Mean												
Mgd	2.59	1.81	2.54	1.90	0.449	0.734	0.192	2.14	1.00	0.021	0.665	0.360
Cfs	4.01	2.80	3.93	2.94	0.695	1.14	0.297	3.31	1.55	0.032	1.03	0.557
Ac-ft	247	173	234	181	41	70	18	184	95	1.9	63	33

Calendar Year 1962:	Max	8.00	Min	0.01	Mean mgd	1.06	Mean cfs	1.64	Ac-ft	1180
Fiscal Year 1962-63:	Max	5.14	Min	0	Mean mgd	1.20	Mean cfs	1.86	Ac-ft	1340

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

942. Ka Loko ditch near Kilauea

Location (revised).--Lat 22°10'43", long 159°22'59", 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 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 754 ft above mean sea level (by stadia survey).

Average discharge.--30 years (1933-63), 3.38 mgd (5.23 cfs).

Extremes.--1932-63: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.11 mgd (0.17 cfs) Nov. 3, 4, 1959, Mar. 9, 1960.

Remarks.--Records good. Ditch diverts from Moloaa and Puu Ka Ele Streams at points 0.5 mile southeast and 1.5 miles southwest of station, respectively, for irrigation in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.68	6.99	1.77	1.37	2.77	1.96	2.32	3.22	2.32	8.13	4.01	4.73
2	1.77	5.93	1.52	1.29	8.60	1.68	2.14	2.14	1.68	7.55	4.25	4.49
3	1.86	3.92	1.37	1.29	4.86	1.37	2.05	1.96	1.29	5.32	4.73	4.73
4	1.77	3.75	1.29	1.37	5.91	1.45	2.86	1.77	1.13	2.52	4.61	5.50
5	3.18	4.25	1.37	*1.37	5.43	1.29	2.05	1.68	1.49	3.89	4.73	6.36
6	1.86	3.13	1.45	1.68	2.60	1.21	2.19	1.60	17.3	5.24	4.85	4.25
7	2.14	3.65	1.37	1.29	2.05	1.37	42.8	1.52	3.02	5.27	4.25	7.25
8	2.14	2.42	2.16	1.21	1.77	1.13	11.8	1.52	2.23	5.50	*4.13	4.73
9	1.68	2.14	10.0	1.13	1.68	1.06	5.37	1.45	1.96	6.43	4.25	5.50
10	2.14	2.14	3.13	1.13	1.60	1.52	4.25	1.52	1.77	5.42	4.13	8.49
11	2.96	2.42	1.96	1.21	1.60	1.13	3.77	1.37	1.68	2.78	4.37	5.57
12	3.57	2.14	1.94	1.21	1.45	1.06	3.34	1.37	1.60	3.02	4.73	4.37
13	2.60	4.31	1.86	1.06	1.37	1.98	3.13	1.37	1.52	1.60	4.37	4.13
14	2.14	3.17	1.68	1.06	*1.29	15.0	2.92	1.29	14.3	1.60	4.49	5.65
15	1.86	4.98	1.52	1.06	1.68	8.57	2.81	1.29	3.44	1.40	4.13	10.0
16	1.68	2.51	1.37	.98	1.60	3.34	7.50	1.21	4.48	.32	4.35	7.55
17	1.68	2.32	3.07	1.06	1.29	11.5	5.34	1.80	6.93	.27	3.45	5.37
18	2.09	2.14	2.59	1.92	1.52	*4.13	3.02	2.12	6.13	4.99	3.23	4.96
19	1.68	1.96	1.52	2.98	2.68	3.13	2.71	1.29	3.02	5.63	3.13	6.68
20	1.77	1.86	1.37	1.68	1.29	2.51	3.45	*1.21	2.81	4.98	3.89	4.61
21	2.05	2.46	1.37	1.21	1.21	2.84	2.51	1.13	2.92	4.73	3.89	*9.08
22	1.52	2.33	1.52	5.29	1.13	2.71	3.12	1.13	4.95	4.37	5.93	8.33
23	7.51	1.77	1.37	2.48	1.21	2.14	2.92	1.21	3.77	6.53	5.24	5.72
24	*2.23	1.68	1.68	1.45	1.29	2.05	2.60	2.98	2.71	5.50	4.85	8.00
25	1.68	1.60	1.60	1.21	1.06	1.96	2.32	2.14	*2.81	4.37	4.61	7.68
26	1.86	1.77	1.60	1.13	1.06	1.86	2.23	1.37	11.0	6.71	4.25	7.80
27	1.52	1.77	2.29	1.06	5.23	1.77	2.14	1.13	10.2	8.28	4.62	5.24
28	1.52	*1.60	1.86	1.80	6.55	7.73	2.05	1.71	5.05	7.55	6.02	4.73
29	1.37	2.79	2.05	1.68	3.28	12.1	*1.96	------	3.55	4.97	5.50	4.37
30	1.29	1.68	1.52	1.21	2.32	3.89	2.76	------	32.6	4.13	7.70	4.25
31	1.29	1.60	------	1.06	------	2.60	12.9	------	9.87	------	5.63	------
TOTAL	66.09	87.18	61.17	46.93	77.38	108.04	153.33	45.30	169.53	139.00	142.32	180.14
MEAN												
MGD	2.13	2.81	2.04	1.51	2.58	3.49	4.95	1.62	5.47	4.63	4.59	6.00
CFS	3.30	4.35	3.15	2.34	3.99	5.39	7.65	2.50	8.46	7.17	7.10	9.29
AC-FT	203	268	188	144	237	332	471	139	520	427	437	553

CALENDAR YEAR	1962:	MAX	15.0	MIN	0.98	MEAN MGD	2.63	MEAN CFS	4.07	AC-FT	2,940
FISCAL YEAR	1962-63:	MAX	42.8	MIN	0.27	MEAN MGD	3.50	MEAN CFS	5.42	AC-FT	3,920

* Discharge measurement made on this day.

950. Puu Ka Ele ditch near Kilauea

Location (revised).--Lat 22°11'10", long 159°24'17", on left bank 200 ft upstream from Puu Ka Ele Reservoir and 2 miles south of Kilauea.

Records available.--August 1932 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 426 ft above mean sea level (by stadia survey).

Average discharge.--30 years (1933-63), 2.53 mgd (3.91 cfs).

Extremes.--1932-63: 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. Ditch diverts from Puu Ka Ele Stream 0.8 mile south of station for irrigation of sugar cane in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.22	5.27	1.54	1.47	1.66	0.16	2.22	0.12	1.77	0.16	a0.09	0.16
2	2.15	3.66	1.54	1.31	6.20	.16	2.07	.12	1.62	2.70	a.09	.16
3	2.22	3.20	1.39	1.39	4.20	.16	1.92	.12	1.54	3.65	.15	.12
4	2.40	4.01	1.39	1.47	4.24	.16	2.07	.12	1.47	.72	a.09	.12
5	3.29	4.60	1.39	*1.31	4.60	.12	1.84	.12	1.62	.36	.12	.12
6	2.49	2.78	1.47	1.47	2.68	.97	2.67	.12	9.55	.16	.93	1.89
7	2.59	3.36	1.47	1.31	2.07	1.54	5.76	.12	2.49	5.57	.12	4.48
8	2.59	2.59	1.84	1.23	1.84	1.31	.16	.12	2.00	7.24	a.09	3.47
9	2.30	2.30	4.41	1.23	1.84	1.23	.16	a.09	1.84	2.21	a.09	3.80
10	2.49	2.15	2.11	1.23	1.69	1.47	.16	a.06	1.77	.87	a.09	6.23
11	2.78	2.15	1.54	1.31	1.69	1.23	.16	a.04	1.69	.16	.13	3.80
12	3.74	2.07	1.47	1.31	1.62	1.16	.12	a.02	1.62	.12	.46	3.36
13	3.58	3.09	1.47	1.23	1.54	1.39	.12	a.01	1.54	.12	a.09	3.16
14	2.78	2.87	1.47	1.16	*1.47	6.91	.12	1.22	15.1	.16	.73	4.71
15	2.49	4.00	1.39	1.16	1.54	4.50	a.09	1.62	4.48	2.86	a.09	6.28
16	2.40	2.59	1.47	1.16	1.47	2.30	.12	1.54	4.52	.86	.43	4.98
17	2.40	2.30	1.88	1.16	1.39	9.02	.16	1.62	4.36	.16	a.09	3.91
18	2.78	2.22	2.07	1.78	1.54	*3.25	.12	1.77	2.02	.12	a.04	3.69
19	2.30	2.07	1.54	2.14	1.69	2.59	.12	1.47	2.27	.12	a.02	4.17
20	2.68	2.00	1.47	1.62	1.31	2.15	.12	*1.47	.12	.12	a.01	3.36
21	2.78	2.22	1.54	1.31	1.31	2.47	.12	1.47	.12	.12	a0	*6.04
22	2.30	2.22	1.62	3.34	1.23	2.22	a.09	1.47	a.09	a.09	*a0	6.28
23	5.85	1.84	1.54	1.84	1.39	1.84	a.06	1.54	a.09	a.06	a0	4.13
24	*2.15	1.77	1.54	1.39	1.54	1.77	a.04	2.32	a.09	a.04	1.68	4.98
25	1.77	1.69	1.54	1.31	1.31	1.69	a.02	2.00	a.09	a.02	4.02	6.51
26	1.77	1.84	1.62	1.23	1.31	1.62	a.01	1.54	.43	.17	3.69	6.09
27	1.62	1.92	1.69	1.23	2.78	1.54	a0	1.54	.27	.58	4.10	4.24
28	1.54	*1.62	1.54	1.47	2.58	5.04	a0	1.62	.12	.24	6.43	3.91
29	1.47	2.02	1.84	1.31	.19	11.0	*a0	--------	.12	.12	4.65	3.58
30	1.47	1.54	1.54	1.16	.16	3.58	1.74	--------	3.52	a.09	7.33	3.47
31	1.47	1.54	------	1.09	------	2.49	2.76	--------	.71	------	.16	------
TOTAL	76.86	79.50	50.33	44.13	60.08	77.04	25.12	25.39	69.04	29.97	36.01	111.20
MEAN												
MGD	2.48	2.56	1.68	1.42	2.00	2.49	0.810	0.907	2.23	0.999	1.16	3.71
CFS	3.84	3.97	2.60	2.20	3.10	3.84	1.25	1.40	3.45	1.55	1.80	5.73
AC-FT	236	244	154	135	184	236	77	78	212	92	111	341

CALENDAR YEAR	1962:	MAX	11.0	MIN	0	MEAN MGD	1.95	MEAN CFS	3.02	AC-FT	2,180
FISCAL YEAR	1962-63:	MAX	15.1	MIN	0	MEAN MGD	1.88	MEAN CFS	2.91	AC-FT	2,100

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

952. Ross ditch near Kilauea

Location (revised).--Lat 22°11'22", long 159°24'33", on left bank 1,000 ft downstream from intake and 1.7 miles south of Kilauea.

Records available.--October 1956 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 341 ft above mean sea level (by stadia survey). Prior to July 1, 1962, at datum 0.03 ft higher.

Average discharge.--6 years (1957-63), 2.32 mgd (3.59 cfs).

Extremes.--1956-63: Maximum daily discharge, 11.0 mgd (17.0 cfs) Apr. 15, 1963; no flow at times.

Remarks.--Records good. Ditch diverts from Puu Ka Ele Stream for irrigation in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.39	2.49	1.20	0.98	0.86	0.35	0	0.04	0.98	5.48	0.19	3.92
2	1.25	2.50	1.20	.94	.94	.35	0	.01	.98	3.43	.06	3.78
3	1.30	2.19	1.20	.98	.90	.29	0	.01	1.11	6.48	1.59	4.06
4	1.44	2.68	1.15	1.06	.86	.26	0	.01	1.15	9.46	1.24	4.74
5	2.48	2.81	1.20	*1.06	.65	.21	0	.01	.98	8.43	1.80	4.82
6	1.44	1.96	1.20	1.06	.08	.10	0	0	5.53	6.80	6.58	3.25
7	1.39	2.07	1.20	1.02	.05	.01	2.44	0	1.53	2.87	2.39	4.64
8	1.39	1.75	1.25	.98	.01	0	1.01	0	1.20	1.06	.42	3.71
9	1.20	1.53	1.53	.98	0	0	.04	0	1.11	3.14	.52	4.52
10	1.39	1.44	1.58	.94	0	.17	.03	0	1.02	7.86	.21	6.38
11	1.80	1.39	1.25	.94	0	.46	.03	0	1.02	5.90	1.96	3.92
12	2.13	1.48	1.15	.98	0	.42	.02	0	1.02	5.48	4.93	3.49
13	2.54	1.95	1.11	.94	0	.39	.02	0	1.02	6.08	.60	2.95
14	1.69	2.13	1.11	.90	*0	.42	.01	0	8.93	6.80	3.44	4.05
15	1.44	2.50	1.06	.86	.29	.42	.01	.57	4.25	11.0	.08	6.79
16	1.30	1.75	1.06	.86	.78	.39	.47	.90	3.46	9.46	3.12	5.56
17	1.20	1.58	1.20	.86	.78	.39	.07	.98	4.91	7.94	1.74	3.78
18	1.53	1.53	1.34	.98	.78	.20	.02	1.20	2.54	5.99	1.09	3.35
19	1.25	1.39	1.11	1.11	.78	.02	.01	.98	.97	4.82	.14	3.79
20	1.34	1.34	1.02	1.06	.70	0	.02	*.86	1.80	4.06	3.38	2.88
21	1.64	1.48	1.02	.98	.70	0	.01	.86	5.35	3.71	8.53	*5.50
22	1.20	1.64	1.06	.98	.70	0	.01	.82	7.06	1.16	*8.95	7.45
23	2.73	1.39	1.02	1.02	.66	0	.02	.86	3.63	.23	7.94	4.44
24	*1.69	1.30	.98	.98	.66	0	.01	1.69	2.13	.16	5.77	5.15
25	1.44	1.25	.98	.98	.66	0	0	1.30	*1.69	.07	2.62	6.81
26	1.44	1.34	1.02	.94	.66	0	0	1.02	4.98	.86	2.50	7.36
27	1.44	1.39	1.20	.90	.66	0	0	.90	3.66	4.63	2.80	4.21
28	1.39	*1.30	1.06	.90	.59	.04	0	.86	1.20	1.35	4.06	3.56
29	1.34	1.44	1.20	.90	.49	.08	*0	--------	1.30	.56	3.56	3.22
30	1.34	1.30	1.06	.86	.39	.03	0	--------	10.5	.26	7.59	3.32
31	1.30	1.20	------	.86	------	0	1.00	--------	7.84	------	5.56	------
TOTAL	47.84	53.49	34.72	29.79	14.63	5.00	5.25	13.88	94.85	135.53	95.36	135.40
MEAN												
MGD	1.54	1.73	1.16	0.961	0.488	0.161	0.169	0.496	3.06	4.52	3.08	4.51
CFS	2.39	2.67	1.79	1.49	0.754	0.250	0.261	0.767	4.73	6.99	4.76	6.98
AC-FT	147	164	107	91	45	15	16	43	291	416	293	416

CALENDAR YEAR	1962:	MAX	9.50	MIN	0	MEAN MGD	1.78	MEAN CFS	2.75	AC-FT	2,000
FISCAL YEAR 1962-63:		MAX	11.0	MIN	0	MEAN MGD	1.82	MEAN CFS	2.82	AC-FT	2,040

* Discharge measurement or observation of no flow made on this day.

959. Kalihiwai ditch above wasteway, near Kilauea

Location (revised).--Lat 22°10'42", long 159°25'43", on left bank 0.7 mile upstream from Kalihiwai Reservoir and 2.5 miles southwest of Kilauea.

Records available.--April 1960 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 413.4 ft above mean sea level (by stadia survey).

Extremes.--1960-63: Maximum daily discharge, 23.7 mgd (36.7 cfs) Mar. 30, 1963; minimum daily, 0.87 mgd (1.35 cfs) Feb. 7, 1961.

Remarks.--Records good. Ditch diverts from Pohakuhonu Stream for domestic use and irrigation of sugar cane in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.54	8.92	1.63	1.54	2.16	2.31	1.80	2.06	1.22	4.73	6.81	3.80
2	1.46	5.64	1.54	1.46	10.2	2.23	1.63	1.63	1.38	4.60	5.51	3.57
3	1.63	4.73	1.54	2.06	6.79	1.80	1.54	1.54	1.14	18.1	7.21	3.57
4	1.71	5.56	1.46	1.63	6.81	1.71	1.80	1.46	1.14	9.06	6.42	3.68
5	3.25	5.38	1.46	*1.54	5.77	1.54	1.54	1.38	1.52	7.72	7.25	3.68
6	1.71	4.26	1.46	1.97	3.57	1.46	1.84	1.30	9.26	6.29	16.2	3.03
7	1.80	4.86	1.46	1.71	2.82	1.54	8.19	1.30	2.40	4.86	8.50	6.04
8	1.80	3.68	1.71	1.63	2.31	1.38	3.03	1.22	1.97	5.38	*5.90	3.80
9	1.54	2.82	1.54	1.54	2.23	1.30	2.14	1.22	1.63	5.51	6.68	4.14
10	1.88	2.61	1.63	1.54	2.06	1.54	1.88	1.22	1.54	4.69	6.29	7.14
11	2.51	2.40	1.46	1.54	1.97	1.30	1.71	1.22	1.46	3.68	15.4	4.81
12	3.24	2.31	1.38	1.54	1.80	1.30	1.63	1.14	1.46	3.68	16.3	4.14
13	2.82	4.21	1.54	1.38	*1.71	*1.71	1.54	1.14	1.38	4.26	8.11	3.35
14	2.14	3.06	1.38	1.38	1.71	4.56	1.46	1.14	17.0	4.26	12.0	3.24
15	1.88	4.05	1.30	1.38	1.71	3.68	1.46	1.14	5.38	21.6	6.68	5.78
16	1.71	2.31	1.30	1.38	1.71	2.23	4.07	1.14	9.50	11.1	8.32	4.49
17	1.63	1.97	3.06	1.38	1.88	8.29	2.82	1.53	11.0	8.37	6.81	3.45
18	1.80	1.88	1.88	2.44	1.97	3.14	1.71	1.46	10.4	5.51	5.38	3.24
19	1.54	1.71	1.46	2.81	1.80	2.40	1.54	1.14	4.73	4.60	4.60	3.68
20	1.80	1.63	1.30	1.71	1.63	2.06	1.88	*1.14	3.35	4.03	4.14	3.03
21	2.06	1.97	1.30	1.54	1.54	2.40	1.46	1.14	4.73	4.03	6.03	5.70
22	1.54	1.97	1.38	2.64	1.54	2.06	2.17	1.14	7.64	4.03	6.42	7.71
23	*3.44	1.54	1.22	1.97	1.54	1.80	1.80	1.22	4.73	6.69	4.26	5.38
24	2.31	1.54	1.22	1.63	1.97	1.71	1.54	1.71	3.24	6.29	3.80	5.38
25	2.06	1.46	1.22	1.46	1.54	1.63	1.46	1.46	*2.82	5.51	3.57	6.16
26	2.23	1.98	1.30	1.38	1.63	1.46	1.46	1.22	6.68	11.7	3.24	6.95
27	1.97	1.71	1.63	1.38	3.91	1.46	1.46	1.14	4.81	13.6	4.26	4.37
28	1.88	*1.63	1.80	1.71	5.90	3.07	1.38	1.22	3.14	11.7	7.43	3.80
29	1.71	1.71	2.23	1.63	2.72	3.54	*1.38	------	2.72	11.6	5.38	3.45
30	1.71	1.63	1.71	1.38	2.14	2.40	1.63	------	23.7	7.46	8.36	3.68
31	1.71	1.71	------	1.30	------	2.14	5.60	------	7.20	------	4.73	------
TOTAL	62.01	92.84	46.50	51.58	87.04	71.15	66.55	36.77	160.27	224.64	221.99	134.24
MEAN												
MGD	2.00	2.99	1.55	1.66	2.90	2.30	2.15	1.31	5.17	7.49	7.16	4.47
CFS	3.09	4.63	2.40	2.57	4.49	3.55	3.32	2.03	8.00	11.6	11.1	6.92
AC-FT	190	285	143	158	267	218	204	113	492	689	681	412

CALENDAR YEAR	1962:	MAX	21.3	MIN	1.22	MEAN MGD	3.05	MEAN CFS	4.72	AC-FT	3,420
FISCAL YEAR	1962-63:	MAX	23.7	MIN	1.14	MEAN MGD	3.44	MEAN CFS	5.32	AC-FT	3,850

* Discharge measurement made on this day.

960. Kalihiwai ditch near Kilauea

Location (revised).--Lat 22°11'07", long 159°25'58", on right bank 0.1 mile upstream from Kalihiwai Reservoir and 2.4 miles southwest of Kilauea.

Records available.--June 1934 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 409.2 ft above mean sea level (by stadia survey).

Average discharge.--29 years, 2.31 mgd (3.57 cfs).

Extremes.--1934-63: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

Remarks.--Records good. Ditch diverts low flow of most branches of Pohakuhonu Stream at intakes about 1 mile south of station. Water discharges into Kalihiwai Reservoir, where it is stored for domestic use and irrigation of sugar cane in vicinity of Kilauea.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.02	8.35	0.87	a1.0	1.61	0.04	1.46	0.07	0.73	0.24	0.24	0.05
2	.95	5.41	.87	a.9	9.98	.04	1.30	.05	.67	.61	.20	.05
3	1.02	4.39	.80	a1.2	6.56	0	1.38	.03	.49	1.54	.20	.05
4	1.09	5.02	.73	a1.1	6.36	0	1.38	0	.38	.67	.20	.05
5	2.14	5.28	.73	*1.02	1.84	0	1.16	0	.49	.61	.20	.04
6	1.16	3.81	.73	1.38	.33	0	1.34	0	9.26	.55	.20	.04
7	1.30	4.50	.80	1.09	.33	0	2.63	0	1.54	3.50	.16	.04
8	1.38	3.15	.95	.95	.29	0	.55	0	.95	5.28	.13	.04
9	1.02	2.24	.87	.80	.20	.37	.49	0	.67	5.28	.13	.04
10	1.38	1.87	.87	.80	.16	1.02	.44	0	.55	1.83	.07	.05
11	2.05	1.46	.87	.80	.16	1.02	.33	0	.49	.38	.10	.05
12	2.74	1.38	.80	.80	.10	.95	.33	0	.44	.38	.13	.05
13	2.44	2.24	.95	.73	.10	*1.09	.29	.29	.44	.38	.10	.05
14	1.62	1.22	.87	.61	.07	2.44	.33	.67	13.7	.44	.13	.05
15	1.38	.29	.80	.61	.07	2.44	.67	.67	.13	1.02	.07	.05
16	1.16	.13	.87	.67	.07	1.62	.84	.73	.20	.73	.07	.05
17	1.16	.10	1.38	.73	.07	4.67	.20	1.02	.29	.61	.07	.04
18	1.23	.05	1.23	1.59	.05	2.64	.13	1.09	.20	.49	.07	.04
19	1.16	0	1.02	2.34	.05	2.64	.13	.80	.10	.49	.07	.04
20	1.38	0	.87	1.16	.24	2.14	.13	*.80	.10	.44	.07	0
21	1.54	.57	.95	.95	.95	2.54	.49	.80	.10	.44	.07	0
22	1.02	1.30	.87	2.07	.87	1.96	.67	.80	.24	.38	.07	.04
23	*3.12	1.09	.80	1.46	.95	1.70	.55	.80	.24	.44	.07	.05
24	2.05	1.02	.80	1.16	1.16	1.70	.16	1.30	.24	.38	.07	.05
25	1.70	1.02	.80	1.16	1.02	1.62	.13	1.02	.24	.33	.05	.07
26	1.96	1.23	.87	1.16	1.02	1.46	.10	.73	.33	.38	.05	.07
27	1.62	1.09	1.16	1.09	1.78	1.46	.10	.61	.33	.38	.05	.05
28	1.54	*1.02	1.23	1.46	1.83	2.00	.05	.73	.24	.33	.07	.05
29	1.46	1.09	a1.3	1.30	.10	2.24	.03	------	.20	.38	.07	.05
30	1.30	.87	a1.1	1.09	.02	1.70	.01	------	.61	.24	.07	.04
31	1.30	.95	------	.95	------	1.62	.13	------	.33	------	.05	------
TOTAL	47.39	62.14	27.76	34.13	38.34	43.12	17.93	13.01	34.92	29.15	3.30	1.34
MEAN												
MGD	1.53	2.00	0.93	1.10	1.28	1.39	0.578	0.465	1.13	0.972	0.106	0.045
CFS	2.36	3.10	1.44	1.70	1.98	2.15	0.895	0.719	1.74	1.50	0.165	0.070
AC-FT	145	191	85	105	118	132	55	40	107	89	10	41

CALENDAR YEAR 1962:	MAX	11.9	MIN	0	MEAN MGD	1.12	MEAN CFS	1.73	AC-FT	1,250
FISCAL YEAR 1962-63:	MAX	13.7	MIN	0	MEAN MGD	0.966	MEAN CFS	1.49	AC-FT	1,080

* Discharge measurement made on this day.
a No gage-height record.

970. Pohakuhonu Stream near Kilauea

Location (revised).--Lat 22°10'52", long 159°25'40", on left bank 0.8 mile upstream from confluence with Halaulani Stream, 1.2 miles upstream from Stone Dam, and 2.5 miles southwest of Kilauea.

Drainage area.--1.8 sq mi, approximately.

Records available.--October 1957 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 401.7 ft above mean sea level (by stadia survey).

Average discharge.--5 years (1958-63), 5.06 mgd (783 cfs).

Extremes.--Maximum discharge during year, 764 mgd (1,180 cfs) Apr. 15 (gage height, 4.64 ft); minimum, 0.88 mgd (1.36 cfs) Oct. 2, 3.

1957-63: Maximum discharge, 1,750 mgd (2,710 cfs) Aug. 6, 1959 (gage height, 7.23 ft, from floodmark in well), from rating curve extended above 420 mgd on basis of slope-area measurement at gage height 11.0 ft; minimum, 0.80 mgd (1.24 cfs) June 27, 28, 1959.

Maximum stage known, 11.0 ft Jan. 24, 1956, from floodmark (discharge, 3,620 mgd, 5,600 cfs, from slope-area measurement of peak flow).

Remarks.--Records good. Kalihiwai ditch (see preceding page) diverts about 0.5 mile above station for domestic supply and irrigation of sugar cane. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.3	0.88	0.8	11.5
.4	1.80	1.1	26.2
.5	3.20	1.5	57.5
.6	5.30	2.0	117

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.58	7.47	1.58	0.95	1.28	2.64	1.80	2.36	1.19	5.88	5.88	4.25
2	1.38	2.78	1.58	.88	9.86	2.36	1.69	1.80	1.28	5.30	4.67	3.83
3	1.48	2.64	1.48	1.11	4.77	1.80	1.58	1.69	1.19	46.0	7.68	4.04
4	1.80	3.62	1.28	1.02	4.46	1.69	1.80	1.6	1.11	12.8	5.88	4.46
5	3.97	3.62	1.28	*.95	3.83	1.48	1.48	1.4	1.46	10.5	8.34	4.46
6	1.80	2.36	1.28	1.11	2.08	1.38	2.68	1.3	16.0	11.2	37.9	3.62
7	1.80	2.64	1.28	1.02	1.69	1.48	15.9	1.2	1.58	6.17	8.98	7.42
8	1.80	2.08	1.58	1.02	1.58	1.28	3.41	1.3	1.28	3.20	*5.30	4.67
9	1.48	1.69	1.48	1.02	1.48	1.19	2.36	1.5	1.19	2.64	6.17	5.95
10	1.94	1.69	1.48	.95	1.38	1.48	1.94	1.3	1.11	5.72	5.88	10.7
11	2.78	1.69	1.38	1.02	1.38	1.19	1.80	1.2	1.11	4.88	26.2	6.38
12	4.31	1.58	1.28	.95	1.28	1.19	1.69	1.4	1.02	4.25	29.4	4.88
13	3.62	3.71	1.38	.95	*1.11	*1.38	1.58	1.3	1.02	4.88	7.91	4.04
14	2.36	3.83	1.28	.95	1.11	5.14	1.58	1.2	40.2	5.09	22.0	5.04
15	2.08	4.88	1.28	.95	1.11	4.25	1.48	1.1	5.88	108	7.33	6.46
16	1.69	2.92	1.19	1.02	1.11	2.36	4.95	1.2	15.7	26.0	11.4	5.30
17	1.69	2.50	2.67	1.02	1.19	11.7	3.80	1.5	14.4	9.85	7.62	4.04
18	1.80	2.22	1.69	1.42	1.19	3.41	1.94	1.4	15.6	5.30	6.17	3.83
19	1.69	2.08	1.28	1.69	1.11	2.78	1.80	1.1	5.09	4.25	5.09	4.04
20	2.08	1.80	1.11	1.19	1.11	2.22	2.22	*1.02	4.04	3.62	4.67	3.20
21	2.22	2.36	1.19	1.02	1.11	2.50	1.69	1.02	6.17	3.41	8.08	8.37
22	1.58	2.36	1.19	1.38	1.02	2.22	2.41	1.02	12.5	3.41	7.91	10.1
23	*3.96	1.69	1.11	1.19	1.11	1.80	1.80	1.02	6.46	6.37	4.88	5.88
24	1.58	1.69	1.11	1.11	1.28	1.80	1.69	1.69	4.04	5.88	4.04	6.17
25	1.38	1.58	1.11	.95	1.11	1.69	1.48	1.48	*3.62	4.46	3.83	8.73
26	1.48	2.08	1.19	.95	1.11	1.58	1.28	1.19	10.9	18.8	3.41	9.57
27	1.28	1.80	1.48	.95	1.80	1.48	1.28	1.11	6.46	24.5	6.17	5.09
28	1.28	*1.69	1.28	1.11	4.25	3.96	1.28	1.19	4.25	14.2	7.72	4.25
29	1.19	1.94	1.19	1.02	2.92	4.67	*1.28	------	3.41	13.2	6.17	3.83
30	1.19	1.58	.95	.95	2.22	2.78	1.58	------	100	7.04	10.3	4.25
31	1.19	1.69	------	.95	------	2.22	7.77	------	9.52	------	5.09	------
TOTAL	61.46	78.26	40.64	32.77	62.04	79.10	81.02	37.59	298.78	386.80	292.07	166.85
MEAN												
MGD	1.98	2.52	1.35	1.06	2.07	2.55	2.61	1.34	9.64	12.9	9.42	5.56
CFS	3.07	3.91	2.10	1.64	3.20	3.95	4.04	2.07	14.9	19.9	14.6	8.60
AC-FT	189	240	125	101	190	243	249	115	917	1,190	896	512

CALENDAR YEAR	1962:	MAX	70.5	MIN	0.88	MEAN MGD	3.85	MEAN CFS	5.96	AC-FT	4,310
FISCAL YEAR 1962-63:		MAX	108	MIN	0.88	MEAN MGD	4.43	MEAN CFS	6.85	AC-FT	4,970

* Discharge measurement made on this day.
Note.--No gage-height record Feb. 4-19.

Peak discharge (base, 230 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-14	0100	3.52	425	658	4-15	1530	4.64	764	1,180
3-30	0500	4.17	616	953					

975. Halaulani Stream at altitude 400 ft, near Kilauea

Location (revised).--Lat 22°10'54", long 159°25'17", on left bank 0.5 mile upstream from confluence with Pohakuhonu Stream, 1 mile upstream from Stone Dam, and 2.5 miles south of Kilauea.

Drainage area.--1.1 sq mi, approximately.

Records available.--November 1957 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 391.8 ft above mean sea level (by stadia survey).

Average discharge.--5 years (1958-63), 7.46 mgd (11.5 cfs).

Extremes.--Maximum discharge during year, 522 mgd (808 cfs) Mar. 30 (gage height, 5.26 ft), from rating curve extended above 130 mgd as explained below; minimum, 2.32 mgd (3.59 cfs) Feb. 20-23, 27, 28, Mar. 4.

1957-63: Maximum discharge, 1,340 mgd (2,070 cfs) Aug. 6, 1959 (gage height, 8.30 ft), from rating curve extended above 130 mgd on basis of slope-area measurement of peak flow; minimum, that of Feb. 20-23, 27, 28, Mar. 4, 1963.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.7	1.60	1.5	17.8
.8	2.40	2.0	41.0
1.0	4.85	2.5	79.0
1.2	8.80	3.0	130

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.39	17.2	3.77	3.39	4.38	5.03	3.77	3.64	2.62	9.32	7.92	5.38
2	3.28	11.7	3.64	3.28	19.1	4.18	3.50	3.06	2.73	8.80	6.43	5.03
3	3.50	9.32	3.50	3.50	11.5	3.50	3.28	2.95	2.51	41.7	13.2	5.38
4	3.64	10.4	3.50	3.50	11.1	3.28	4.04	2.84	2.32	21.7	9.58	6.60
5	6.90	9.58	3.50	*3.39	9.84	3.06	3.28	2.73	2.93	17.3	13.7	6.77
6	3.77	7.92	3.50	3.91	5.55	3.06	6.36	2.62	22.0	13.7	43.7	4.85
7	4.04	8.80	3.50	3.50	4.45	3.06	25.4	2.51	3.77	9.06	15.4	10.0
8	4.04	6.82	4.18	3.28	3.91	2.84	7.41	2.51	3.06	7.04	8.80	6.08
9	3.39	5.55	4.18	3.17	3.64	2.73	4.58	2.62	2.84	6.82	10.9	7.92
10	4.52	5.20	3.91	2.95	3.39	3.06	4.04	2.51	2.73	18.2	9.84	14.0
11	5.73	5.20	3.64	3.06	3.28	2.73	3.64	2.51	2.62	9.40	22.6	9.16
12	8.53	4.85	3.64	3.06	3.06	2.62	3.39	2.51	2.51	8.14	29.1	6.25
13	7.26	9.03	3.64	2.84	2.95	3.28	3.17	2.40	3.82	8.80	12.6	5.20
14	5.20	7.04	3.50	2.84	*2.84	12.1	3.06	2.40	38.9	11.4	23.5	6.25
15	4.72	10.2	3.28	2.84	3.06	9.75	2.95	2.40	7.70	88.1	9.32	10.8
16	4.31	6.08	3.39	2.73	2.95	4.72	8.44	2.40	15.6	26.8	16.9	7.92
17	4.31	5.38	6.98	2.73	3.06	21.2	5.46	3.00	18.6	15.5	11.7	5.90
18	4.58	5.03	4.72	4.50	3.06	*6.43	3.50	2.95	18.3	8.36	8.58	5.73
19	4.18	4.58	3.50	4.58	3.28	5.03	3.28	2.51	7.48	6.43	6.43	7.26
20	4.58	4.31	3.39	3.17	2.84	4.04	4.15	*2.40	5.73	5.55	5.73	5.03
21	4.58	5.20	3.50	2.84	2.73	4.72	3.17	2.32	7.92	5.38	10.8	*11.8
22	4.04	4.85	3.64	4.44	2.62	3.91	4.08	2.32	14.8	5.38	*12.0	13.0
23	11.6	4.18	3.39	3.50	2.62	3.39	3.39	2.40	8.80	11.1	6.43	8.58
24	*4.45	3.91	3.50	3.06	3.28	3.28	3.06	3.50	5.73	9.06	5.55	9.84
25	4.45	3.77	3.28	2.84	2.73	3.17	2.95	3.06	*5.20	6.68	5.03	12.5
26	4.85	4.93	3.50	2.73	2.73	3.06	2.84	2.51	14.7	24.0	4.58	13.8
27	4.31	4.45	4.18	2.84	6.75	2.84	2.73	2.40	11.9	30.0	7.47	7.04
28	4.18	*3.91	4.31	3.17	10.7	9.86	2.73	2.51	6.82	22.4	12.3	5.90
29	3.91	4.81	4.58	3.28	5.55	11.6	*2.62	------	5.20	15.6	8.58	5.38
30	3.77	3.91	3.50	2.62	4.31	5.90	2.95	------	86.6	10.4	14.9	5.73
31	3.77	4.04	------	2.51	------	4.58	12.3	------	16.1	------	7.04	------
TOTAL	147.78	202.15	114.24	100.05	151.26	162.01	149.52	74.49	352.54	482.12	380.61	235.08
MEAN												
MGD	4.77	6.52	3.81	3.23	5.04	5.23	4.82	2.66	11.4	16.1	12.3	7.84
CFS	7.37	10.1	5.89	4.99	7.80	8.08	7.46	4.12	17.6	24.9	19.0	12.1
AC-FT	454	620	351	307	464	497	459	229	1,080	1,480	1,170	721

CALENDAR YEAR 1962: MAX 64.3 MIN 2.51 MEAN MGD 6.62 MEAN CFS 10.2 AC-FT 7,420
FISCAL YEAR 1962-63: MAX 88.1 MIN 2.32 MEAN MGD 6.99 MEAN CFS 10.8 AC-FT 7,830

* Discharge measurement made on this day.

Peak discharge (base, 140 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0100	3.98	269	416	4-15	1530	5.10	490	758
3- 6	0100	3.13	146	226	5- 6	0600	3.73	230	356
3-14	0030	4.34	338	523	5-14	0730	3.33	171	265
3-30	0530	5.26	522	808					

1000. Hanalei tunnel outlet near Lihue

Location (revised).--Lat 22°04'57", long 159°27'52", on right bank at outlet 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 1963.

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

Average discharge.--31 years, 17.9 mgd (27.7 cfs).

Extremes.--1932-63: Maximum daily discharge, 64 mgd (99 cfs) Apr. 11, 25, 26, 1942; no flow at times.

Remarks.--Records good. Tunnel diverts water from Kaapoko Stream and Hanalei River into North Branch of North Fork Wailua River, from which it is later diverted and used for irrigation in vicinity of Lihue and Kapaa.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	6.01	*11.8	6.97	*8.08	*18.1	19.9	17.2	13.8	*15.5	2.85	2.16	0.83
2	5.72	10.3	5.24	8.08	24.0	19.9	*11.4	13.0	16.4	*2.85	*1.15	.68
3	*7.34	9.56	6.60	9.93	20.3	18.1	8.82	12.3	14.2	7.98	3.10	1.00
4	6.60	9.43	*6.97	12.8	21.7	17.2	14.8	*12.3	13.4	5.42	2.38	*1.35
5	9.91	9.93	6.97	15.9	21.2	16.4	11.5	11.9	13.0	4.24	2.61	.83
6	6.60	9.56	6.60	18.1	19.0	*15.5	14.6	12.3	19.0	4.24	3.65	.54
7	6.31	9.56	7.89	18.1	17.6	15.5	22.1	11.5	13.8	2.85	2.61	1.15
8	5.72	8.08	13.4	18.1	16.4	15.1	16.4	11.1	12.6	2.85	1.35	.83
9	5.42	7.34	13.4	17.6	15.6	14.6	13.4	11.9	12.3	2.61	1.74	.54
10	7.71	8.08	14.4	17.6	15.3	15.5	12.6	10.3	13.8	2.61	1.74	1.74
11	8.61	7.71	13.0	16.8	15.5	14.6	11.9	9.93	13.8	2.61	1.74	2.54
12	10.4	7.34	12.6	15.9	15.1	14.2	11.1	9.93	11.9	2.85	3.65	.83
13	9.02	8.08	12.3	15.5	15.1	15.5	10.7	9.56	12.6	3.95	1.35	.68
14	6.60	8.08	11.9	15.1	16.8	20.8	10.3	9.56	19.0	4.54	4.75	1.15
15	6.31	9.19	11.5	15.1	19.5	24.5	13.7	9.56	27.5	15.7	1.35	1.54
16	6.01	8.08	11.9	15.1	16.8	19.4	22.7	12.3	31.5	9.56	3.41	1.15
17	6.01	6.97	15.2	14.6	16.4	23.0	16.4	14.6	24.5	6.60	3.18	.54
18	6.97	7.71	14.2	20.3	17.8	19.9	13.4	14.6	14.2	5.40	1.15	.41
19	6.31	7.71	12.6	23.5	19.4	18.5	12.6	14.2	6.60	8.82	.68	.41
20	6.31	7.34	12.3	18.5	18.1	17.2	12.3	14.2	5.13	2.38	.68	.19
21	6.01	7.71	12.3	16.8	18.1	17.6	11.5	13.8	15.3	1.35	.68	1.31
22	5.42	7.71	12.3	17.2	17.2	16.4	12.3	13.8	15.9	1.35	.68	3.43
23	8.20	7.34	11.5	17.6	16.8	15.5	12.8	14.2	6.97	1.15	.54	1.35
24	5.72	7.34	11.5	12.9	15.9	15.1	17.7	15.5	3.65	1.35	.54	1.00
25	5.13	6.97	11.5	13.8	15.1	15.1	12.3	16.4	3.40	1.54	.54	.83
26	5.42	7.71	11.1	13.8	15.9	14.6	11.5	14.2	9.56	2.61	.68	3.79
27	5.72	8.08	11.5	13.8	20.8	14.2	11.1	14.2	4.83	6.80	1.15	1.35
28	7.34	7.34	11.0	16.4	22.1	15.1	11.1	16.4	2.85	4.62	1.15	.41
29	6.60	8.72	7.71	15.9	20.3	20.3	12.3	------	2.38	3.10	.83	.29
30	6.60	8.08	7.71	13.8	19.4	21.2	14.7	------	16.3	3.76	1.00	.29
31	6.60	7.72	------	13.8	------	19.4	20.5	------	4.83	------	.83	------
TOTAL	208.65	256.57	324.06	480.49	541.3	539.8	426.72	357.34	396.70	128.54	53.05	32.98
MEAN												
MGD	6.73	8.28	10.8	15.5	18.0	17.4	13.8	12.8	12.8	4.28	1.71	1.10
CFS	10.4	12.8	16.7	24.0	27.9	26.9	21.3	19.7	19.8	6.63	2.65	1.70
AC-FT	640	787	995	1,470	1,660	1,660	1,310	1,100	1,220	394	163	101

CALENDAR YEAR	1962:	MAX	24.5	MIN	0.89	MEAN MGD	8.58	MEAN CFS	13.3	AC-FT	9,610
FISCAL YEAR	1962-63:	MAX	31.5	MIN	0.19	MEAN MGD	10.3	MEAN CFS	15.9	AC-FT	11,500

* Discharge measurement made on this day.

1030. Hanalei River near Hanalei

Location.--Lat 22°11'31", long 159°27'57", on right bank 2.3 miles southeast of Hanalei and 4.9 miles upstream from mouth.

Drainage area.--19.1 sq mi.

Records available.--January 1912 to November 1919, December 1962 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 35.8 ft above mean sea level (by stadia survey). Jan. 1, 1912, to Nov. 20, 1919, staff gage at site 0.2 mile upstream at different datum.

Extremes.--Maximum discharge during period December to June, 22,400 mgd (34,700 cfs) Apr. 15 (gage height, 13.13 ft), from rating curve extended above 1,800 mgd; minimum, 24.9 mgd (38.5 cfs) Mar. 4.

1912-19, 1962-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Mar. 4, 1963.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Since 1925 Hanalei tunnel (see preceding page) has diverted from Hanalei River and its tributary Kaapoko Stream above station to North Branch of North Fork Wailua River for irrigation.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

Dec. 27 to Apr. 15

1.1	24.5	3.5	340
1.5	43.5	4.0	530
2.0	76.5	4.5	810
2.5	131	5.0	1,180
3.0	210	6.0	2,100

Apr. 16 to June 30

2.1	71.0
2.5	113
3.0	200
3.5	330
4.0	530

Note.--Same as preceding table above 4.0 ft.

Discharge, in million gallons a day, December 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1						-	36.5	70.1	31.0	152	285	78.2
2						-	35.0	49.0	29.5	126	160	113
3						-	37.0	46.0	27.3	453	293	158
4						-	143	46.0	25.3	243	240	173
5						-	46.5	44.5	27.3	156	358	139
6						-	79.4	40.0	224	129	781	97.7
7						-	a500	39.0	44.3	103	467	176
8						-	175	38.0	43.5	86.0	196	113
9						-	106	39.5	36.5	79.9	270	185
10						-	95.0	36.5	31.0	82.4	238	231
11						-	83.3	36.5	31.5	79.9	456	275
12						-	74.9	34.0	27.7	88.8	555	156
13						-	71.7	33.5	27.7	122	220	120
14						-	69.3	33.0	402	141	447	151
15						-	74.1	32.5	739	1430	172	266
16						-	a1,000	32.0	1,080	682	429	164
17						-	*112	48.3	740	632	271	123
18						-	59.8	40.5	362	423	170	108
19						-	51.2	30.0	175	560	124	140
20						-	61.1	28.5	134	225	105	113
21					(*)	-	47.5	27.7	272	184	116	196
22						-	49.6	27.7	444	159	109	327
23						-	a45	28.1	206	284	*86.0	196
24						-	a400	39.5	124	264	76.4	168
25						-	a100	33.0	112	200	71.9	146
26						-	a70	*26.9	250	417	78.0	200
27						*34.5	a65	25.7	206	691	144	140
28						39.5	a60	27.7	103	596	405	109
29						77.5	a150	---------	86.0	322	291	98.8
30						62.1	a500	---------	865	275	304	102
31					---------	48.5	*370	---------	267	---------	176	--------
Total						-	4,767.9	1,033.7	7,173.6	9,386.0	8,094.3	4,762.7
Mean												
Mgd						-	154	36.9	231	313	261	159
Cfs						-	238	57.1	357	484	404	246
Ac-ft						-	14,630	3,170	22,010	28,800	24,840	14,620

Calendar Year 1962: Max - Min - Mean mgd - Mean cfs - Ac-ft -
Fiscal Year 1962-63: Max - Min - Mean mgd - Mean cfs - Ac-ft -

Peak discharge (base, 2,900 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-16	2000	8.51	5,920	9,160	4-15	2200	13.13	22,400	34,700

* Discharge measurement made on this day.
a No gage-height record.

1080. Wainiha River near Hanalei

Location.--Lat 22°08'10", long 159°33'40", on left bank at Puwainui Falls, 1.5 miles upstream from Wainiha powerplant intake, and 6.0 miles southwest of Hanalei.

Drainage area.--10.2 sq mi.

Records available.--August 1952 to February 1956, October 1957 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 960 ft (from topographic map).

Average discharge.--7 years (1953-55, 1958-63), 86.0 mgd (133 cfs).

Extremes.--Maximum discharge during year, 7,140 mgd (11,000 cfs) Mar. 16 (gage height, 7.04 ft), from rating curve extended above 660 mgd as explained below; minimum recorded, 23.2 mgd (35.9 cfs) Jan. 14, 15, but may have been less during period of no gage-height record in July.

1952-63: Maximum discharge recorded, 13,000 mgd (20,100 cfs) Aug. 6, 1959 (gage height, 8.19 ft), from rating curve extended above 660 mgd on basis of slope-area measurement at gage height 7.72 ft; minimum, 22.5 mgd (34.8 cfs) Feb. 12, 1954.

Flood of Feb. 17, 1956, which destroyed the station, reached a stage of about 14.1 ft (discharge not determined).

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.1	21.5	3.0	300
1.2	25.0	3.5	530
1.5	40.2	4.0	850
2.1	96.0	4.5	1,350
2.5	165	5.0	2,000

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	a35	278	34.8	29.1	64.3	85.2	30.1	67.2	31.7	a110	167	95.5
2	a39	133	32.2	28.7	196	73.3	26.6	53.1	42.5	a96	77.8	72.2
3	41.3	90.0	32.2	80.1	74.0	46.4	26.2	40.2	27.5	211	274	125
4	33.2	73.8	36.0	*41.8	93.6	37.8	56.0	34.8	24.7	113	104	142
5	95.6	86.0	45.3	35.4	82.0	33.2	33.2	32.7	26.2	93.6	92.4	95.0
6	42.5	80.4	36.0	55.5	56.5	31.1	138	47.0	135	a80	308	64.2
7	40.2	71.3	34.2	52.7	39.6	30.1	246	36.0	42.5	a62	255	100
8	38.4	52.3	54.5	58.7	34.2	29.1	68.8	34.2	36.0	a48	98.8	67.7
9	34.2	41.0	45.9	45.7	36.0	30.6	41.0	45.5	33.2	a45	218	88.5
10	67.2	44.1	63.5	53.6	37.2	38.1	39.6	29.6	52.3	a44	140	110
11	83.3	48.0	42.3	39.0	34.8	30.1	*33.7	27.1	40.7	a41	177	114
12	151	43.4	44.2	32.7	31.1	28.3	27.1	26.2	27.9	60.7	286	72.2
13	104	55.1	45.3	30.1	29.6	36.4	24.3	25.8	30.4	63.2	90.8	54.8
14	59.1	69.7	36.6	29.1	36.0	77.1	23.6	25.0	266	79.9	233	65.7
15	48.0	86.4	31.7	28.3	49.0	79.1	157	24.7	940	842	77.0	151
16	39.0	55.3	34.2	27.9	33.2	34.2	620	24.7	1,790	610	104	98.3
17	37.2	41.0	53.3	27.9	73.0	102	120	25.0	608	707	95.0	68.6
18	43.3	35.4	49.2	100	67.5	54.4	51.5	25.4	181	535	73.4	84.7
19	34.8	33.7	31.7	171	44.1	41.8	39.0	*24.7	86.4	540	54.8	106
20	42.9	33.7	30.1	57.1	*45.2	34.2	36.0	24.3	72.2	136	50.6	101
21	a32.2	37.8	41.2	38.4	50.0	42.4	31.7	24.3	315	105	64.4	266
22	a25.8	38.4	43.3	44.9	41.8	38.4	47.3	24.3	294	102	53.1	310
23	40.4	31.7	32.2	41.8	46.8	33.7	62.8	25.0	103	173	44.1	109
24	a30.6	*48.3	30.6	34.2	38.4	31.1	259	29.6	a80	158	41.0	101
25	*33.2	33.2	32.7	30.6	34.2	29.6	52.3	30.6	a82	140	39.6	91.0
26	39.0	43.4	30.1	29.1	42.6	28.3	39.6	25.0	179	211	49.8	260
27	37.2	52.5	36.0	28.7	171	27.1	36.0	24.0	127	291	60.6	91.1
28	37.3	40.2	43.4	32.2	186	26.6	36.6	34.0	a84	218	97.9	68.6
29	36.6	52.6	47.0	31.7	99.0	51.6	51.0	---------	a76	141	137	62.5
30	37.2	39.6	32.2	27.9	80.3	57.8	85.5	---------	371	154	170	71.2
31	39.0	39.0	------	27.5	------	38.3	289	---------	a160	------	118	------
TOTAL	1,497.7	1,908.3	1,181.9	1,391.4	1,947.0	1,357.4	2,828.5	890.0	6,365.2	6,210.4	3,852.1	3,306.8
MEAN												
MGD	48.3	61.6	39.4	44.9	64.9	43.8	91.2	31.8	205	207	124	110
CFS	74.7	95.2	60.9	69.4	100	67.7	141	49.2	317	320	192	171
AC-FT	4,600	5,860	3,630	4,270	5,980	4,170	8,680	2,730	19,530	19,060	11,820	10,150

CALENDAR YEAR 1962: MAX 788 MIN 25.8 MEAN MGD 75.3 MEAN CFS 117 AC-FT 84,320
FISCAL YEAR 1962-63: MAX 1,790 MIN 23.6 MEAN MGD 89.7 MEAN CFS 139 AC-FT 100,500

* Discharge measurement made on this day.
a No gage-height record.

Peak discharge (base, 2,000 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-16	2230	7.04	7,140	11,000	5-14	0700	5.27	2,430	3,760
4-15	1700	6.39	5,070	7,840					

2000. Left Branch of North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°31'09", long 157°56'53", on left bank 140 ft upstream from intake of Mauka ditch and confluence with Right Branch, and 4.5 miles northeast of Wahiawa.

Drainage area.--1.38 sq mi.

Records available.--May 1913 to July 1953, April 1960 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

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

Average discharge.--41 years (1913-24, 1926-53, 1960-63), 10.6 mgd (16.4 cfs).

Extremes.--Maximum discharge during year, 3,260 mgd (5,040 cfs) Apr. 15 (gage height, 12.46 ft), from rating curve extended above 44 mgd on basis of slope-area measurement of peak flow; minimum, 0.24 mgd (0.37 cfs) Dec. 13.

1913-53, 1960-63: Maximum discharge, 3,550 mgd (5,490 cfs) Jan. 1, 1933 (gage height, 11.7 ft, from flood marks), from rating curve extended above 44 mgd by test on model of station site; minimum, 0.08 mgd (0.12 cfs) Mar. 2, 13, 1941.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 31 to Mar. 6, June 10-30)

1.4	0.16	1.9	2.15	3.0	42.0
1.5	.31	2.1	4.30	3.5	100
1.6	.56	2.3	7.90	4.0	185
1.7	.93	2.5	13.4	5.0	435
1.8	1.45	2.7	22.0	6.0	770

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.73	66.1	3.74	1.09	0.82	8.60	0.67	4.28	14.9	4.78	11.3	9.04
2	3.65	13.6	2.75	1.03	.75	2.06	.56	2.15	2.30	16.5	8.65	6.50
3	21.7	7.10	1.80	11.6	2.11	.89	.78	1.66	1.35	43.8	26.7	16.2
4	4.81	21.2	1.59	5.14	8.06	.63	.51	1.40	.75	23.7	16.2	35.0
5	17.6	7.90	1.45	7.64	3.07	.49	.41	1.29	6.06	7.10	8.90	17.1
6	2.91	10.9	2.28	6.15	1.45	.44	.35	1.19	9.25	5.74	49.5	*9.96
7	2.53	7.58	1.52	3.45	1.94	*.41	62.8	1.14	1.41	5.26	22.7	16.5
8	2.53	7.37	5.79	1.94	1.14	.34	4.25	.98	.75	4.46	9.40	10.2
9	7.63	6.13	8.14	1.66	.93	.28	1.87	1.09	.63	4.18	47.3	26.5
10	8.65	*8.19	6.86	2.23	.86	.41	1.40	.89	.46	3.82	13.4	116
11	6.44	4.63	1.80	1.40	.71	.49	1.52	.75	*.31	3.34	69.6	17.0
12	47.5	4.18	2.61	1.29	.60	.28	1.03	.67	.27	3.01	66.5	11.0
13	10.8	16.9	6.38	1.09	.78	.25	.89	.67	4.29	19.9	24.5	9.40
14	11.2	9.40	1.94	1.03	.56	18.5	.76	.63	74.1	35.3	159	7.90
15	4.30	8.83	1.52	1.03	12.2	50.9	.75	.54	54.7	*558	19.3	10.4
16	3.46	6.01	37.6	.89	1.44	3.75	11.7	.51	42.5	32.8	25.7	7.90
17	6.11	4.30	43.1	.86	.82	7.56	2.02	.46	17.1	32.5	62.5	14.1
18	20.6	3.82	5.19	1.14	1.40	2.52	.93	.74	125	23.3	16.9	8.68
19	8.18	3.46	2.91	36.3	2.00	1.73	.78	.89	7.30	22.5	11.0	13.3
20	3.82	3.22	2.44	7.22	.82	1.24	.75	.56	7.73	17.4	9.90	26.3
21	3.10	3.01	*2.34	1.94	.60	1.64	.67	.44	11.9	15.2	16.9	63.7
22	11.2	2.72	2.01	1.35	.54	1.89	6.66	.39	69.6	9.65	10.5	28.1
23	57.7	2.53	2.05	1.14	.63	.86	2.86	.34	26.5	9.46	9.15	10.4
24	6.30	2.34	2.58	1.03	.44	.82	2.84	3.62	8.65	*11.0	6.50	15.9
25	11.4	2.25	1.66	.93	.41	4.20	1.21	4.19	6.50	16.9	5.74	13.8
26	6.66	5.39	2.79	*.89	.49	1.35	1.38	1.40	37.9	101	8.65	11.5
27	4.99	3.51	1.59	.82	.39	.78	1.21	.78	14.5	41.4	24.2	36.2
28	6.44	2.53	1.45	12.2	.44	.67	.79	.67	6.90	28.6	5.42	13.7
29	3.46	2.69	2.67	3.12	1.54	.71	.93	------	12.5	17.5	9.16	10.2
30	4.93	2.01	1.19	1.14	8.80	2.91	*.72	------	5.10	17.3	17.2	14.2
31	8.00	1.87	------	.89	------	1.28	39.6	------	6.61	------	6.10	------
TOTAL	320.29	251.66	161.74	119.63	56.74	118.88	153.61	34.32	577.82	1,135.40	798.47	606.68
MEAN												
MGD	10.3	8.12	5.39	3.86	1.89	3.83	4.96	1.23	18.6	37.8	25.8	20.2
CFS	15.0	12.6	8.34	5.97	2.93	5.93	7.67	1.90	28.8	58.5	39.8	31.3
AC-FT	983	772	496	367	174	365	471	105	1,770	3,480	2,450	1,860

CALENDAR YEAR	1962:	MAX	151	MIN	0.25	MEAN MGD	6.91	MEAN CFS	10.7	AC-FT	7,740
FISCAL YEAR	1962-63:	MAX	558	MIN	0.25	MEAN MGD	11.9	MEAN CFS	18.4	AC-FT	13,290

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-18	0330	7.52	1,300	2,010	5-14	1400	8.97	1,870	2,890
4-15	1130	12.46	3,260	5,040	6-10	0430	8.06	1,560	2,410
4-26	0900	5.86	721	1,120					

* Discharge measurement made on this day.

2030. Mauka ditch near Wahiawa

Location (revised).--Lat 21°30'45", long 157°59'20", on left bank 0.7 mile northwest of Ku Tree Reservoir and 2.9 miles east of Wahiawa Post Office.

Records available.--March 1947 to June 1963. Prior to July 1958, published as Kaukonahua ditch near Wahiawa.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,140 ft (revised, from topographic map).

Average discharge.--16 years, 3.17 mgd (4.90 cfs).

Extremes.--1947-63: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts from North Fork Kaukonahua Stream for domestic use in Wahiawa.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.89	5.74	2.58	1.85	1.69	3.84	1.77	4.70	*3.42	2.48	0.42	0.18
2	2.87	5.61	4.10	1.77	1.53	4.12	1.53	3.40	3.11	4.44	.29	.18
3	5.48	5.22	2.89	4.68	2.47	1.94	1.85	2.68	1.46	5.78	1.40	.25
4	4.70	5.35	a2.7	4.58	4.83	1.39	1.46	2.30	.94	2.47	.68	.33
5	5.74	5.35	a2.5	4.96	4.46	1.12	1.32	2.12	1.32	1.18	.39	.65
6	4.34	5.09	a2.4	5.09	2.68	1.06	1.25	1.85	4.46	1.00	.42	.41
7	3.62	5.48	a2.3	4.34	3.38	1.00	6.48	1.77	2.08	.94	.55	.75
8	3.62	5.22	a2.3	3.19	2.12	.94	5.61	1.61	1.06	*2.06	.29	.64
9	4.70	5.09	a2.3	2.89	1.77	.83	4.46	1.61	.83	2.48	1.02	.31
10	5.22	5.09	a4.5	3.62	1.61	.94	3.50	1.46	.78	2.48	.39	1.28
11	5.61	5.09	a4.0	2.58	1.32	1.06	3.74	1.25	.58	2.58	.61	.39
12	5.87	4.83	*a3.5	2.30	1.25	.83	2.68	1.18	.50	2.58	.87	.29
13	*5.74	5.22	4.83	2.03	1.39	.78	2.39	1.12	.53	3.21	.39	.27
14	5.61	5.35	2.50	1.85	1.25	3.57	2.12	1.06	5.35	3.70	2.44	.23
15	5.22	5.35	1.85	1.94	4.12	5.22	1.94	1.00	5.35	5.00	1.12	.21
16	4.96	5.09	5.09	1.69	3.08	4.46	*3.94	.88	5.74	1.61	.78	.18
17	5.09	4.96	5.35	1.61	1.94	4.22	4.19	.83	5.48	1.53	.68	.18
18	5.48	4.58	5.09	2.24	2.73	3.86	2.48	.63	5.47	.94	.50	.20
19	5.48	4.34	4.46	*4.04	4.34	3.19	1.85	1.12	4.46	.94	.42	.25
20	5.09	4.22	3.86	5.35	2.48	2.48	1.61	.88	4.46	1.14	.39	.59
21	4.46	3.86	3.62	3.86	1.69	2.49	1.39	.78	4.46	.96	.33	1.51
22	4.46	3.74	3.40	2.99	1.32	3.35	4.27	.68	5.35	.54	.31	1.52
23	5.74	3.30	2.92	2.48	1.46	1.77	4.17	.63	4.83	.50	.29	.54
24	5.35	3.19	3.98	2.21	1.12	1.61	4.34	.58	4.46	.94	.27	.36
25	5.22	2.99	2.68	2.12	1.06	4.99	2.75	3.74	4.22	1.61	.25	.29
26	5.35	4.00	3.86	1.94	1.06	3.17	2.72	1.35	5.30	1.89	.25	.25
27	5.09	4.10	2.79	1.85	*1.03	1.85	2.72	.83	4.58	1.04	.44	.29
28	5.09	3.74	2.30	3.37	1.00	1.61	1.77	.68	4.22	.68	.21	.25
29	4.46	3.09	3.50	4.29	1.63	1.53	1.85	------	4.59	.46	*.18	.25
30	4.46	3.16	2.12	2.48	4.13	3.93	1.46	------	2.30	.42	.18	.38
31	4.58	2.58	------	1.94	------	3.13	4.89	------	2.30	------	.18	------
TOTAL	151.59	140.02	100.27	92.13	65.94	76.28	88.50	42.92	103.99	57.58	16.94	13.41
MEAN												
MGD	4.89	4.52	3.34	2.97	2.20	2.46	2.85	1.53	3.35	1.92	0.546	0.447
CFS	7.56	6.99	5.17	4.60	3.40	3.81	4.42	2.37	5.19	2.97	0.845	0.692
AC-FT	465	430	308	283	202	234	272	132	319	177	52	41

CALENDAR YEAR	1962:	MAX	5.87	MIN	0.73	MEAN MGD	3.15	MEAN CFS	4.87	AC-FT	3,530
FISCAL YEAR	1962-63:	MAX	6.48	MIN	0.18	MEAN MGD	2.60	MEAN CFS	4.02	AC-FT	2,920

* Discharge measurement made on this day.
a No gage-height record.

2040. 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.--4.86 sq mi.

Records available.--September 1946 to June 1963.

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

Average discharge.--16 years (1947-63), 21.1 mgd (32.6 cfs).

Extremes.--Maximum discharge during year, 3,010 mgd (4,660 cfs) Apr. 15 (gage height, 20.95 ft), from rating curve extended above 190 mgd on basis of slope-area measurements at gage heights 8.39 and 15.55 ft; minimum, 0.14 mgd (0.22 cfs) Mar. 13.

1946-63: Maximum discharge, that of Apr. 15, 1963; no flow at times in 1953.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Mauka ditch (see preceding page) diverts 2.6 miles above station for domestic use in Wahiawa. Poamoho tunnel (see p. 49) diverts from Poamoho Stream into North Fork Kaukonahua Stream about 1 mile above station.

Rating teble (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Apr. 30 to May 3)

0.1	0.04	1.3	20.0
.2	.20	1.6	37.5
.3	.53	2.0	74.0
.4	1.06	2.5	148
.5	1.80	3.0	245
.7	3.95	4.0	424
1.0	9.10	6.0	744

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.72	101	1.36	0.95	0.58	11.8	0.80	14.7	*21.1	12.8	47.9	26.2
2	1.73	33.7	2.27	1.43	.53	4.18	.40	3.97	5.28	52.8	26.8	20.7
3	29.9	*9.05	1.13	24.3	.58	1.33	.30	2.56	.96	145	78.1	42.8
4	5.05	28.1	.80	11.4	8.01	.53	.37	1.99	.43	165	47.7	70.9
5	33.4	10.7	.80	15.2	2.66	.37	.23	1.73	.43	31.1	36.8	46.5
6	4.15	6.59	1.01	17.4	1.55	.30	.18	1.50	13.6	20.5	88.1	24.2
7	2.37	17.7	1.06	5.12	1.01	.33	231	1.43	2.71	17.0	93.2	33.7
8	2.75	7.32	1.61	2.75	.90	.30	17.9	1.28	.64	13.9	30.4	33.5
9	7.51	4.81	3.86	2.09	.64	.27	3.23	1.43	.40	10.9	102	72.8
10	9.29	8.22	19.9	2.66	.58	*.33	1.58	1.36	.30	10.0	44.6	231
11	18.9	4.47	2.01	1.73	.43	.46	1.80	1.01	.18	a9.0	122	29.5
12	104	3.11	1.43	1.21	.42	.37	1.50	.90	.15	a8.0	178	23.0
13	24.9	25.7	*7.37	.90	.50	.20	1.06	.90	.17	40.5	52.0	19.6
14	32.6	13.0	2.59	.85	.69	14.5	.90	.85	231	189	358	17.0
15	8.15	13.0	1.13	.90	46.7	123	.80	.74	239	*705	68.8	18.0
16	4.10	5.71	59.8	.90	3.77	8.30	40.6	.64	205	a250	54.2	16.1
17	4.71	3.86	79.8	.95	1.13	9.75	8.10	.69	125	228	125	22.6
18	14.3	2.66	11.3	2.51	1.06	4.39	2.09	.85	259	118	50.9	17.8
19	24.2	2.28	2.82	148	14.6	1.36	1.36	.90	30.9	120	33.0	26.2
20	4.39	1.90	1.43	26.7	1.70	.85	1.13	.90	18.7	107	29.2	50.0
21	2.99	1.58	1.21	4.03	.90	.85	*.90	.64	28.3	73.2	44.7	105
22	2.56	1.72	1.21	1.90	.58	3.47	20.4	.58	144	48.6	30.2	85.0
23	96.9	1.43	1.10	*1.43	.53	.80	7.28	.50	63.7	54.0	24.5	27.2
24	10.3	1.21	4.18	1.06	.46	.80	6.94	.52	18.6	61.0	19.6	29.2
25	10.3	1.13	1.36	.95	.40	12.0	3.54	6.19	12.8	a50	17.4	27.7
26	8.51	4.46	1.73	.85	.40	2.78	2.02	1.49	136	a155	16.6	32.9
27	5.24	2.28	1.73	.80	.40	.95	3.11	.69	45.4	136	58.8	47.6
28	6.07	1.73	1.01	12.8	.33	.37	1.73	.46	19.4	78.2	16.6	21.0
29	3.73	1.43	2.11	10.7	.40	.40	1.99	------	81.7	50.4	*19.0	21.2
30	3.79	1.28	1.28	1.21	8.58	1.15	1.73	------	16.6	*86.4	68.7	25.1
31	6.06	1.01	------	.74	------	3.70	130	------	16.1	------	22.7	------
TOTAL	495.57	322.14	220.40	304.42	101.02	210.19	494.97	51.40	1,737.55	3,046.3	2,005.5	1,264.0
MEAN												
MGD	16.0	10.4	7.35	9.82	3.37	6.78	16.0	1.84	56.1	102	64.7	42.1
CFS	24.7	16.1	11.4	15.2	5.21	10.5	24.7	2.84	86.7	158	100	65.2
AC-FT	1,520	989	676	934	310	645	1,520	158	5,330	9,350	6,150	3,880

CALENDAR YEAR 1962:	MAX	369	MIN	0.20	MEAN MGD	14.1	MEAN CFS	21.8	AC-FT	15,840
FISCAL YEAR 1962-63:	MAX	705	MIN	0.15	MEAN MGD	28.1	MEAN CFS	43.5	AC-FT	31,470

* Discharge measurement made on this day.
a No gage-height record.

2080. South Fork Kaukonahua Stream at East Pump Reservoir, near Wahiawa

Location.--Lat 21°29'32", long 157°59'55", on right bank on upstream side of dam at East Pump Reservoir, 2.3 miles east of Wahiawa Post Office, and 7.1 miles north of Waipahu.

Drainage area.--4.04 sq mi.

Records available.--July 1957 to June 1963.

Gage.--Water-stage recorder and Ogee-type dam control. Datum of gage is 860.35 ft above mean sea level, datum of 1929.

Average discharge.--6 years, 12.8 mgd (19.8 cfs).

Extremes.--Maximum discharge during year, 3,530 mgd (5,460 cfs) Apr. 15 (gage height, 11.33 ft), from rating curve extended above 700 mgd on basis of computation of peak flow over dam; no flow Feb. 23, 24.

1957-63: Maximum discharge, that of Apr. 15, 1963; no flow Dec. 24, 25, 27, 28, 1960, Feb. 23, 24, 1963.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Koolau ditch diverts water into Koolau Reservoir (capacity, 43,000,000 gal), and Ku Tree Reservoir (capacity, 293,000,000 gal) located on tributary.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.1	0	2.1	21.4
1.2	.30	2.2	30.0
1.3	.80	2.5	61.0
1.4	1.60	3.0	136
1.5	2.75	3.5	235
1.6	4.25	4.0	360
1.8	8.55	5.0	680
1.9	11.8		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.36	102	2.75	2.75	1.90	3.95	1.00	16.8	8.8	6.0	24.2	7.14
2	1.80	*36.3	3.16	2.48	1.80	3.42	.93	5.37	3.5	30	17.1	6.91
3	23.8	12.6	2.36	5.52	3.46	*1.69	.86	3.16	1.2	90	32.2	9.04
4	6.00	14.0	2.00	4.86	12.1	1.32	.86	2.12	1.1	100	21.2	18.2
5	29.2	9.85	2.00	3.60	5.61	1.07	1.00	1.41	1.1	17	19.9	17.8
6	5.18	23.2	3.65	7.28	3.00	1.00	.93	1.24	*6.6	12	77.0	14.4
7	3.45	24.1	3.90	6.17	2.48	.93	123	1.00	3.5	9.0	71.0	20.2
8	4.80	13.1	4.07	3.75	2.36	.93	13.3	.86	1.3	6.0	18.7	18.3
9	21.7	7.85	8.05	3.40	1.90	.86	4.67	1.90	1.1	4.5	75.8	22.9
10	24.3	6.67	26.2	4.01	1.80	1.07	3.00	1.41	1.0	3.8	30.8	135
11	13.0	5.60	3.45	2.75	1.60	1.15	2.48	.93	1.0	3.0	43.4	23.6
12	26.6	5.20	5.38	2.36	1.50	1.15	2.12	.73	1.0	3.0	142	12.6
13	12.5	29.1	14.4	2.12	1.41	1.15	1.69	.61	1.0	14	30.9	10.2
14	8.35	16.9	3.75	2.00	1.41	5.40	1.50	.46	140	75	238	8.55
15	4.80	11.5	*2.62	1.90	1.41	58.1	1.32	.42	150	*664	69.0	7.85
16	3.75	6.91	24.5	1.80	1.50	6.67	15.2	.34	110	79.1	75.4	7.61
17	3.45	5.80	26.0	1.98	1.50	7.06	8.53	.23	65	67.7	74.3	14.9
18	5.41	5.20	8.65	2.90	1.41	5.73	*2.48	.20	160	36.8	30.9	12.2
19	15.5	4.60	3.91	66.4	1.32	2.12	1.60	.17	22	31.9	22.3	29.2
20	4.80	4.25	3.31	28.3	1.50	1.90	1.50	.12	11	24.0	20.3	56.7
21	3.91	3.75	3.78	6.60	1.32	1.50	1.79	.10	20	22.3	39.6	83.1
22	3.00	3.75	3.75	*3.91	1.24	1.69	7.86	.02	80	17.1	19.8	49.2
23	48.9	3.45	3.00	3.16	1.32	1.60	5.09	0	22	28.7	16.0	18.8
24	8.84	3.16	8.87	2.62	1.41	1.63	5.60	0	13	45.4	13.1	23.9
25	6.84	3.00	3.45	2.36	1.32	6.52	4.08	4.0	6.0	*36.5	11.5	17.1
26	7.61	5.09	12.2	2.23	1.60	4.11	3.00	2.0	70	94.8	10.8	13.9
27	5.20	5.00	7.87	2.12	1.60	1.80	2.62	1.1	18	77.2	13.5	19.1
28	3.91	3.60	4.80	4.95	1.32	1.24	2.36	1.1	12	81.2	9.85	12.2
29	3.60	2.90	5.00	9.80	1.24	1.00	2.12	------	34	39.9	8.88	17.3
30	5.44	2.90	3.31	3.00	5.25	.93	1.90	------	9.0	26.6	13.1	29.2
31	12.8	2.48	------	2.12	------	.93	71.7	------	8.0	------	8.55	------
TOTAL	330.80	383.81	210.14	199.20	68.59	129.62	296.09	47.80	982.2	1,746.5	1,299.08	737.10
MEAN												
MGD	10.7	12.4	7.00	6.43	2.29	4.18	9.55	1.71	31.7	58.2	41.9	24.6
CFS	16.5	19.2	10.8	9.94	3.54	6.47	14.8	2.65	49.0	90.0	64.8	38.0
AC-FT	1,020	1,180	645	611	210	398	909	147	3,010	5,360	3,990	2,260

CALENDAR YEAR	1962:	MAX	159	MIN	0.86	MEAN MGD	90.0	MEAN CFS	139	AC-FT	10,080
FISCAL YEAR	1962-63:	MAX	664	MIN	0	MEAN MGD	17.6	MEAN CFS	27.2	AC-FT	19,740

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-15	1400	11.33	3,530	5,460	6-10	0530	5.49	852	1,320
5-14	1530	8.24	1,970	3,050					

* Discharge measurement made on this day.
Note.--No gage-height record Feb. 25 to Apr. 14.

2085. Right Branch of South Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'00", long 157°59'06", on left bank 500 ft below spillway of Ku Tree Reservoir, 1 mile above mouth, and 3 miles east of Wahiawa Post Office.

Drainage area.--0.86 sq mi.

Records available.--August 1957 to June 1963.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 980 ft (from topographic map).

Average discharge.--5 years (1958-63), 1.03 mgd (1.59 cfs).

Extremes.--Maximum discharge during year, 880 mgd (1,360 cfs) Apr. 15 (gage height, 6.00 ft), from rating curve extended above 110 mgd; no flow Dec. 15, 18.

1957-63: Maximum discharge, that of Apr. 15, 1963; no flow at times.

Remarks.--Records fair. Diversion from South Fork Kaukonahua Stream into Ku Tree Reservoir, above station, then to Schofield Barracks for domestic use.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used July 10 to Aug. 1, Aug. 15 to Sept. 11, May 22 to June 5)

0.02	0	1.3	4.60
.1	.02	1.6	7.87
.2	.09	2.0	14.5
.3	.20	2.5	28.0
.5	.51	3.0	50.0
.7	1.00	3.5	87.0
.9	1.85	4.0	147

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.07	*6.26	0.03	0.07	0.06	0.04	0.01	1.82	0.20	0.21	0.66	0.01
2	.08	3.49	.01	.06	.06	.01	.01	.28	.09	8.18	.08	.03
3	.08	.78	.01	1.15	.07	.01	.01	.11	.03	24.5	.18	.02
4	.08	1.02	.01	.57	.09	*.01	.01	.08	.02	15.3	.14	.02
5	1.26	.34	.02	.18	.09	.01	.01	.08	.03	2.70	.06	*.02
6	.23	1.76	.03	3.29	.08	.01	.01	.08	*.02	1.31	.05	.07
7	.08	2.09	.01	1.13	.08	.01	.95	.07	.01	.83	.06	.04
8	.90	.56	.03	.44	.08	.01	.08	.08	.01	1.22	.03	.04
9	2.33	.28	.02	.67	.08	.01	.05	.12	.01	.67	.20	.04
10	5.16	.15	.01	.95	.09	.01	.04	.11	.01	.67	.04	.16
11	1.80	.09	*.01	.17	.08	.02	.04	.11	.01	.53	.03	.03
12	1.02	.09	.03	.05	.08	.01	.03	.10	.01	.55	.15	.03
13	.62	2.11	.03	.03	.01	.01	.03	.09	.03	3.07	.04	.03
14	.33	2.48	.02	.02	.01	.01	.03	.09	.17	31.8	1.28	.03
15	.11	1.41	.03	.01	.03	0	.03	.09	.14	*109	.28	.03
16	.01	.12	.04	.01	.03	.01	.25	.08	.03	9.69	.34	.04
17	.01	.09	.04	.01	.01	.01	.08	.09	.01	4.68	.44	.05
18	.01	.06	.07	.07	.02	0	.06	.09	.30	.13	.44	.06
19	.01	.03	.09	.81	.06	.01	.05	.09	.19	.08	.39	.19
20	.04	.03	.12	.16	.02	.01	.04	.09	.17	.14	.37	.48
21	.01	.02	.08	.30	.02	.01	.04	.10	.30	.13	.22	.50
22	.01	.01	.06	.13	.02	.01	.15	.11	.32	.08	.06	.21
23	.02	.02	.10	*.07	.01	.01	*.07	.12	.50	.22	.05	.11
24	.03	.01	.06	.05	.01	.02	.10	.08	.11	.57	.05	.04
25	.04	.02	.05	.07	.01	.13	.07	.06	.11	.23	.05	.04
26	.04	.03	.41	.06	.02	.01	.08	.07	13.6	.27	.04	.03
27	.05	.02	.37	.07	.03	.01	.07	.08	4.07	.20	.04	.04
28	.03	.02	.19	.07	.02	.01	.06	.08	1.31	.10	.03	.07
29	.04	.03	.23	.06	.02	.01	.06	------	10.4	.08	.03	.08
30	.05	.03	.09	.04	.04	.01	.08	------	.83	.11	.02	.24
31	.09	.03	------	.07	------	.01	10.9	------	.56	------	.02	------
TOTAL	14.64	23.48	2.30	10.84	1.33	0.46	13.50	4.45	33.60	217.25	5.67	2.78
MEAN												
MGD	0.472	0.757	0.077	0.350	0.044	0.015	0.435	0.159	1.08	7.24	0.189	0.093
CFS	0.731	1.17	0.119	0.541	0.069	0.023	0.674	0.246	1.68	11.2	0.293	0.143
AC-FT	45	72	7.1	33	4.1	1.4	41	14	103	667	18	8.5

CALENDAR YEAR 1962: MAX 74.4 MIN 0 MEAN MGD 0.736 MEAN CFS 1.14 AC-FT 825
FISCAL YEAR 1962-63: MAX 109 MIN 0 MEAN MGD 0.905 MEAN CFS 1.40 AC-FT 1,010

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-15	1300	6.00	880	1,360

* Discharge measurement made on this day.

2109. Poamoho tunnel near Wahiawa

Location.--Lat 21°31'10", long 157°58'50", on left bank 5 ft downstream from tunnel outlet and 3.5 miles northeast of Wahiawa Post Office.

Records available.--July 1958 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (from topographic map).

Average discharge.--5 years, 3.61 mgd (5.59 cfs).

Extremes.--1958-63: Maximum daily discharge, 128 mgd (198 cfs) Apr. 15, 1963; no flow at times each year.

Remarks.--Records good except those for period of no gage-height record, which are fair. Water from Poamoho Stream basin is diverted by Poamoho tunnel to Kaukonahua Stream basin.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.55	a6.3	0	0	0	0	0	4.29	5.24	3.65	14.3	6.27
2	.34	*a1.4	.11	0	0	0	0	1.60	.04	26.5	6.80	4.48
3	.90	.16	.03	1.04	0	0	0	.96	0	49.6	10.6	7.52
4	.66	1.13	0	1.98	0	0	0	.77	0	33.7	8.64	9.17
5	2.91	.34	0	3.03	0	*0	0	.70	0	11.6	6.59	6.20
6	.65	.03	0	2.11	0	0	0	.60	1.95	8.10	14.4	3.40
7	.40	2.08	0	.58	0	0	56.5	.55	.07	4.21	16.8	3.87
8	.37	.05	0	.30	0	0	3.14	.50	0	*1.24	5.32	3.40
9	1.25	.02	0	.22	0	0	*.43	.52	0	.71	13.5	15.2
10	.85	.02	*3.65	.30	0	0	.02	.50	0	.29	7.73	32.9
11	4.65	.04	.16	.26	0	0	.61	.37	0	1.23	15.2	5.51
12	19.7	.02	.03	.13	0	0	.50	.33	0	.14	25.2	3.70
13	2.93	2.67	.07	.07	0	0	.37	.30	0	11.4	6.80	3.11
14	8.68	1.26	0	.02	0	2.01	.33	.29	28.3	49.8	53.4	2.84
15	1.68	1.47	0	0	6.56	21.5	.27	.27	61.6	128	14.4	2.93
16	.85	.30	3.73	0	0	.73	15.0	.24	47.7	45.4	9.66	2.48
17	.81	.07	11.5	*0	0	1.32	2.52	.23	17.6	73.7	16.4	3.52
18	1.68	.02	1.42	0	.11	.35	.73	.24	44.7	30.3	9.85	3.58
19	1.49	.01	.17	31.1	6.46	0	.50	.29	6.17	21.3	6.50	5.41
20	.62	0	.01	2.14	0	0	.45	.31	2.47	22.2	6.20	9.18
21	.50	0	0	.02	0	.43	.28	.23	3.28	13.7	10.1	13.2
22	.37	0	0	.01	0	.60	8.94	.21	23.0	9.52	6.10	14.3
23	9.11	0	0	0	0	0	2.20	.19	8.37	10.2	4.62	4.79
24	1.25	0	.08	0	0	0	2.74	.19	.65	8.50	4.10	4.00
25	.22	0	.01	0	0	3.03	.69	*2.14	.21	10.0	3.80	5.75
26	a.1	0	.03	0	0	0	.53	.45	47.1	40.8	3.60	8.13
27	a.1	0	.18	0	0	0	1.01	.26	15.4	27.0	*6.98	4.27
28	a.1	0	0	1.89	0	0	.47	.69	7.18	13.5	4.03	3.11
29	a.1	0	0	.86	0	0	.57	------	41.8	7.70	4.18	3.37
30	a.1	0	0	0	0	.25	.45	------	5.83	34.0	20.0	5.03
31	a.2	0	------	0	------	.14	36.4	------	5.90	------	6.07	------
TOTAL	64.12	17.39	21.18	46.06	13.13	30.36	135.65	17.62	374.56	697.99	343.87	200.62
MEAN												
MGD	2.07	0.561	0.706	1.49	0.438	0.979	4.38	0.629	12.1	23.3	11.1	6.69
CFS	3.20	0.868	1.09	2.30	0.677	1.52	6.77	0.972	18.7	36.0	17.2	10.3
AC-FT	197	53	65	141	40	93	416	54	1,150	2,140	1,060	616

CALENDAR YEAR	1962:	MAX	70.3	MIN	0	MEAN MGD	2.30	MEAN CFS	3.56	AC-FT	2,570
FISCAL YEAR	1962-63:	MAX	128	MIN	0	MEAN MGD	5.38	MEAN CFS	8.32	AC-FT	6,020

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

2110. Poamoho Stream near Wahiawa

Location.--lat 21°31'25", long 157°58'55", on left bank 75 ft downstream from concrete diversion dam, 3.5 miles northeast of Wahiawa, and 9.5 miles north of Waipahu.

Drainage area.--1.79 sq mi.

Records available.--January 1947 to June 1963.

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

Average discharge.--16 years, 2.46 mgd (3.81 cfs).

Extremes.--Maximum discharge during year, 1,440 mgd (2,230 cfs) Apr. 15 (gage height, 8.24 ft), from rating curve extended above 49 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Feb. 21-28, June 6, 7, 12-16.

1947-63: Maximum discharge, that of Apr. 15, 1963; no flow at times.

Remarks.--Records good. Poamoho tunnel (see preceding page) diverts from Poamoho Stream, 175 ft above station, into North Fork Kaukonahua Stream.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 7-9)

0.01	0	0.8	5.75
.1	.04	1.0	10.0
.2	.19	1.2	16.2
.3	.47	1.5	31.5
.4	.99	2.0	74.0
.5	1.77	2.5	140
.6	2.83	3.0	235

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.13	2.13	0.17	0.17	0.30	1.38	0.85	0.15	3.18	3.85	1.11	0.08
2	.13	*2.15	.25	.13	.23	1.77	.51	.13	1.98	4.15	.99	.02
3	.15	1.69	.30	.36	.21	.69	.70	.11	.55	4.60	.99	.09
4	.15	1.25	.21	.33	1.69	.33	.64	.07	.28	4.60	.85	.10
5	.13	1.33	.13	.23	1.04	*.27	.39	.07	.25	3.97	.79	.06
6	.13	1.18	.15	.21	.92	.21	.33	.05	1.92	3.85	1.11	.01
7	.15	1.25	.23	.17	.69	.23	1.59	.05	1.13	3.85	1.11	.01
8	.17	1.18	.30	.15	.74	.23	1.25	.05	.36	*3.70	.74	.02
9	.19	.85	.28	.15	.36	.17	*1.11	.03	.28	3.70	.92	.15
10	.19	.74	*.55	.15	.28	.21	.99	.03	.21	3.55	.99	.17
11	.23	.79	.55	.15	.23	.59	.44	.02	.13	3.55	1.04	.03
12	.28	.64	.47	.13	.19	.30	.15	.03	.11	3.30	1.11	.01
13	.25	.64	.47	.13	.17	.19	.11	.03	.10	3.45	.79	.01
14	.25	.64	.36	.11	.15	1.72	.11	.03	27.1	5.00	35.1	.01
15	.23	.69	.17	.10	3.46	3.05	.10	.03	46.2	150	.38	.01
16	.21	.69	.28	.07	1.74	2.35	.11	.02	22.8	1.25	.08	.01
17	.21	.64	.59	*.07	1.59	1.41	.08	.02	10.3	1.58	.80	.04
18	.23	.55	.64	.42	2.51	1.85	.07	.02	81.1	1.25	.30	.03
19	.25	.47	.59	4.13	3.50	1.33	.07	.02	3.97	1.18	.08	.06
20	.25	.39	.47	6.35	2.45	1.18	.06	.02	3.55	1.18	.08	.09
21	.25	.33	.33	1.91	1.04	1.55	.17	.01	3.30	1.11	.37	.09
22	.25	.30	.28	.92	.64	2.94	.36	.01	5.00	.79	.08	.17
23	.28	.28	.25	.55	.64	.85	1.01	.01	4.60	.85	.05	.06
24	.28	.25	.43	.43	.47	.90	.79	.01	4.15	.79	.05	.03
25	.70	.23	.39	.33	.33	3.70	.74	*.01	3.85	.79	.04	.04
26	.74	.25	.36	.30	.36	2.05	.59	.01	6.34	2.45	.04	.10
27	.64	.28	.47	.23	.33	.85	.36	.01	4.73	1.11	*.30	.05
28	.97	.36	.36	1.82	.25	.59	.25	.15	4.26	.92	.03	.03
29	.93	.28	.28	3.20	.28	.51	.23	------	4.73	.99	.02	.03
30	.82	.23	.33	.79	1.04	1.03	.19	------	4.15	1.18	.40	.06
31	.79	.21	------	.43	------	2.05	.23	------	3.85	------	.05	------
TOTAL	10.56	22.88	10.64	24.62	27.83	36.48	14.58	1.20	254.46	222.54	50.79	1.67
MEAN												
MGD	0.341	0.738	0.355	0.794	0.928	1.18	0.470	0.043	8.21	7.42	1.64	0.056
CFS	0.527	1.14	0.549	1.23	1.44	1.82	0.728	0.066	12.7	11.5	2.53	0.086
AC-FT	32	70	33	76	85	112	45	3.7	781	683	156	5.1

CALENDAR YEAR	1962:	MAX	58.7	MIN	0.03	MEAN MGD	1.24	MEAN CFS	1.92	AC-FT	1,390
FISCAL YEAR 1962-63		MAX	150	MIN	0.01	MEAN MGD	1.86	MEAN CFS	2.88	AC-FT	2,080

* Discharge measurement made on this day.

2116. Makaha Stream near Makaha

Location.--Lat 21°30'18", long 158°10'58", on right bank 1.5 miles northeast of Kaneaki Heiau and 3.4 miles northeast of Makaha.

Drainage area.--2.13 sq mi.

Records available.--July 1959 to June 1963.

Gage.--Water-stage recorder and concrete-masonry control. Datum of gage is 938.64 ft above mean sea level (Waianae Plantation bench mark).

Extremes.--Maximum discharge during year, 364 mgd (563 cfs) Jan. 31 (gage height, 4.67 ft), from rating curve extended above 32 mgd as explained below; no flow Sept. 4-8, Oct. 16.

1959-63: Maximum discharge, 756 mgd (1,170 cfs) Mar. 13, 1962 (gage height, 6.50 ft, from floodmark), from rating curve extended above 32 mgd on basis of slope-area measurement of peak flow; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. No diversion above station. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.04	0	1.6	2.58
1.1	.02	1.7	4.00
1.2	.11	1.9	8.20
1.3	.35	2.1	15.0
1.4	.80	2.4	30.0
1.5	1.54	2.8	62.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.18	0.15	0.01	0.02	0.21	0.01	0.46	13.0	14.3	a3.5	1.20	1.12
2	.14	.29	.01	.02	.16	.01	.38	5.26	6.79	50.7	1.12	1.06
3	.12	*.24	.01	.02	.14	.01	.32	3.40	3.86	53.4	1.06	1.00
4	.11	.18	0	.02	.11	.01	.29	2.95	2.95	a45	1.28	*1.00
5	.09	.14	0	.02	.11	.01	.26	2.58	2.45	a20	1.28	.92
6	.09	.11	0	.01	.11	*.01	.28	2.96	3.09	a10	1.00	.86
7	.09	.08	0	.01	.11	.01	*47.9	3.70	*2.84	a8.0	1.70	.80
8	.09	.07	0	.01	.08	.01	6.85	2.58	1.90	a7.0	1.06	.75
9	.09	.06	.77	.01	.08	.02	4.00	3.35	1.81	a6.0	1.53	.75
10	.12	.06	.38	.01	.07	2.15	3.56	2.33	1.70	*5.17	1.06	.70
11	.18	.05	.21	.01	.07	.61	3.86	1.81	1.54	4.20	.86	2.04
12	.18	.05	.21	.01	.06	.29	2.33	1.70	1.45	3.40	1.00	1.12
13	.25	.05	.16	.01	.05	1.88	1.45	1.61	1.28	10.1	.80	.80
14	.24	.04	.11	.01	.05	1.35	1.36	1.45	1.00	8.86	14.6	.70
15	.18	.03	.09	.01	.04	.50	1.36	1.36	1.22	20.8	6.80	.65
16	.12	.02	.09	0	.04	.32	16.1	1.28	1.54	9.79	14.8	.55
17	.09	.02	*2.48	.01	.03	6.38	*5.55	6.74	1.12	6.63	7.71	.50
18	.08	.02	.86	.02	.03	2.32	2.95	9.47	7.88	5.17	4.39	.50
19	.07	.02	.35	13.1	.03	1.52	1.61	2.22	2.33	4.00	3.28	.55
20	.06	.02	.24	3.62	.03	1.00	2.51	2.10	1.61	3.53	2.58	.97
21	.05	.02	.18	.92	.02	1.09	1.54	2.00	1.28	3.09	2.45	.96
22	.05	.02	.14	.94	.02	.80	5.35	1.90	1.20	2.58	2.10	1.20
23	.05	.02	.09	.89	.02	.60	3.28	1.70	1.06	2.33	1.70	.86
24	.05	.02	.08	*.55	.02	.95	4.68	4.23	1.00	2.10	1.45	.75
25	.05	.01	.07	.42	.01	4.76	2.72	3.02	1.20	1.81	1.36	.70
26	.04	.01	.06	.26	.01	2.22	4.52	1.90	17.4	1.90	1.20	.60
27	.04	.01	.05	.21	.01	1.45	3.53	1.70	a15	1.81	2.22	.50
28	.04	.01	.04	.76	.01	1.12	3.00	7.57	a5.0	1.45	1.81	.46
29	.03	.01	.04	.70	.01	1.00	3.09	------	a6.0	1.28	2.10	.46
30	.02	.01	.03	.38	.01	.75	2.27	------	a4.0	1.20	1.81	.46
31	.02	.01	------	.29	------	.55	32.3	------	a4.5	------	1.28	------
TOTAL	3.04	1.85	6.75	23.27	1.75	33.71	169.66	95.87	120.30	304.80	88.59	24.29
MEAN												
MGD	0.098	0.060	0.225	0.751	0.058	1.09	5.47	3.42	3.88	10.2	2.86	0.810
CFS	0.152	0.092	0.348	1.16	0.090	1.68	8.47	5.30	6.00	15.8	4.42	1.25
AC-FT	9.3	5.7	21	71	5.4	103	521	294	369	935	272	75

CALENDAR YEAR	1962:	MAX	80	MIN	0	MEAN MGD	1.38	MEAN CFS	2.14	AC-FT	1,550
FISCAL YEAR 1962-63:		MAX	53.4	MIN	0	MEAN MGD	2.39	MEAN CFS	3.70	AC-FT	2,680

* Discharge measurement made on this day.
a No gage-height record.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0730	4.02	234	362	4-15	1530	3.80	200	309
1-31	1600	4.67	364	563	5-14	1330	3.90	218	337
3-18	0530	3.21	112	173	5-16	1300	3.27	124	192
4- 2	0630	4.18	266	412					

2118. Kaupuni Stream at altitude 374 ft, near Waianae
(Formerly published as Kaupuni Stream at altitude 360 ft, near Waianae)

Location.--Lat 21°28'20", long 158°09'26", on right bank at diversion dam, 2.6 miles northeast of Waianae Cemetery, and 2.8 miles northeast of junction of Waianae Valley Road and Farrington Highway.

Drainage area.--3.27 sq mi.

Records available.--May 1960 to June 1963. Prior to July 1962, published as "at altitude 360 ft, near Waianae."

Gage.--Water-stage recorder and concrete-masonry control. Datum of gage is 374 ft above mean sea level (by stadia survey).

Extremes.--Maximum discharge during year, 310 mgd (480 cfs) May 14 (gage height, 3.73 ft), from rating curve extended above 40 mgd on basis of slope-area measurement at gage height 4.06 ft; no flow most of year.

1960-63: Maximum discharge, 446 mgd (690 cfs) Mar. 14, 1962 (gage height, 4.06 ft), from rating curve extended above 40 mgd on basis of slope-area measurement of peak flow; no flow at times each year.

Remarks.--Records good except those for period of no gage-height record, which are poor. Records include diversion by 12-inch pipe at station for irrigation (none during 1963 fiscal year). Several water-development tunnels above station may affect flow.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.06	0	1.7	3.50
1.1	.02	1.8	5.15
1.2	.10	1.9	7.40
1.3	.28	2.1	14.0
1.4	.64	2.3	24.5
1.5	1.25	2.6	53.0
1.6	2.10		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1				0			0	6.61	*3.03	2.10	0.74	0.69
2				0			0	3.37	1.02	36.6	.72	.69
3				0			0	1.55	.39	52.4	.70	.64
4				0			0	.96	.16	38.6	.76	.69
5				0			0	.69	.07	10.9	.76	.64
6				0			0	.59	.33	8.33	.66	.47
7				0			*29.9	.51	.09	5.83	.80	.47
8				0			*1.08	.22	.07	4.49	.76	.55
9				0			.01	.47	.07	*4.00	.78	.51
10				0		(*)	0	.33	.07	3.4	.66	.47
11			(*)	0			0	.22	.06	2.8	.54	.59
12				0			0	.12	.05	2.3	.62	.69
13	(*)			0			0	.07	.05	9.0	.50	.69
14				0			0	.04	.05	8.4	7.6	.69
15				0			0	.03	.05	20	5.0	.69
16				0			6.53	.01	.05	8.0	7.4	.64
17				0			1.54	.30	.04	5.4	4.8	.55
18				*0			*.05	.28	2.85	3.5	3.0	.51
19				1.68			0	.09	.20	2.2	1.9	.55
20				.01			0	.06	.09	1.9	1.5	.64
21				0			0	.03	.09	1.7	1.4	.64
22				0			0	.03	.06	1.5	1.2	.64
23				0			.01	.02	0	1.4	1.1	.59
24				0			.49	.02	0	1.3	.96	.51
25				0			.16	.01	0	1.2	.88	.51
26				0			.25	*.01	*19.6	1.2	.76	.51
27				0			.49	0	13.1	1.1	1.3	.55
28				0	(*)		.08	.09	2.89	.90	*.85	.55
29				0			.15	------	6.09	.76	.85	.51
30				0			0	------	2.75	.76	.80	.47
31			--------	0	---------		20.4	------	2.90	------	.80	------
TOTAL	0	0	0	1.69	0	0	61.14	16.93	56.27	241.97	51.10	17.54
MEAN												
MGD	0	0	0	0.055	0	0	1.97	0.605	1.82	8.06	1.65	0.585
CFS	0	0	0	0.084	0	0	3.05	0.935	2.81	12.5	2.55	0.904
AC-FT	0	0	0	5.2	0	0	188	52	173	743	157	54

CALENDAR YEAR 1962:	MAX	58.0	MIN	0	MEAN MGD	0.206	MEAN CFS	0.319	AC-FT	231
FISCAL YEAR 1962-63	MAX	52.4	MIN	0	MEAN MGD	1.22	MEAN CFS	1.89	AC-FT	1,370

Peak discharge (base, 160 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0630	3.37	192	297	4- 3	2300	3.62	272	421
1-31	1600	3.32	180	279	5-14	About 1300	3.73	310	480
3-26	1000	3.29	172	266					

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Apr. 10 to May 27.

2118.5 Puea mauka ditch near Waianae

Location.--lat 21°28'12", long 158°09'43", on left bank 2.3 miles northeast of Waianae School and 2.8 miles north of Lualualei Naval Radio Station.

Records available.--June 1960 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 360 ft (from topographic map).

Extremes.--1960-63: Maximum daily discharge, 1.4 mgd (2.2 cfs) Oct. 22, 1960; minimum daily, 0.11 mgd (0.17 cfs) Aug. 21, 1961.

Remarks.--Records good. Water is used for irrigation of truck farms in Waianae Valley. Continuous records of rainfall are obtained at station.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.18	0.26	0.29	0.18	0.29	0.29	0.26	0.26	0.26	0.18	0.39	0.43
2	.18	.18	.23	.20	.29	.26	.23	.26	.20	.26	.43	.43
3	.15	.20	.26	.20	.32	.26	.26	.23	.20	.46	.44	.43
4	.15	.29	.20	.20	.29	.26	.26	.23	.20	.30	.51	.43
5	.18	.26	.20	.20	.32	.23	.26	.36	.23	.26	.43	.42
6	.18	.29	.20	.23	.32	.32	.26	.29	.29	.23	.43	.39
7	.18	.29	.18	.20	.36	.39	.38	.29	.29	.23	.47	.39
8	.26	.26	.29	.20	.36	.43	.15	.36	.29	.26	.47	.43
9	.20	.26	.24	.18	.26	.39	.26	.36	.32	*.28	.47	.43
10	.15	.23	.18	.20	.29	.26	.32	.29	.32	.29	.47	.36
11	.18	.32	*.23	.26	.29	.26	.29	.29	.32	.26	.43	.36
12	.20	.26	.20	.23	.26	.36	.32	.32	.26	.26	.43	.47
13	*.20	.23	.20	.23	.20	.29	.36	.36	.29	.26	.43	.47
14	.23	.18	.18	.29	.23	.26	.36	.36	.32	.31	.47	.43
15	.23	.15	.23	.23	.29	.29	.39	.36	.29	.42	.51	.43
16	.23	.18	.23	.18	.23	.26	.36	.36	.26	.29	.47	.39
17	.23	.18	.23	.26	.29	.26	*.29	.36	.26	.29	.43	.36
18	.20	.23	.26	*.35	.26	.23	.29	.29	.27	.32	.43	.39
19	.20	.29	.29	.32	.23	.26	.32	.32	.20	.32	.39	.32
20	.20	.20	.29	.15	.29	.26	.32	.36	.23	.32	.39	.41
21	.23	.15	.29	.18	.26	.26	.29	.29	.23	.32	.39	.32
22	.26	.26	.26	.32	.29	.23	.26	.29	.29	.29	.39	.39
23	.20	.18	.26	.29	.26	.26	.23	.32	.29	.29	.39	.36
24	.28	.15	.23	.39	.26	.26	.20	.32	.26	.32	.39	.36
25	.18	.26	.20	.36	.23	.20	.23	.29	.23	.32	.47	.36
26	.23	.26	.23	.36	.23	.23	.29	*.32	.52	.32	.47	.36
27	.23	.20	.26	.32	.23	.26	.29	.29	.43	.39	.47	.32
28	.20	.23	.20	.39	*.29	.26	.26	.32	.43	.36	*.43	.32
29	.15	.20	.20	.29	.26	.26	.23	------	.43	.36	.39	.39
30	.13	.26	.20	.32	.26	.26	.26	------	.29	.39	.43	.39
31	.20	.23	------	.32	------	.23	.26	------	.18	------	.39	------
TOTAL	6.20	7.12	6.94	8.13	8.24	8.53	8.74	8.75	8.88	9.16	13.50	11.74
MEAN												
MGD	0.200	0.230	0.231	0.262	0.275	0.275	0.282	0.313	0.286	0.305	0.435	0.391
CFS	0.309	0.355	0.358	0.406	0.425	0.426	0.436	0.484	0.443	0.472	0.674	0.605
AC-FT	19	22	21	25	25	26	27	27	27	28	41	36

Calendar Year 1962:	Max	0.55	Min	0.13	Mean mgd	0.252	Mean cfs	0.390	Ac-ft	280
Fiscal Year 1962-63:	Max	0.52	Min	0.13	Mean mgd	0.290	Mean cfs	0.449	Ac-ft	324

* Discharge measurement made on this day.

2128. Kipapa Stream near Wahiawa

Location.--Lat 21°28'15", long 157°57'50", on left bank 1,700 ft downstream from Forest Reserve Boundary, 4.9 miles southeast of Wahiawa Post Office, and 6.3 miles northeast of Waipahu.

Drainage area.--4.29 sq mi.

Records available.--January 1957 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 690 ft (from topographic map).

Average discharge.--6 years, 5.89 mgd (9.11 cfs).

Extremes.--Maximum discharge during year, 3,670 mgd (5,680 cfs) May 14 (gage height, 12.29 ft), from rating curve extended above 190 mgd on basis of slope-area measurements at gage heights 7.96 and 12.29 ft; no flow for many days.

1957-63: Maximum discharge, that of May 14, 1963; no flow at times.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

2.03	0	3.0	10.8
2.1	.06	3.2	18.4
2.2	.17	3.5	35.0
2.3	.42	4.0	76.0
2.4	.87	4.5	135
2.5	1.55	5.0	210
2.6	2.55	6.0	390
2.8	5.70	7.0	630

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.50	30.3	0.12	0.21	0.15	0.76	0.30	9.69	28.9	3.95	11.1	0.90
2	.23	10.2	.14	.13	.09	.46	.15	3.53	4.32	34.4	4.65	.80
3	4.43	3.16	.14	.34	.06	.08	.11	2.05	1.53	70.6	14.2	*.70
4	1.52	1.86	.08	.54	.16	0	.37	1.34	*.74	42.1	12.5	5.0
5	8.28	1.85	0	.25	1.58	0	.16	.99	.62	11.5	6.70	8.0
6	1.51	*1.55	.04	.21	1.22	0	.12	.82	13.6	10.5	5.81	1.2
7	.62	3.59	.17	.27	.33	0	109	.72	1.85	7.40	16.9	1.0
8	.42	3.42	.14	.16	.30	0	11.5	.62	.67	4.48	4.48	.90
9	1.73	1.34	19.3	.10	.27	0	3.86	2.38	.42	*3.85	27.2	1.0
10	2.20	1.13	13.9	.11	.14	0	2.15	1.44	.33	3.95	7.67	3.0
11	1.41	.77	1.20	.14	.11	0	1.55	.54	.27	7.14	23.0	1.3
12	17.6	.54	1.08	.13	0	*0	1.13	.39	.21	3.95	49.9	.80
13	7.20	4.14	*1.34	.08	0	0	.82	.36	14.2	32.1	8.00	.60
14	2.58	2.04	.50	.03	0	17.1	.58	.46	19.0	88.3	*230	.54
15	1.56	1.41	.23	0	0	71.7	.46	.33	20.2	551	25	.50
16	.77	1.34	.33	0	0	6.75	16.6	.25	23.6	55.2	30	.45
17	.54	.82	35.8	0	0	11.2	5.00	.23	19.3	41.9	17	.42
18	.54	.58	4.28	.18	0	4.02	1.48	.99	39.9	20	10	.41
19	1.31	.39	1.27	7.56	0	1.34	.87	.82	7.31	14	3.5	.40
20	1.87	.30	.67	9.61	0	.82	.77	.42	4.53	10	2.0	10
21	1.01	.23	.46	1.24	0	.54	*.60	.23	3.47	12	1.7	15
22	.39	.19	.36	*.45	0	.54	7.26	.19	29.7	7.0	2.5	16
23	24.3	.17	.30	.23	0	.30	3.20	.15	12.5	5.0	1.3	8.0
24	3.78	.16	.50	.14	0	.25	3.29	.24	5.00	4.5	1.0	3.5
25	1.34	.15	.25	.11	0	4.30	2.45	1.76	3.53	4.0	.90	5.0
26	.77	.25	.30	.05	0	1.68	1.65	.50	47.9	46.0	.70	4.0
27	.54	.23	.36	0	0	.58	2.35	.23	24.0	39.5	.65	1.5
28	.46	.17	.33	14.0	0	.30	1.41	.17	9.25	25.8	.60	1.0
29	.77	.14	.43	6.30	0	.19	1.77	------	16.6	8.56	.55	.80
30	.46	.14	.42	.85	.01	.23	1.41	------	5.39	13.2	1.5	.60
31	1.06	.12	------	.27	------	.39	63.8	------	6.44	------	2.0	-------
TOTAL	91.70	72.67	84.44	43.69	4.42	123.53	246.17	31.84	365.28	1,181.88	523.01	93.32
MEAN												
MGD	2.96	2.34	2.81	1.41	0.147	3.98	7.94	1.14	11.8	39.4	16.9	3.11
CFS	4.58	3.63	4.35	2.18	0.228	6.16	12.3	1.76	18.2	61.0	26.1	4.81
AC-FT	281	223	259	134	14	379	755	98	1,120	3,630	1,610	286

CALENDAR YEAR 1962:	MAX	102	MIN	0	MEAN MGD	3.65	MEAN CFS	5.65	AC-FT	4,100
FISCAL YEAR 1962-63:	MAX	551	MIN	0	MEAN MGD	7.84	MEAN CFS	12.1	AC-FT	8,790

Peak discharge (base, 600 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-15	1230	11.57	2,960	4,580	5-14	1330	12.29	3,670	5,680

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Apr. 18-25, May 15 to June 30.

2130. Waikele Stream at Waipahu

Location.--Lat 21°23'09", long 158°00'48", on left bank 300 ft upstream from bridge on Farrington Highway, 0.3 mile south of Waipahu, and 2.5 miles west of Pearl City.

Drainage area.--45.7 sq mi (revised).

Records available.--June to October 1951, December 1951 to October 1959, July 1960 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1.37 ft above mean sea level, datum of 1929. Prior to July 1, 1960, at site 300 ft downstream at datum 1.30 ft higher.

Average discharge.--10 years (1952-59, 1960-63), 24.3 mgd (37.6 cfs).

Extremes.--Maximum discharge during year, 4,690 mgd (7,250 cfs) Apr. 15 (gage height, 9.65 ft), from rating curve extended above 460 mgd on basis of slope-area measurement of peak flow; minimum, 2.44 mgd (3.78 cfs) Sept. 28, 29.

1951-63: Maximum discharge, 8,790 mgd (13,600 cfs) Nov. 28, 1954 (gage height, 14.82 ft, site and datum then in use), from rating curve extended above 470 mgd on basis of slope-area measurement of peak flow; minimum, that of Sept. 28, 29, 1962.

Remarks.--Records good. Diversions above station for irrigation of sugar cane in Waipahu area.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 14				Apr. 15 to June 30			
1.6	3.40	2.8	60.0	2.0	11.3	3.2	145
1.8	6.60	3.0	95.0	2.3	23.0	3.5	250
2.0	11.3	4.0	475	2.6	42.0	4.0	460
2.2	18.5	5.0	940	2.9	82.0	6.0	1,450
2.5	34.0						

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	10.5	6.60	7.02	7.65	7.44	11.6	16.5	101	*43.7	32.8	49.7	26.0
2	7.44	15.5	10.3	*5.92	8.07	11.9	16.5	38.2	32.3	113	31.0	25.0
3	8.07	10.3	11.6	4.38	12.3	6.82	16.1	29.8	23.8	288	31.2	25.5
4	10.8	10.8	8.07	5.88	13.5	6.06	15.3	25.0	19.4	482	39.6	28.6
5	7.86	11.6	7.86	7.02	8.41	6.06	14.9	25.0	*17.3	121	43.1	28.6
6	7.86	8.07	7.02	6.38	8.28	6.06	14.9	22.1	22.5	67.5	31.0	25.5
7	9.22	6.60	6.42	5.25	7.65	6.42	*305	19.9	19.5	55.0	68.5	21.7
8	10.5	6.60	7.86	5.16	7.23	10.2	*71.4	18.5	14.5	50.0	29.2	25.0
9	7.86	7.23	9.48	6.06	9.06	12.6	30.4	19.9	14.5	42.8	40.1	24.5
10	7.65	7.44	15.5	5.34	13.5	7.83	20.3	22.6	14.5	43.7	41.7	60.4
11	7.44	10.0	7.44	4.52	12.9	5.88	18.1	19.4	14.9	48.6	29.2	*33.8
12	6.42	10.3	7.86	4.66	9.36	6.06	14.5	17.7	14.5	39.6	113	27.0
13	7.44	7.65	7.86	6.24	9.22	5.70	13.2	17.3	14.9	72.1	38.8	21.7
14	10.5	*7.44	7.23	7.44	8.28	6.42	12.6	16.9	48.8	294	473	15.3
15	11.6	8.49	7.86	6.60	8.28	40.3	*12.6	16.1	29.7	*1,430	128	13.5
16	7.44	8.28	9.22	5.52	8.28	19.1	39.8	15.7	56.0	334	95.7	13.5
17	6.24	8.70	13.6	5.70	10.8	8.74	39.0	15.7	38.9	175	107	13.9
18	6.24	8.28	14.9	9.78	12.9	7.83	19.4	16.1	*99.0	106	54.3	12.3
19	6.06	9.48	8.49	18.9	8.44	9.05	17.7	15.7	36.5	77.2	41.2	11.9
20	6.24	7.65	6.24	28.1	9.06	10.8	16.5	15.7	27.1	63.4	37.2	31.3
21	7.23	6.81	5.16	16.9	11.9	11.6	15.3	16.1	22.1	59.5	35.6	32.2
22	7.23	6.81	6.81	12.9	11.6	14.2	26.0	15.7	29.2	49.7	38.8	48.4
23	6.06	6.60	7.65	13.2	*7.76	14.5	24.0	13.9	38.3	*47.5	34.8	25.5
24	6.24	6.42	6.24	12.9	9.87	12.6	22.6	15.3	29.2	53.0	34.8	17.7
25	6.06	8.49	5.34	9.48	11.0	25.7	22.6	15.3	26.8	44.2	29.2	16.1
26	5.88	8.96	8.40	9.22	7.16	18.1	27.5	14.5	*191	64.7	28.6	22.5
27	6.24	7.02	6.42	13.9	4.80	15.7	29.2	13.9	82.9	124	30.4	16.5
28	6.81	7.02	6.60	14.5	5.34	15.7	23.0	13.5	15.7	77.2	31.6	15.7
29	8.49	7.23	6.81	14.0	6.71	16.1	22.6	------	86.3	50.8	28.6	13.9
30	6.60	7.02	12.3	10.8	6.42	16.1	22.1	------	41.0	43.5	30.4	13.9
31	6.42	6.60	------	8.07	------	16.1	191	------	38.9	------	31.6	------
TOTAL	236.64	255.99	253.56	292.37	275.52	381.83	1,150.6	606.5	1,203.7	4,549.8	1,876.9	707.4
MEAN												
MGD	7.63	8.26	8.45	9.43	9.18	12.3	37.1	21.7	38.8	152	60.5	23.6
CFS	11.8	12.8	13.1	14.6	14.2	19.1	57.4	33.5	60.1	235	93.7	36.5
AC-FT	726	786	778	897	846	1,170	3,530	1,860	3,690	13,960	5,760	2,170

CALENDAR YEAR 1962: MAX 491 MIN 4.38 MEAN MGD 15.3 MEAN CFS 23.7 AC-FT 17,080
FISCAL YEAR 1962-63: MAX 1,430 MIN 4.38 MEAN MGD 32.3 MEAN CFS 50.0 AC-FT 36,170

* Discharge measurement made on this day.

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-4	0300	5.45	1,160	1,790	5-14	1630	9.13	4,130	6,390
4-15	1900	9.65	4,690	7,250					

2140. 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. 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 1963.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 0.73 ft below mean sea level, datum of 1929.

Average discharge.--29 years, 11.3 mgd (17.5 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-63: Maximum daily discharge, 18.7 mgd (28.9 cfs) Feb. 27, 1949; minimum daily, 1.30 mgd (2.01 cfs) Sept. 13-18, Oct. 4, 1962.

Remarks.--Records good except those for period of no gage-height record, which are fair. Oahu Sugar Co. pump 9 diverts about 3 mgd at times for irrigation of sugar cane. Surface runoff from floods not included in figures of discharge.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	5.90	2.74	1.74	1.64	2.26	2.50	4.00	4.25	6.80	4.76	7.12	8.72
2	4.00	3.15	3.74	1.45	2.58	2.74	4.25	4.00	4.25	5.34	6.80	8.72
3	3.56	3.03	4.00	1.45	5.34	2.50	4.50	4.00	4.25	5.34	6.80	8.72
4	5.90	2.50	1.74	1.30	5.34	2.50	*3.74	4.00	4.00	5.34	6.80	8.40
5	3.89	2.50	1.45	1.45	3.50	2.50	3.74	4.25	4.00	5.34	6.80	8.08
6	4.11	*2.74	1.45	1.45	2.74	2.26	3.74	4.25	4.25	5.06	6.80	8.08
7	5.34	2.74	1.60	1.45	2.74	2.26	5.34	4.25	4.00	5.06	5.46	6.74
8	5.34	2.26	1.60	1.45	2.74	2.26	3.74	4.25	4.00	5.34	3.46	7.76
9	3.28	1.81	1.60	1.60	2.96	2.03	3.74	4.25	4.00	5.34	5.28	7.76
10	2.98	1.81	1.60	1.60	4.50	2.03	4.00	4.25	4.00	5.34	5.08	6.38
11	2.98	1.81	1.60	1.60	4.50	1.81	4.00	4.25	4.00	5.34	6.20	6.51
12	2.74	1.81	1.45	1.60	2.75	1.81	4.00	4.25	*4.00	5.34	6.20	6.71
13	2.50	2.26	1.30	1.60	2.03	1.60	4.00	4.25	4.25	5.34	5.29	6.46
14	2.50	2.26	1.30	1.60	1.81	1.60	4.00	4.25	3.94	5.34	6.80	6.44
15	3.08	2.26	1.30	1.81	2.03	1.60	4.00	4.50	3.42	6.20	a11.8	7.12
16	2.79	2.26	1.30	1.81	3.38	1.60	4.25	4.25	4.78	7.44	a14.7	7.12
17	2.26	2.26	1.30	1.81	4.78	1.81	4.25	4.25	5.06	7.44	a14.3	6.22
18	2.50	2.26	1.30	2.03	4.78	1.60	4.00	4.25	5.34	8.08	a14.3	6.11
19	2.50	2.26	1.45	3.55	2.18	1.81	4.00	4.25	5.34	8.40	a14.0	5.92
20	2.26	2.03	1.45	5.34	1.81	1.81	4.25	4.00	5.62	8.40	a14.0	6.22
21	2.26	2.03	1.45	5.06	*2.26	1.81	4.50	4.00	5.06	8.72	a13.4	6.45
22	2.26	2.03	1.45	5.34	4.78	4.00	4.50	4.00	4.78	8.72	a12.2	6.50
23	2.26	1.81	1.45	5.34	3.06	4.00	4.25	4.00	4.78	*8.40	a10.0	6.50
24	2.03	2.36	1.45	5.34	5.78	3.04	3.74	4.00	4.78	7.44	8.40	5.69
25	2.26	4.50	*1.60	5.34	7.44	4.00	4.00	4.00	4.78	7.44	8.08	*6.20
26	2.74	2.85	1.60	3.35	3.98	4.00	4.00	3.21	5.34	7.44	8.08	6.20
27	2.50	2.03	1.45	5.34	4.89	3.74	4.00	3.20	5.06	7.12	8.08	6.50
28	2.74	2.03	1.90	5.34	3.32	3.74	4.00	2.72	5.06	7.12	8.40	5.14
29	3.22	2.03	4.00	3.21	2.03	3.74	4.00	------	4.78	7.44	8.40	5.84
30	3.48	2.02	4.00	2.26	2.26	4.00	4.00	------	4.78	7.12	8.40	5.98
31	2.74	2.40	------	2.26	------	4.00	4.00	------	4.78	------	8.40	------
TOTAL	98.90	72.84	54.62	85.77	104.25	80.70	126.53	113.38	143.28	196.56	269.85	205.19
MEAN												
MGD	3.19	2.35	1.82	2.77	3.48	2.60	4.08	4.05	4.62	6.55	8.70	6.84
CFS	4.94	3.63	2.82	4.28	5.38	4.03	6.31	6.26	7.15	10.1	13.5	10.6
AC-FT	304	224	168	263	320	248	388	348	440	603	828	630

CALENDAR YEAR	1962:	MAX	10.0	MIN	1.30	MEAN MGD	4.96	MEAN CFS	7.67	AC-FT	5,560
FISCAL YEAR	1962-63:	MAX	14.7	MIN	1.30	MEAN MGD	4.25	MEAN CFS	6.58	AC-FT	4,760

* Discharge measurement made on this day.
a No gage-height record.

2160. Waiawa Stream near Pearl City

Location.--Lat 21°23'55", long 157°58'50", on left bank 100 ft upstream from bridge on Farrington Highway, 0.6 mile northwest of Pearl City, and 2.0 miles northeast of Waipahu.

Drainage area.--26.4 sq mi.

Records available.--June 1952 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1.81 ft above mean sea level, datum of 1929.

Average discharge.--11 years, 15.4 mgd (23.8 cfs)

Extremes.--Maximum discharge during year, 10,000 mgd (15,500 cfs) May 14 (gage height, 18.18 ft), from rating curve extended above 680 mgd as explained below; minimum, 2.70 mgd (4.18 cfs) Jan. 5, 6, Feb. 15.

1952-63: Maximum discharge, 10,900 mgd (16,900 cfs) Nov. 28, 1954 (gage height, 19.27 ft), from rating curve extended above 680 mgd on basis of slope-area measurement at gage height 17.1 ft; minimum, 1.67 mgd (2.58 cfs) June 8, 1957.

Remarks.--Records good. Occasional small diversions for irrigation above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.5	1.92	3.0	75.0
1.6	2.90	3.5	151
1.8	5.50	4.0	263
2.1	11.8	6.0	730
2.3	19.3	8.0	1,400
2.6	37.3		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	4.20	5.43	4.35	3.57	5.63	3.45	2.90	35.0	45.8	10.0	18.5	5.50
2	4.21	17.3	4.06	4.06	5.48	3.30	2.90	11.6	26.7	50.5	9.78	5.50
3	4.64	7.84	3.57	4.49	4.64	3.69	2.90	7.27	8.47	228	12.5	5.07
4	4.35	5.36	3.57	5.21	4.06	3.30	*2.90	5.50	5.25	262	18.6	10.7
5	3.93	5.07	3.69	5.50	4.20	3.20	2.80	4.78	*4.08	68.2	18.8	11.0
6	3.93	*5.21	3.93	5.21	4.91	3.45	2.90	4.06	38.9	42.6	9.55	7.51
7	3.93	5.50	4.24	6.08	5.23	3.93	426	3.69	11.1	43.9	57.9	6.73
8	3.57	6.19	4.35	5.07	4.64	3.93	74.2	3.57	5.84	19.9	13.6	6.36
9	3.69	6.70	4.78	5.07	4.20	3.80	21.7	3.57	4.35	*13.5	39.9	6.84
10	4.35	7.00	5.39	4.78	4.06	4.06	10.2	3.45	3.69	12.8	22.8	19.1
11	4.49	7.29	5.15	4.92	3.69	4.35	6.82	3.45	3.20	8.86	23.2	*9.08
12	12.1	6.53	5.44	5.36	3.57	4.20	5.21	3.30	3.10	10.0	142	5.21
13	15.8	6.70	5.21	5.07	4.06	4.20	4.35	3.20	3.00	67.4	29.7	4.06
14	7.63	5.84	5.80	5.07	4.49	7.21	3.80	3.10	56.5	404	1,140	3.69
15	6.88	6.23	5.76	5.36	4.78	198	3.69	2.80	35.9	1,050	126	3.45
16	5.67	5.67	5.50	5.07	5.26	17.6	15.0	2.90	70.2	197	47.8	3.20
17	4.92	6.41	16.6	5.50	4.06	10.5	27.7	2.90	43.3	99.2	81.9	3.10
18	5.07	6.73	14.6	7.25	3.45	12.1	8.33	2.90	63.3	54.2	34.7	3.10
19	4.92	6.26	5.50	6.97	4.18	6.83	5.50	2.90	27.9	31.7	18.5	3.10
20	4.92	5.99	5.95	6.72	3.80	6.31	4.49	2.90	13.9	24.0	12.8	25.0
21	5.21	5.07	5.50	5.36	*4.24	5.96	4.06	2.90	9.20	24.4	11.6	36.9
22	5.67	5.21	6.19	4.20	5.49	4.20	8.81	2.90	18.6	14.9	13.3	49.0
23	5.84	5.50	5.95	3.80	4.23	3.57	10.4	2.90	31.7	11.8	8.25	27.7
24	7.84	5.67	5.65	3.57	3.69	3.56	6.36	2.90	13.9	10.5	6.70	16.7
25	7.22	5.21	6.45	3.45	3.45	3.99	6.02	3.10	8.86	8.66	6.36	14.9
26	6.53	5.79	*6.15	3.97	3.80	4.92	5.97	3.20	169	49.2	5.36	15.0
27	6.02	5.65	6.26	3.80	4.35	3.69	6.36	3.10	102	89.7	5.07	6.70
28	5.21	5.96	6.35	3.57	4.72	3.20	5.36	3.22	43.0	46.4	4.78	5.07
29	4.92	5.82	4.64	20.5	3.69	3.00	4.78	------	34.9	20.0	4.49	4.35
30	4.92	5.18	3.69	5.21	3.30	2.90	4.35	------	19.7	14.9	10.5	3.80
31	4.49	4.64	------	5.21	------	2.90	46.5	------	12.2	------	13.8	------
TOTAL	177.07	195.95	174.27	168.97	127.35	349.35	743.26	137.06	938.14	2,988.22	1,968.74	327.42
MEAN												
MGD	5.71	6.32	5.81	5.45	4.31	11.3	24.0	4.90	30.3	99.6	63.5	10.9
CFS	8.84	9.78	8.99	8.43	6.67	17.4	37.1	7.57	46.8	154	98.2	16.9
AC-FT	543	601	535	519	397	1,070	2,280	421	2,880	9,170	6,040	1,000

CALENDAR YEAR 1962:	MAX	218	MIN	2.80	MEAN MGD	8.65	MEAN CFS	13.4	AC-FT	9,680
FISCAL YEAR 1962-63:	MAX	1,140	MIN	2.80	MEAN MGD	22.7	MEAN CFS	35.1	AC-FT	25,460

* Discharge measurement made on this day.

Peak discharge (base, 800 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0630	9.67	2,180	3,370	4-15	1830	14.16	5,500	8,510
3-26	1300	7.71	1,280	1,980	5-14	1530	18.18	10,000	15,500
4- 4	0230	6.75	945	1,460					

ISLAND OF OAHU

2190. Hawaiian Electric Co. tunnel at Waiau, near Pearl City

Location.--Lat 21°23'30", long 157°57'55", on right bank of ditch at Hawaiian Electric Co. Waiau powerplant, 20 ft downstream from tunnel portal, and 0.6 mile east of Pearl City.

Records available.--October 1939 to April 1942, July 1942 to December 1945, July 1952 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 2.91 ft above mean sea level, datum of 1929. Prior to July 1, 1952, at site 120 ft downstream at datum 2.27 ft lower.

Average discharge.--13 years (1940-41, 1944-45, 1952-63), 10.5 mgd (16.2 cfs).

Extremes.--1939-45, 1952-63: Maximum daily discharge, 17.3 mgd (26.8 cfs) Mar. 26, 27, 1940; minimum daily, 6.0 mgd (9.3 cfs) Aug. 3, 1941.

Remarks.--Records good. Water is used for cooling condensers of powerplant and afterwards for irrigation of sugarcane.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	10.5	10.0	9.79	9.57	9.68	9.24	10.1	11.4	11.1	11.1	11.1	11.1
2	10.5	10.0	9.79	9.57	9.68	9.35	10.1	11.4	11.0	11.4	11.1	11.1
3	10.3	10.0	9.79	9.57	9.79	9.35	10.1	11.5	11.0	11.4	11.1	11.1
4	10.5	10.0	9.68	9.57	9.79	9.35	10.1	11.5	11.1	11.2	11.1	11.1
5	10.3	10.0	9.57	9.46	9.68	9.35	10.1	11.5	*11.1	11.2	11.1	11.1
6	10.3	9.90	9.57	9.46	9.68	9.24	10.2	11.5	11.1	11.2	11.1	11.1
7	10.3	9.90	9.57	9.46	9.57	9.24	11.2	11.5	11.1	11.2	11.1	11.1
8	10.3	9.90	9.57	9.46	9.57	9.35	10.8	11.5	11.1	11.2	11.1	11.1
9	10.3	9.57	9.57	9.46	9.57	9.46	10.9	11.5	11.1	11.2	11.0	11.1
10	10.3	9.68	9.57	9.46	9.57	9.46	10.9	11.5	11.2	11.2	11.0	11.1
11	10.3	9.90	9.57	9.46	9.57	9.35	10.9	11.5	11.0	11.2	11.0	11.0
12	10.3	9.90	9.57	9.35	9.24	9.35	11.0	11.5	11.0	11.2	11.0	11.0
13	10.3	10.0	9.57	9.35	9.35	9.35	11.0	11.4	10.9	11.4	11.0	11.0
14	10.3	9.79	9.57	9.57	9.46	9.35	11.0	11.2	10.9	11.2	11.5	11.0
15	10.3	9.79	9.57	9.46	9.46	9.46	11.0	11.1	10.9	11.4	11.1	11.7
16	10.3	9.79	9.57	9.46	9.46	9.57	11.2	11.1	10.9	11.2	11.1	11.7
17	10.3	9.79	9.57	9.46	9.46	9.57	11.2	11.1	11.0	11.2	11.1	11.8
18	10.1	9.90	9.57	9.57	9.46	9.57	11.2	11.1	11.0	11.2	11.1	11.8
19	10.0	9.90	9.57	9.68	9.35	9.57	11.2	11.0	11.0	*11.2	11.1	11.8
20	10.0	9.79	9.57	9.79	9.35	9.57	11.2	11.0	11.0	11.2	11.1	11.8
21	10.0	9.79	9.68	9.79	*9.35	9.68	11.2	11.0	11.0	11.2	11.1	11.8
22	10.0	9.79	9.79	9.79	9.35	9.79	11.2	10.9	10.9	11.2	11.1	11.7
23	10.0	9.79	9.79	9.90	9.24	9.79	11.2	10.9	10.9	11.2	11.1	11.7
24	10.0	9.68	9.68	9.90	9.35	9.90	11.2	10.9	10.9	11.2	11.1	11.7
25	10.0	9.68	9.68	9.90	9.35	10.0	11.2	10.9	10.9	11.2	11.1	11.7
26	10.0	9.79	9.68	9.79	9.24	9.90	11.4	10.9	11.4	11.2	10.9	11.7
27	10.0	9.79	9.68	9.90	9.24	9.90	11.2	10.9	11.1	11.2	11.1	11.7
28	10.0	9.79	9.57	9.90	9.24	10.0	11.2	10.9	11.1	11.2	11.1	11.6
29	10.0	9.68	9.57	9.79	9.24	10.1	11.2	------	11.1	11.2	11.0	11.7
30	10.0	9.68	9.57	9.79	9.24	10.1	11.4	------	11.1	11.1	11.0	11.7
31	10.0	9.68	------	9.68	------	10.1	11.4	------	11.1	------	11.0	------
TOTAL	315.8	304.64	288.86	298.32	283.58	297.36	339.2	314.1	342.0	336.6	343.5	342.6
MEAN												
MGD	10.2	9.83	9.63	9.62	9.45	9.59	10.9	11.2	11.0	11.2	11.1	11.4
CFS	15.8	15.2	14.9	14.9	14.6	14.8	16.9	17.4	17.1	17.4	17.1	17.6
AC-FT	969	935	886	916	870	913	1,040	964	1,050	1,030	1,050	1,050

CALENDAR YEAR 1962:	MAX	11.4	MIN	9.24	MEAN MGD	10.3	MEAN CFS	15.9	AC-FT	11,550
FISCAL YEAR 1962-63:	MAX	11.8	MIN	9.24	MEAN MGD	10.4	MEAN CFS	16.1	AC-FT	11,670

* Discharge measurement made on this day.

2245. Kalauao Stream at Moanalua Road, at Aiea

Location.--Lat 21°23'07", long 157°56'22", on left bank at downstream side of Moanalua Road bridge, 0.4 mile northwest of Aiea Post Office, and 2.3 miles southeast of Pearl City Post Office.

Drainage area.--2.59 sq mi.

Records available.--July 1957 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 12.75 ft above mean sea level, datum of 1929.

Average discharge.--6 years, 1.41 mgd (2.18 cfs).

Extremes.--Maximum discharge during year, 1,670 mgd (2,580 cfs) May 14 (gage height, 6.63 ft), from rating curve extended above 50 mgd on basis of slope-area measurements at gage heights 6.29 and 6.63 ft; minimum, 0.04 mgd (0.06 cfs) on several days in September.

1957-63: Maximum discharge, that of May 14, 1963; minimum, 0.02 mgd (0.03 cfs) on several days in 1959 and 1960.

Remarks.--Records good. Some return of irrigation water above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.39	0.04	1.1	6.80
.5	.27	1.3	12.3
.6	.64	1.6	24.0
.7	1.20	2.0	48.0
.8	2.00	2.5	92.0
.9	3.20	3.0	150
1.0	4.75		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.19	0.10	0.05	0.05	0.12	0.12	0.10	1.72	*16.4	1.27	1.82	0.24
2	.19	.21	.07	.05	.14	.10	.10	.50	4.52	21.4	.73	.33
3	.16	.07	.08	.07	.19	.10	.10	.21	.92	39.9	.47	.39
4	.16	.07	.05	.07	.14	.08	.10	.19	*.33	31.3	1.48	.24
5	.16	.07	.05	.07	.12	.08	.10	.21	.14	5.17	1.23	.30
6	.16	.07	.05	.07	.12	.08	.12	.19	*3.93	3.31	.36	.24
7	.16	*.06	.05	.08	.10	.08	*42.9	.14	1.38	2.90	4.50	.65
8	.19	.05	.07	.05	.12	.10	8.71	.19	1.36	1.62	.95	.47
9	.19	.05	.07	.08	.12	.10	1.91	.20	.43	*1.01	3.27	.33
10	.19	.05	.05	.07	.10	.13	.78	.21	.24	1.61	2.77	.65
11	.19	.05	.07	.07	.10	.08	.36	.19	.16	.78	3.35	.43
12	1.14	.05	.08	.07	.12	.08	.16	.19	.14	.65	14.6	.27
13	.38	.07	.07	.05	.12	.12	.14	.14	.14	14.4	2.75	.24
14	.12	.05	.04	.05	.10	3.91	*.12	.14	.80	51.8	*115	*.22
15	.10	.05	.04	.05	.10	8.41	.12	.14	2.57	55.4	14.2	.19
16	.10	.07	.04	.05	.10	1.00	6.04	.14	8.18	15.4	5.37	.19
17	.10	.07	.05	.07	.12	2.49	4.15	.14	2.93	11.4	6.46	.19
18	.10	.05	.07	.24	.12	1.57	.72	.14	8.19	4.40	2.92	.16
19	.10	.05	.07	.17	*.09	.10	.27	.19	2.86	2.30	3.22	.19
20	.10	.05	.07	.90	.08	.08	.19	.14	1.20	1.56	4.40	1.35
21	.08	.05	.07	.20	.08	.10	.17	.14	.54	2.00	7.49	3.72
22	.08	.05	.07	.08	.10	.08	.80	.14	.77	1.52	8.10	7.25
23	.72	.05	.04	.08	.08	.10	1.31	.12	2.96	.78	2.75	1.98
24	.35	.05	.04	.10	.08	.10	.54	.12	1.04	.81	1.01	.73
25	.14	.05	*.04	.10	.10	.46	.27	.12	.54	.50	1.13	.52
26	.10	.07	.05	.10	.10	.26	1.44	.12	45.9	4.97	.82	.90
27	.12	.05	.05	.10	.12	.12	1.32	.10	12.9	14.4	.33	.24
28	.10	.05	.07	2.15	.12	.10	.54	.19	5.37	4.40	.27	.19
29	.10	.05	.05	1.29	.12	.10	.27	------	5.00	3.15	.30	.21
30	.10	.05	.05	.14	.12	.10	.19	------	1.74	1.33	2.19	.21
31	.12	.07	------	.12	------	.10	.98	------	1.07	------	1.41	------
TOTAL	6.19	1.95	1.72	6.84	3.34	20.43	75.02	6.36	134.65	301.44	215.65	23.22
MEAN												
MGD	0.200	0.063	0.057	0.221	0.111	0.659	2.42	0.227	4.34	10.0	6.96	0.774
CFS	0.309	0.097	0.089	0.341	0.172	1.02	3.74	0.351	6.72	15.5	10.8	1.20
AC-FT	19	6.0	5.3	21	10	63	230	20	413	925	662	71

CALENDAR YEAR 1962:	MAX	24.7	MIN	0.04	MEAN MGD	0.845	MEAN CFS	1.31	AC-FT	946
FISCAL YEAR 1962-63:	MAX	115	MIN	0.04	MEAN MGD	2.18	MEAN CFS	3.37	AC-FT	2,450

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-26	1100	4.00	335	518	4-14	0930	3.83	301	466
4-4	0200	3.40	215	333	5-14	1500	6.63	1,670	2,580

* Discharge measurement made on this day.

2260. North Halawa Stream near Aiea

Location.--Lat 21°23'45", long 157°53'35", on left bank 2.7 miles upstream from confluence with South Halawa Stream and 2.7 miles northeast of Aiea Post Office.

Drainage area.--3.45 sq mi.

Records available.--August 1929 to June 1933, July 1953 to June 1963. Monthly discharge only May, June 1931, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 320 ft (from topographic map).

Average discharge.--13 years (1930-33, 1953-63), 4.08 mgd (6.31 cfs).

Extremes.--Maximum discharge during year, 3,630 mgd (5,620 cfs) May 14 (gage height, 13.46 ft), from rating curve extended above 44 mgd on basis of slope-area measurements at gage heights 10.3, 13.04 and 13.46 ft; no flow for many days.

1929-33, 1953-63: Maximum discharge, 4,300 mgd (6,650 cfs) Feb. 28, 1932 (gage height, 13.36 ft), from rating curve extended above 270 mgd; maximum gage height, 13.46 ft May 14, 1963; no flow at times each year.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

4.07	0	4.9	4.19
4.1	.01	5.2	9.40
4.2	.06	5.5	17.5
4.3	.19	6.0	38.5
4.4	.43	6.5	71.0
4.5	.81	7.0	114
4.6	1.35	8.0	233
4.7	2.09	9.0	397

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1				0	0.01	0	0	1.35	32.4	2.06	4.40	1.16
2				0	0	0	0	.53	7.28	45.9	2.55	.90
3				0	0	0	0	.40	1.60	45.6	2.09	.85
4				0	0	0	0	.25	.56	41.8	7.20	2.23
5				0	0	0	0	.16	.37	6.59	2.94	1.55
6				0	0	0	0	.09	7.79	7.61	3.55	2.54
7				0	0	0	69.3	.06	2.19	4.46	8.61	5.76
8				0	0	0	12.3	.03	1.89	2.45	3.12	2.45
9				0	0	0	2.67	.02	.72	4.28	7.43	2.69
10				0	0	0	.93	.01	.32	3.61	4.80	3.98
11				0	0	0	.40	.01	.19	2.78	9.98	1.78
12				0	0	0	.23	0	.10	3.34	24.9	*1.16
13				0	0	0	.14	0	*.05	28.2	7.00	.90
14		(*)		0	0	18.3	.09	0	2.73	85.3	*241	.68
15				0	0	25.0	.05	0	6.59	85.4	39.0	1.20
16				0	0	2.79	9.8	0	18.6	27.5	18.7	1.77
17				0	0	10.0	*6.2	0	8.21	23.7	15.2	.68
18				0	0	3.28	1.62	1.73	16.1	*9.49	7.30	.53
19			(*)	0	*0	.46	.72	.40	6.80	4.19	3.96	1.59
20				0	0	.21	.49	.13	2.72	3.26	2.65	4.87
21				0	0	.13	.32	.08	1.28	2.95	4.23	6.50
22				0	0	.05	5.28	.03	5.43	2.45	3.00	13.6
23				0	0	.01	3.36	.01	6.31	1.68	1.68	4.33
24				0	0	0	1.55	0	2.55	1.22	1.41	2.35
25				0	0	.05	.95	0	2.61	.95	1.10	3.29
26				0	0	.10	3.15	0	62.7	9.02	.95	2.18
27				0	0	.23	2.58	0	18.2	22.7	.95	1.28
28				6.86	0	.13	1.41	0	6.00	6.35	.85	.85
29				.74	0	.05	.90	------	9.78	5.42	.90	.68
30				.05	0	.03	.56	------	3.06	3.80	5.05	.92
31			---------	.02	------	.01	1.00	------	4.65	------	2.48	------
TOTAL	0	0	0	7.67	0.01	60.83	126.00	5.29	239.78	494.06	438.98	75.25
MEAN												
MGD	0	0	0	0.247	0	1.96	4.06	0.189	7.73	16.5	14.2	2.51
CFS	0	0	0	0.383	0.001	3.04	6.28	0.292	12.0	25.5	21.9	3.88
AC-FT	0	0	0	24	0.03	187	387	16	736	1,520	1,350	231

CALENDAR YEAR 1962: MAX 39.7 MIN 0 MEAN MGD 1.22 MEAN CFS 1.89 AC-FT 1,370
FISCAL YEAR 1962-63: MAX 241 MIN 0 MEAN MGD 3.97 MEAN CFS 6.14 AC-FT 4,450

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-26	1000	8.90	377	583	4-15	1500	9.40	484	749
4- 3	2400	9.29	458	709	5-14	1400	13.46	3,630	5,620

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record July 12 to Aug. 13, Jan. 15-17.

2270. Halawa Stream near Aiea

Location.--Lat 21°22'25", long 157°55'40", on right bank 0.7 mile southeast of Aiea Post Office and 6.2 miles northwest of Honolulu Post Office.

Drainage area.--8.78 sq mi.

Records available.--April 1953 to August 1962 (discontinued).

Gage.--Water-stage recorder and concrete control. Datum of gage is 16.52 ft above mean sea level, datum of 1929.

Average discharge.--9 years, 6.74 mgd (10.4 cfs).

Extremes.--Maximum discharge during period July, August, 2.55 mgd (3.95 cfs) Aug. 12 (gage height, 1.39 ft); minimum, 0.14 mgd (0.22 cfs) July 11-14.

1953-62: Maximum discharge, 2,400 mgd (3,710 cfs) May 14, 1960 (gage height, 10.8 ft); no flow at times.

Remarks.--Records fair.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.1	0.03
1.2	.30
1.3	1.10
1.4	2.55

Discharge, in million gallons a day, July to August 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.30	0.64										
2	.26	.42										
3	.26	.26										
4	.26	.32										
5	.22	.22										
6	.22	.18										
7	.22	*.26										
8	.18	.26										
9	.18	.26										
10	.18	.22										
11	.18	.22										
12	.18	1.16										
13	.18	.56										
14	.26	-										
15	.48	-										
16	.56	-										
17	.42	-										
18	.36	-										
19	.30	-										
20	.30	-										
21	.48	-										
22	.48	-										
23	.48	-										
24	.48	-										
25	.80	-										
26	.80	-										
27	.56	-										
28	.36	-										
29	.56	-										
30	.72	-										
31	.90	-										
Total	12.12	-										
Mean												
Mgd	0391	-										
Cfs	0605	-										
Ac-ft	37	-										

Calendar Year 1962:	Max	-	Min	-	Mean mgd	-	Mean cfs	-	Ac-ft	-
Fiscal Year 1962-63:	Max	-	Min	-	Mean mgd	-	Mean cfs	-	Ac-ft	-

Peak Discharge (base, 300 mgd).--No peak above base.

* Discharge measurement made on this day.

2280. 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.--2.73 sq mi.

Records available.--June 1926 to June 1963.

Gage.--Water-stage recorder and concrete weir. Datum of gage is 338.12 ft above mean sea level (City and County of Honolulu bench mark). Prior to July 1, 1960, at datum 1.0 ft higher.

Average discharge.--37 years, 2.00 mgd (3.09 cfs).

Extremes.--Maximum discharge during year, 2,180 mgd (3,370 cfs) May 14 (gage height, 11.82 ft), from rating curve extended above 42 mgd by test on model of station site and on basis of slope-area determination of peak flow; no flow for many days.

1926-63: Maximum discharge, 2,960 mgd (4,580 cfs) Nov. 18, 1930 (gage height, 12.58 ft, present datum), from rating curve extended above 72 mgd by test on model of station site; no flow at times each year.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 7-9, 16)

0.87	0	1.3	0.63	2.1	13.0
.9	.01	1.4	1.13	2.5	27.1
1.0	.03	1.5	1.86	3.0	55.0
1.1	.10	1.6	2.85	3.5	91.0
1.2	.30	1.8	5.70	4.0	144

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1						0	0	0.05	*21.2	1.07	4.67	0.33
2						0	0	.04	5.24	25.0	2.26	.08
3						0	0	.04	1.09	28.6	1.78	.03
4						0	0	.03	.33	27.5	4.01	.02
5						0	0	.02	.12	6.79	3.12	.29
6						0	0	.01	3.42	3.60	2.06	.28
7						0	*36.2	0	2.47	2.55	6.35	.08
8						0	10.3	0	1.56	1.70	2.26	.04
9						0	2.61	0	.38	3.20	3.29	.04
10		(*)				0	.67	0	.12	2.39	*2.86	.03
11						0	.19	0	.06	1.40	3.19	.02
12						0	.07	0	.04	.86	15.9	.02
13						0	.04	0	.03	16.8	4.70	.02
14						1.37	.03	0	.86	42.8	*120	.02
15						8.57	.02	0	3.44	59.6	16.3	.02
16						.90	3.63	0	12.2	26.0	7.64	.01
17						.05	3.14	0	5.07	22.7	5.98	.01
18						.58	*.73	0	12.2	13.3	3.85	0
19			(*)			.05	.30	0	3.92	7.87	2.26	0
20						.02	.13	0	1.80	6.79	1.62	0
21					(*)	.01	.07	0	.86	5.55	1.99	0
22						0	.06	0	1.61	3.73	1.34	5.08
23						0	.06	0	3.04	2.26	.96	1.16
24						0	.07	0	1.34	1.55	.71	.41
25						.01	.07	0	.86	1.13	.51	.30
26						.01	.06	0	31.9	4.83	.38	.49
27						0	.06	0	11.1	18.8	.25	.13
28						0	.05	0	4.06	8.53	.13	.05
29						0	.05	------	2.07	4.91	.07	.04
30						0	.05	------	1.78	3.19	1.19	.03
31			---------		---------	0	.05	------	1.07	------	.72	------
TOTAL	0	0	0	0	0	11.57	58.71	0.19	135.24	355.00	222.35	9.03
MEAN												
MGD	0	0	0	0	0	0.373	1.89	0.007	4.36	11.8	7.17	0.301
CFS	0	0	0	0	0	0.577	2.93	0.010	6.75	18.3	11.1	0.466
AC-FT	0	0	0	0	0	36	180	0.6	415	1,090	682	28

CALENDAR YEAR 1962: MAX 33.1 MIN 0 MEAN MGD 0.466 MEAN CFS 0.721 AC-FT 522
FISCAL YEAR 1962-63: MAX 120 MIN 0 MEAN MGD 2.17 MEAN CFS 3.36 AC-FT 2,430

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-26	1100	4.42	201	311	4-15	1500	5.71	397	614
4- 3	2400	4.72	243	376	5-14	1330	11.82	2,180	3,370

* Discharge measurement or observation of no flow made on this day.

2290. Kalihi Stream near Honolulu

Location.--Lat 21°22'00", long 157°50'50", on right bank at Kioi Pool, 0.4 mile upstream from Catholic Orphanage, and 4.1 miles north of Honolulu Post Office.

Drainage area.--2.61 sq mi.

Records available.--September 1913 to April 1914, July 1914 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 464.40 ft above mean sea level, datum of 1929. Prior to Oct. 12, 1923, at same site at datum 2.00 ft lower.

Average discharge.--49 years (1914-63), 4.54 mgd (7.02 cfs).

Extremes.--Maximum discharge during year, 1,820 mgd (2,820 cfs) May 14 (gage height, 10.20 ft), from rating curve extended above 180 mgd as explained below; minimum, 0.07 mgd (0.11 cfs) sometime during period Dec. 1-31.

1913-63: Maximum discharge, about 8,000 mgd (about 12,400 cfs) Nov. 18, 1930 (gage height, 13,81 ft), from rating curve extended above 180 mgd on basis of indirect measurements at gage heights 8.9 ft and 11.27 ft; minimum, 0.06 mgd (0.09 cfs) Oct. 22, 1933.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

2.0	0	3.0	19.2
2.1	.45	3.5	38.0
2.2	1.28	4.0	62.0
2.3	2.38	5.0	126
2.4	3.90	6.0	215
2.6	8.00		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	*0.82	*4.90	0.52	*0.38	0.45	0.90	1.18	*2.19	*55.2	*5.20	*5.93	4.25
2	.74	3.54	.52	.38	.45	.45	1.09	2.02	9.39	33.5	5.00	3.73
3	1.09	2.02	.45	.74	1.09	.30	1.09	1.80	4.80	30.3	5.20	*3.56
4	.82	1.91	.45	.66	1.09	.31	1.00	1.58	3.56	34.0	8.74	4.25
5	1.09	1.48	.52	.74	.82	.33	.91	1.48	3.09	12.1	5.80	3.40
6	.82	1.48	.66	.59	.59	.30	.80	1.48	6.34	9.20	6.28	3.24
7	.74	1.48	.45	.45	.59	.30	40	1.38	6.46	7.56	6.77	3.09
8	.82	1.18	1.21	.45	.59	.32	10	1.28	4.43	6.24	5.00	2.94
9	1.88	1.18	2.18	.38	.52	.32	5.40	1.48	3.40	8.31	6.05	3.09
10	1.00	1.18	.91	.45	.45	.31	4.07	1.18	2.80	6.24	4.80	3.09
11	.91	1.00	.66	.52	.45	.31	3.24	1.00	2.52	5.40	6.63	2.80
12	3.59	1.09	.82	.45	.38	.30	2.66	.91	2.38	5.20	12.0	2.66
13	1.48	2.22	.82	.32	.45	1.5	2.26	.91	2.45	21.0	6.24	2.38
14	1.18	1.28	.66	.32	.52	6.0	1.91	.82	8.62	32.8	132	2.26
15	.91	1.18	.52	.32	.59	7.0	1.91	.91	10.3	54.4	20.0	2.26
16	.82	1.00	.91	.32	.38	3.0	9.72	.82	11.1	22.2	12.5	2.14
17	.91	.82	2.65	.26	.45	3.5	5.06	1.26	5.80	14.3	15.2	2.14
18	.91	.74	1.18	.66	.38	2.9	3.09	2.26	13.1	9.92	11.6	2.14
19	.82	.74	.74	.59	.32	2.0	2.52	1.28	6.24	8.00	8.00	2.66
20	.74	.66	.66	1.38	.32	1.0	2.38	1.00	4.61	7.56	7.34	4.25
21	.66	.66	.66	.59	.32	.60	2.37	.91	4.07	6.46	9.72	4.46
22	.74	.59	.52	.38	.26	.50	3.73	.74	7.94	5.80	6.90	4.25
23	2.88	.52	.66	.32	.26	.40	3.86	.74	7.12	5.40	5.80	2.94
24	1.18	.52	1.09	.32	.26	.40	4.07	1.55	5.40	4.80	5.20	3.09
25	.91	.52	.66	.26	.26	5.0	2.94	1.38	5.78	4.43	4.80	3.84
26	.82	1.00	.82	.26	.26	2.0	3.09	.91	37.8	8.99	4.43	2.94
27	.74	.59	.59	.32	.32	1.7	2.94	.74	12.9	11.3	4.25	2.52
28	.82	.66	.66	3.86	.27	1.5	2.80	5.06	8.00	8.53	4.07	2.38
29	.65	.59	.52	1.48	.29	1.4	2.38	------	7.56	6.02	4.25	2.14
30	.91	.45	.45	.66	*.69	1.3	2.38	------	5.80	6.90	5.79	2.66
31	.82	*.45	------	*.52	------	*1.09	2.66	------	5.80	------	4.43	------
TOTAL	33.23	37.65	24.12	19.33	14.07	47.24	133.51	39.07	274.76	402.06	350.72	91.55
MEAN												
MGD	1.07	1.21	0.804	0.624	0.469	1.52	4.31	1.40	8.86	13.4	11.3	3.05
CFS	1.66	1.88	1.24	0.965	0.725	2.35	6.67	2.16	13.7	20.7	17.5	4.72
AC-FT	102	116	74	59	43	145	410	120	843	1,230	1,080	281

CALENDAR YEAR	1962:	MAX	20.1	MIN	0.26	MEAN MGD	1.86	MEAN CFS	2.88	AC-FT	2,090
FISCAL YEAR	1962-63:	MAX	132	MIN	0.26	MEAN MGD	4.02	MEAN CFS	6.22	AC-FT	4,500

Peak discharge (base, 400 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	1300	10.20	1,820	2,820

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 28 to Dec. 30, Jan. 6-8.

2293. Kalihi Stream at Kalihi

Location.--Lat 21°20'29", long 157°52'36", on right bank at Kalihi, 0.4 mile northwest of Bishop Museum, and 2.4 miles northwest of Honolulu Post Office. Prior to July 1, 1962, crest-stage gage only, at site 600 ft downstream.

Drainage area.--5.18 sq mi. Area at crest-stage gage site, 5.24 sq mi.

Records available.--Fiscal year 1962 (annual maximum), July 1962 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 70 ft (from topographic map). Aug. 28, 1961, to June 30, 1962, crest-stage gage at site 600 ft downstream at different datum.

Extremes.--Maximum discharge during year, 4,090 mgd (6,330 cfs) May 14 (gage height, 8.24 ft), from rating curve extended above 510 mgd on basis of slope-area measurement of peak flow; minimum, 1.90 mgd (2.94 cfs), June 18.

1961-63: Maximum discharge, that of May 14, 1963.

Flood of May 14, 1960, reached a stage of 8.0 ft, from floodmarks, present site and datum (discharge, 4,100 mgd or 6,350 cfs, from slope-area measurement of peak flow).

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

Rating tables (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used May 14-17, May 30 to June 11, June 18-20)

July 1 to May 13

0.7	2.35	1.7	35.0
.9	4.90	2.0	60.0
1.1	9.00	2.5	122
1.3	15.0	3.0	215

May 14 to June 30

0.5	1.50	1.6	40.0
.6	2.50	2.0	79.0
.8	5.40	2.5	155
1.0	10.0	3.0	270
1.3	21.5	3.5	410

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	6.0	20	3.5	3.20	2.65	3.20	3.20	5.47	138	7.46	8.93	3.02
2	5.0	16	3.5	3.05	2.75	2.75	3.05	5.09	17.0	66.1	8.62	2.76
3	7.0	13	2.9	4.00	2.85	2.45	3.05	4.75	7.46	80.5	12.1	2.76
4	6.0	12	2.9	3.05	3.20	2.45	3.05	4.60	5.47	74.3	15.0	2.89
5	7.0	9.0	3.2	3.46	2.85	2.55	3.20	4.45	5.09	18.5	10.4	2.76
6	6.0	9.0	3.7	3.05	2.65	2.55	3.05	4.60	10.4	14.6	10.3	2.50
7	5.0	9.0	2.9	2.75	2.55	2.55	*158	4.30	9.56	10.9	10.9	3.02
8	6.0	7.5	8.0	2.65	2.65	2.65	35.4	4.30	7.02	10.4	7.68	2.89
9	11	7.5	12	2.85	2.65	2.65	* 10.9	4.75	5.47	11.4	9.81	2.76
10	8.0	7.5	4.5	2.85	2.75	2.7	8.12	4.30	4.90	9.00	*7.08	2.63
11	7.0	5.5	3.5	2.75	2.65	2.7	6.80	4.00	4.60	7.46	8.60	2.76
12	15	7.0	4.0	2.95	2.65	2.55	5.28	4.00	4.45	7.02	18.4	2.7
13	8.0	11	4.0	2.85	3.05	2.65	5.28	4.00	4.30	28.8	9.27	2.6
14	7.0	7.5	3.5	2.85	2.65	17.3	5.28	4.00	11.5	42.8	*343	2.5
15	6.0	7.0	3.0	2.65	2.65	19.5	4.90	4.00	18.2	118	42.9	2.5
16	5.5	5.5	9.0	2.55	2.65	5.47	27.1	4.00	21.5	38.4	*22.3	2.3
17	6.0	5.0	15	2.85	2.95	6.28	12.2	3.85	10.4	21.9	20.9	*2.3
18	6.0	4.7	6.0	4.12	3.05	5.0	7.02	5.08	30.0	16.4	10.6	2.30
19	5.5	4.7	3.5	3.70	2.75	4.5	6.42	4.15	10.4	11.4	8.25	3.15
20	5.0	4.3	2.7	7.32	2.65	4.0	5.85	3.70	7.46	11.7	7.50	6.36
21	4.5	4.3	2.65	3.05	2.65	3.85	6.69	3.70	6.42	9.81	8.77	8.17
22	5.0	3.7	2.65	2.65	2.65	3.60	11	3.70	11.4	8.97	7.08	7.75
23	15	3.2	3.03	2.65	2.65	3.05	12	3.60	10.4	8.92	6.24	5.08
24	7.0	3.2	3.20	2.55	2.65	3.05	13	4.24	7.68	8.20	6.03	5.08
25	6.0	3.2	2.95	2.55	2.65	15.9	6.42	4.30	11.3	7.72	5.82	5.16
26	5.5	5.0	3.85	2.55	2.75	4.75	7.63	3.70	115	12.1	5.82	4.44
27	5.0	3.5	3.05	2.55	2.65	3.70	6.66	3.70	26.5	15.6	5.82	4.28
28	5.5	4.0	3.35	5.71	2.35	3.60	6.67	10.8	13.4	12.6	5.61	4.28
29	4.5	3.5	3.20	3.85	2.35	3.50	6.04	------	12.6	9.27	5.24	4.28
30	6.5	3.0	3.20	2.85	2.85	3.35	5.88	------	8.56	9.46	4.25	5.08
31	6.0	3.0	------	2.65	------	3.20	6.62	------	8.34	------	3.02	------
TOTAL	208.5	212.3	132.43	99.11	81.45	148.00	405.76	125.13	564.78	709.69	656.24	111.06
MEAN												
MGD	6.73	6.85	4.41	3.20	2.72	4.77	13.1	4.47	18.2	23.7	21.2	3.70
CFS	10.4	10.6	6.82	4.95	4.20	7.38	20.3	6.91	28.2	36.6	32.7	5.72
AC-FT	640	652	406	304	250	454	1,250	384	1,730	2,180	2,010	341

CALENDAR YEAR	1962:	MAX	-	MIN	-	MEAN MGD	-	MEAN CFS	-	AC-FT	-
FISCAL YEAR 1962-63:		MAX	343	MIN	2.30	MEAN MGD	9.46	MEAN CFS	14.6	AC-FT	10,600

Peak discharge (base, 600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0500	4.43	705	1,090	4-15	1530	4.33	662	1,020
3- 1	1400	4.22	634	981	5-14	1430	8.24	4,090	6,330
3-26	1100	4.75	870	1,350					

* Discharge measurement made on this day.
Note.--No gage-height record July 1 to Sept. 20, Dec. 10, 11, 18-20, Jan. 22-24, June 12-17.

2320. 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.--3.35 sq mi.

Records available.--October 1913 to January 1921, September 1921 to June 1963.

Gage.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft above mean sea level, datum of 1929. Prior to Sept. 7, 1915, staff gage at same site at datum 0.03 ft lower and Sept. 7, 1915, to Mar. 31, 1918, at same datum.

Average discharge.--46 years (1914-16, 1917-20, 1922-63), 4.84 mgd (7.49 cfs).

Extremes.--Maximum discharge during year, 1,080 mgd (1,670 cfs) May 14 (gage height, 5.95 ft), from rating curve extended above 270 mgd on basis of slope-area measurement at gage height 6.69 ft; minimum, 0.33 mgd (0.51 cfs) Dec. 2.

1913-63: Maximum discharge, 4,520 mgd (6,990 cfs) Jan. 16, 1921 (gage height, 8.74 ft, from floodmarks), from rating curve extended above 270 mgd by test on model of station site; minimum, 0.06 mgd (0.09 cfs) Sept. 10, 11, 1925.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Low-flow regulation by reservoirs 2, 3, and 4 (capacities, 21, 34, and 1,630 acre-ft, respectively). Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 1-8, Apr. 16-23, May 15 to June 5)

0.1	0.18	1.2	8.30
.2	.48	1.5	18.8
.5	1.70	2.0	42.8
1.0	4.40	3.0	107
1.1	5.80	4.0	205

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.85	6.20	1.11	1.2	0.55	0.86	0.84	2.35	46	10.9	8.96	5.38
2	1.80	1.63	1.08	1.4	.62	.55	.84	2.30	11	29.2	7.80	5.24
3	2.01	1.00	1.02	1.3	.69	.48	.84	2.20	7.5	24.8	7.30	5.10
4	1.85	1.29	1.00	*1.4	.69	.48	.92	2.15	6.0	22.2	10.1	5.10
5	1.85	1.25	1.04	1.12	.62	.52	.88	2.10	5.0	15.0	7.55	*4.98
6	1.70	1.25	1.12	1.20	.62	.48	.80	2.10	7.7	14.0	7.12	4.82
7	1.66	1.34	1.00	.96	.58	.42	*60	2.05	8.0	12.6	8.05	5.52
8	1.75	*1.39	1.57	.84	.55	.42	*6.80	2.00	6.8	12.3	6.55	4.82
9	2.07	1.41	1.51	.92	.55	.42	3.16	2.05	5.2	12.6	7.55	5.10
10	1.85	1.53	1.08	.92	.55	1.33	2.60	2.00	4.0	12.3	6.30	4.68
11	1.75	1.39	.96	.80	.55	.70	2.35	1.90	*3.0	10.9	8.12	4.68
12	3.48	1.39	1.00	.76	.48	.52	2.10	1.85	2.65	10.9	12.8	4.28
13	1.80	1.89	.96	.78	.52	.64	1.95	1.85	3.45	19.1	7.30	4.16
14	1.85	1.48	.92	.73	.55	5.41	1.85	1.80	13.7	32.5	121	4.04
15	1.66	1.38	.96	.69	.62	6.86	1.85	1.80	8.97	64.0	63.1	4.16
16	1.57	1.36	1.12	.69	.48	1.90	7.12	1.75	12.2	55.9	35.5	3.98
17	1.66	1.24	5.42	.76	.55	2.85	2.88	1.88	9.05	53.5	19.6	3.68
18	1.88	1.30	1.60	.96	.48	1.42	2.35	2.17	14.6	37.3	21.9	3.80
19	1.61	1.30	1.25	.92	.58	1.04	2.31	1.85	7.55	9.95	12.3	3.98
20	1.57	1.21	1.08	1.22	*.52	.96	2.20	1.80	7.05	12.2	10.3	4.90
21	1.52	1.19	1.12	.78	.48	1.09	2.33	1.75	6.55	9.95	11.3	4.67
22	1.57	1.17	1.12	.76	.52	.92	3.24	1.70	11.1	8.30	8.05	4.82
23	3.30	1.16	1.16	.73	.52	.84	2.70	1.66	9.29	*6.74	6.80	4.10
24	1.66	1.10	1.20	.73	.48	.84	2.60	1.89	7.55	7.80	6.30	4.28
25	1.57	1.12	1.16	.69	.48	2.03	2.40	1.75	7.85	7.55	5.80	3.98
26	1.57	1.12	1.30	.69	.52	1.34	2.60	1.61	29.2	13.5	5.66	3.92
27	1.52	1.13	1.08	.66	.48	1.12	2.58	1.50	16.1	15.0	5.38	3.74
28	1.52	1.08	1.34	1.50	.52	1.04	2.55	2.56	12.3	10.9	5.38	3.68
29	1.39	1.12	1.08	.69	.52	.96	2.40	------	12.3	9.62	5.66	3.62
30	1.55	1.04	1.1	.62	.58	1.00	2.45	------	10.9	9.95	7.54	3.92
31	1.56	1.16	------	.58	------	.92	2.55	------	12.3	------	5.38	------
TOTAL	55.95	44.82	38.46	28.00	16.45	40.36	133.04	54.37	324.86	571.46	462.45	133.13
MEAN												
MGD	1.80	1.44	1.28	0.903	0.548	1.30	4.29	1.94	10.5	19.0	14.9	4.44
CFS	2.79	2.23	1.98	1.40	0.848	2.01	6.64	3.00	16.2	29.5	23.1	6.87
AC-FT	172	137	118	86	50	124	408	167	997	1,750	1,420	409

CALENDAR YEAR 1962: MAX 27.4 MIN 0.42 MEAN MGD 2.47 MEAN CFS 3.82 AC-FT 2,760
FISCAL YEAR 1962-63: MAX 121 MIN 0.42 MEAN MGD 5.21 MEAN CFS 8.06 AC-FT 5,840

Peak discharge (base, 150 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-15	1500	3.72	172	266	5-14	1500	5.95	1,080	1,670

* Discharge measurement made on this day.
Note.--No gage-height record Sept. 30 to Oct. 4, Jan. 6, 7, Mar. 1-11.

2390. East Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long 157°48'10", on right bank 5 ft downstream from highway bridge, 400 ft upstream from confluence with West Branch, and 4.2 miles northeast of Honolulu Post Office.

Drainage area.--1.06 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1963.

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 bench mark). 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 site 30 ft upstream at different datum. Aug. 18, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 2.99 ft lower, and Mar. 16, 1928, to Oct. 18, 1933, at datum 0.41 ft higher than present datum.

Average discharge.--44 years (1913-20, 1926-63), 3.15 mgd (4.87 cfs).

Extremes.--Maximum discharge during year, 767 mgd (1,190 cfs) May 14 (gage height, 4.96 ft, from floodmark), from rating curve extended above 68 mgd by test on model of station site; minimum, 0.72 mgd (1.11 cfs) Feb. 23.

1913-21, 1925-63: Maximum discharge, 2,000 mgd (3,090 cfs) Jan. 16, 1921 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 37 mgd; minimum, 0.4 mgd (0.6 cfs) June 7, 8, 1926.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnels above station. Occasional small diversions for irrigation above station.

Rating table (gage height, in feet, and discharge in million gallons a day)
(Shifting-control method use Aug. 11-13, Sept. 9-17, Oct. 14 to Nov. 4, Nov. 12-20)

0.2	0.61	1.2	11.5
.3	1.15	1.5	22.2
.5	2.65	2.0	47.0
1.0	7.90	2.5	91.0

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.57	13.2	1.29	*1.13	0.99	1.52	1.1	1.36	17	2.5	3.5	3.0
2	1.64	3.80	1.29	1.04	.99	1.15	1.1	1.29	5.0	17.7	3.0	2.9
3	2.33	2.41	1.22	1.33	1.35	1.04	1.2	1.22	2.0	10.7	3.5	3.0
4	2.09	3.20	1.22	1.10	1.57	.97	1.2	1.10	1.5	8.15	6.0	*5.0
5	2.54	2.41	1.22	1.04	1.15	.99	1.4	1.10	1.2	3.82	4.5	5.2
6	1.85	2.17	1.64	.99	.93	.99	1.3	1.10	4.5	3.25	5.8	3.0
7	1.71	2.09	1.29	.99	.93	.93	*30	1.04	2.5	2.99	4.5	6.0
8	1.78	*1.89	1.98	.99	.93	.93	4.17	1.04	*1.78	3.11	4.0	3.0
9	3.44	1.93	2.18	1.04	.88	.93	2.17	1.10	1.57	2.74	6.0	4.0
10	2.25	2.08	1.43	1.04	.99	2.56	*1.97	1.04	1.43	3.14	4.5	3.0
11	1.93	2.17	1.36	.99	.99	1.93	1.78	.99	1.3	2.33	7.0	2.7
12	4.69	2.01	1.29	.99	1.16	1.85	1.57	.93	1.2	2.09	12	2.5
13	2.33	2.41	1.22	.99	.93	2.11	1.36	1.04	1.3	8.18	7.0	2.6
14	2.33	2.17	1.22	1.06	.99	13.9	1.29	.93	6.4	7.80	78	2.4
15	1.85	1.85	1.15	.94	1.04	11.1	1.29	.93	4.5	22.3	15	2.6
16	1.71	1.64	1.57	.88	.93	2.82	*6.72	.93	4.0	15.8	9.0	2.4
17	2.05	1.50	4.00	.83	.93	2.17	2.09	.93	4.0	4.40	12	2.4
18	2.48	1.43	1.57	.83	.99	1.9	1.29	2.00	8.4	3.70	9.0	2.7
19	2.17	1.43	1.29	.99	.99	1.7	1.29	.99	4.5	3.0	6.0	3.5
20	1.78	1.36	1.22	1.04	*1.01	1.5	1.36	.88	3.5	4.0	7.0	4.5
21	1.64	1.29	1.15	.76	.93	1.9	1.15	.83	3.0	3.5	8.0	6.0
22	1.85	1.29	1.15	.88	.93	1.5	2.51	.83	8.4	*2.91	6.0	4.0
23	6.54	1.29	1.22	.88	.88	1.3	2.95	.77	4.5	3.20	*3.80	3.0
24	2.25	1.22	1.36	.88	.88	1.2	2.24	1.50	3.5	2.82	3.42	3.5
25	1.93	1.29	1.22	.83	.93	2.0	1.78	3.0	4.5	2.5	3.25	3.0
26	1.78	1.29	1.64	.88	.93	1.7	2.01	2.0	19	10	3.08	2.7
27	1.71	1.36	1.36	.99	.88	1.5	1.83	1.5	7.0	7.0	3.0	2.7
28	1.85	1.29	1.83	2.24	.93	1.3	1.88	4.0	4.0	5.0	2.9	3.0
29	1.64	1.43	1.50	1.10	1.04	1.36	1.43	--------	3.0	4.0	3.5	2.7
30	1.78	1.29	1.29	.99	1.37	1.43	2.03	--------	2.5	4.5	5.58	4.0
31	1.78	1.29	--------	.99	--------	1.29	1.85	--------	3.5	--------	4.50	--------
Total	69.27	67.48	44.37	31.65	30.37	69.47	87.31	36.37	140.48	177.13	254.33	101.0
Mean												
Mgd	2.23	2.18	1.48	1.02	1.01	2.24	2.82	1.30	4.53	5.90	8.20	3.37
Cfs	3.46	3.37	2.29	1.58	1.56	3.47	4.36	2.01	7.01	9.13	12.7	5.21
Ac-ft	213	207	136	97	93	213	268	112	431	544	780	310

Calendar Year 1962: Max 16.1 Min 0.76 Mean mgd 2.12 Mean cfs 3.28 Ac-ft 2370
Fiscal Year 1962-63: Max 78 Min 0.76 Mean mgd 3.04 Mean cfs 4.70 Ac-ft 3400

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	About 1300	4.96	767	1,190

* Discharge measurement made on this day.
Note.--No gage height record Dec. 18-28, Jan. 1-7, Feb. 25 to Mar. 7, Mar. 11 to Apr. 1, Apr. 19-21, Apr. 25 to May 22, May 27-29, June 1-30.

2400. West Branch Manoa Stream near Honolulu

Location.--Lat 21°19'55", long 157°48'10", on left bank 100 ft upstream from highway bridge and 4.2 miles northeast of Honolulu Post Office.

Drainage area.--1.14 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1963.

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 bench mark). 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 3.35 ft lower.

Average discharge.--44 years (1913-20, 1926-63), 2.43 mgd (3.76 cfs).

Extremes.--Maximum discharge during year, 1,380 mgd (2,140 cfs) May 14 (gage height, 5.77 ft), from rating curve extended above 73 mgd by test on model of station site; minimum, 0.07 mgd (0.11 cfs) Nov. 12.

1913-21, 1925-63: Maximum discharge, 2,100 mgd (3,250 cfs) Jan. 16, 1921 (gage height, 10.4 ft, from flood marks, site and datum then in use), from rating curve extended above 40 mgd; minimum, 0.05 mgd (0.08 cfs) Dec. 16, 18, 1913, Jan. 16-18, Feb. 4, 6, 1915, Mar. 16, 22, 1926.

Remarks.--Records good. Occasional small diversion for irrigation above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Oct. 8-12, Nov. 23-29, Feb. 2-23, Apr. 11-13)

0.04	0.10	0.8	6.20
.1	.32	1.1	13.4
.2	.82	1.5	30.0
.3	1.42	2.0	65.0
.7	4.50	3.0	178

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.32	14.7	0.46	*0.38	0.23	1.08	0.28	0.99	15.4	1.89	2.25	1.29
2	.41	3.79	.50	.23	.19	.50	.28	1.01	2.82	18.7	1.89	1.11
3	.93	1.95	.46	.46	.45	.36	.32	.93	1.23	12.1	2.34	1.38
4	.87	2.89	.41	.30	.66	.32	.32	.76	.82	9.43	5.33	*2.18
5	1.05	1.89	.41	.19	.41	.32	.36	.76	.76	4.08	2.18	2.20
6	.55	1.68	.69	.29	.23	.32	.32	.87	3.59	3.54	4.80	1.29
7	.41	1.55	.41	.15	.19	.32	*29.0	.66	1.37	2.78	3.05	2.98
8	.41	*1.23	1.14	.13	.19	.28	5.04	.60	*.90	*2.93	2.02	1.77
9	2.80	1.11	1.15	.18	.16	.28	2.18	1.00	.71	2.81	5.08	2.35
10	2.18	1.11	.46	.19	.16	2.97	*1.51	.99	.60	3.09	2.30	1.62
11	1.89	.87	.41	.13	.19	.66	1.23	1.11	.55	2.06	5.64	1.44
12	4.17	.82	.36	.13	.19	.41	.87	.93	.50	2.02	11.6	1.11
13	1.68	2.07	.32	.12	.16	.63	.76	.93	.54	10.2	3.66	.99
14	1.23	1.23	.28	.13	.19	8.41	.66	.82	6.10	5.35	72.6	.93
15	.82	1.05	.28	.13	.45	10.6	.66	.71	4.15	22.3	8.49	1.05
16	.60	.87	.95	.13	.19	3.02	*6.32	.66	3.67	5.81	6.87	.93
17	.88	.76	3.63	.19	.16	4.27	2.20	1.22	3.70	4.32	11.5	.87
18	1.68	.71	.66	.54	.16	2.03	1.29	1.43	8.11	3.37	7.77	1.60
19	1.34	.66	.36	.46	.16	1.29	1.10	.99	2.70	2.70	4.32	1.82
20	.76	.60	.28	.65	*.16	.99	1.05	.82	2.24	3.65	5.01	4.09
21	.60	.55	.28	.28	.14	1.54	.93	.66	2.02	2.33	7.00	4.61
22	.66	.50	.28	.19	.14	.87	2.01	.50	8.03	2.15	4.97	3.70
23	5.44	.46	.32	.16	.16	.66	2.03	.64	5.40	2.54	3.91	1.82
24	1.55	.46	.41	.13	.19	.60	1.48	1.79	2.88	1.95	3.49	2.84
25	.93	.46	.23	.10	.10	1.63	1.23	2.56	3.27	1.62	2.85	2.10
26	.76	.46	.61	.10	.19	.71	2.31	1.55	17.9	9.37	1.68	1.49
27	.66	.50	.46	.10	.28	.55	1.91	1.29	5.86	7.08	1.62	1.56
28	.76	.50	.95	1.32	.36	.50	1.55	3.87	3.28	3.77	1.58	1.62
29	.50	.66	.50	.41	.54	.46	1.17	--------	2.83	2.79	1.75	1.43
30	.71	.46	.41	.23	1.34	.60	1.67	--------	2.25	3.25	2.86	3.44
31	.66	.50	--------	.23	--------	.46	1.49	--------	3.29	--------	1.55	--------
Total	38.21	47.05	18.07	8.36	8.32	47.64	73.53	31.05	117.47	159.98	201.96	57.61
Mean Mgd	1.23	1.52	0.602	0.270	0.277	1.54	2.37	1.11	3.79	5.33	6.51	1.92
Cfs	1.91	2.35	0.932	0.418	0.429	2.38	3.67	1.72	5.86	8.25	10.1	2.97
Ac-ft	117	144	55	26	26	146	226	95	361	491	620	177

Calendar Year 1962:	Max	14.7	Min	0.10	Mean mgd	1.19	Mean cfs	1.84	Ac-ft	1,330
Fiscal Year 1962-63:	Max	72.6	Min	0.10	Mean mgd	2.22	Mean cfs	3.43	Ac-ft	2,480

* Discharge measurement made on this day.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	1400	5.77	1,380	2,140

2440. Pukele Stream near Honolulu

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

Drainage area.--1.18 sq mi.

Records available.--June 1926 to June 1963.

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 344.78 ft above mean sea level (Honolulu Board of Water Supply bench mark).

Average discharge.--37 years, 1.26 mgd (1.95 cfs).

Extremes.--Maximum discharge during year, 761 mgd (1,180 cfs) May 14 (gage height, 6.26 ft), from rating curve extended above 62 mgd on basis of slope-area measurement at gage height 6.13 ft; minimum, 0.10 mgd (0.16 cfs) Nov. 26 to Dec. 2, Dec. 11-14.

1926-63: Maximum discharge, 1,680 mgd (2,600 cfs) Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 46 mgd by test on model of station site; minimum, 0.05 mgd (0.08 cfs) Oct. 31, 1929.

Remarks.--Records fair except those for periods of no gage-height record and those prior to Jan. 7, which are poor. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.8	0.04	1.5	4.70
.9	.18	1.7	8.10
1.0	.43	2.1	18.3
1.1	.87	2.5	35.0
1.2	1.50	3.0	65.0
1.3	2.33		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.26	3.01	0.26	0.18	0.18	0.10	0.37	0.72	22.2	5.57	1.43	3.0
2	.26	.43	.24	.18	.18	.12	.34	.80	9.5	18.4	1.29	2.5
3	.28	.37	.24	*.18	.18	.12	.34	.51	1.5	11.2	1.29	1.8
4	.28	.37	.24	.18	.18	.12	.34	.52	3.0	7.03	3.52	1.4
5	.28	.40	.22	.20	.18	.12	.31	.54	1.4	3.39	1.36	1.0
6	.28	.43	.22	.20	.16	.12	.40	.55	7.0	2.43	1.95	.96
7	.28	.46	.22	.20	.14	.12	*20.8	.55	1.0	1.98	1.90	.82
8	.28	.43	.20	.22	.14	.12	3.14	.52	1.1	*1.82	1.29	.77
9	.28	*.40	.20	.22	.16	.12	1.10	.69	1.2	1.74	1.63	.72
10	.28	.40	.20	.22	.16	.12	1.5	.43	1.3	1.74	1.29	.80
11	.28	.40	.20	.22	.16	.12	1.4	.45	.96	1.58	1.61	.77
12	.26	.40	.20	.22	.16	.10	.62	.41	.99	1.50	6.18	.67
13	.25	.37	.20	.22	.14	.10	.62	.41	1.2	7.16	1.98	.67
14	.26	.37	.20	.22	.14	7.17	.58	.40	1.1	5.28	51.4	.67
15	.28	.37	.18	.22	.14	4.75	*.58	*.31	.88	17.2	18	.72
16	.28	.37	.20	.22	.12	.40	3.85	.31	.69	6.48	6.5	.67
17	.28	.37	1.01	.24	.12	4.21	1.74	.31	.65	3.06	5.0	.67
18	.28	.34	.18	.24	.12	.77	.92	.34	14	2.33	8.0	.67
19	.28	.31	.16	.22	.12	.50	.92	.31	3.8	2.15	3.7	.77
20	.26	.31	.16	.22	.12	.54	.82	.31	1.3	2.06	2.7	.98
21	.28	.26	.18	.22	.12	.58	.87	.31	1.3	1.90	5.5	.72
22	.28	.24	.18	.20	.12	.54	2.61	.31	5.5	1.98	3.5	.72
23	.60	.26	.18	.20	*.12	.50	2.76	.28	4.1	1.82	2.8	.67
24	.28	.26	.18	.20	.12	.50	4.4	.34	2.5	1.58	2.7	.72
25	.28	.28	.20	.20	.12	.54	2.8	.31	9.5	1.50	2.8	.72
26	.28	.26	.20	.22	.10	.40	2.6	.28	20.9	3.36	2.5	.72
27	.28	.26	.20	.20	.10	.40	1.6	.31	12	3.24	2.0	.67
28	.28	.24	.18	.20	.10	.37	1.2	1.56	11	1.74	2.0	.72
29	.28	.26	.18	.20	.10	.37	1.0	--------	*1.90	1.90	3.5	.67
30	.28	.26	.18	.20	.10	.37	1.8	--------	1.74	1.66	3.0	.82
31	.28	.26	------	.20	------	.37	1.2	--------	3.20	------	3.3	------
TOTAL	8.90	13.15	6.79	6.46	4.10	24.78	63.53	13.09	148.41	124.78	155.62	28.18
MEAN												
MGD	0.287	0.424	0.226	0.208	0.137	0.799	2.05	0.468	4.79	4.16	5.02	0.939
CFS	0.444	0.656	0.350	0.322	0.211	1.24	3.17	0.724	7.41	6.43	7.77	1.45
AC-FT	27	40	21	20	13	76	195	40	455	383	478	86

CALENDAR YEAR 1962: MAX 8.50 MIN 0.10 MEAN MGD 0.769 MEAN CFS 1.19 AC-FT 862
FISCAL YEAR 1962-63: MAX 51.4 MIN 0.10 MEAN MGD 1.64 MEAN CFS 2.54 AC-FT 1,830

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-26	0930	3.86	153	237	5-14	1400	6.26	761	1,180

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 10, 11, Jan. 24 to Feb. 14, Mar. 2-25, 27, 28, May 15 to June 6.

2460. Waiomao Stream above Pukele Stream, near Honolulu

Location.--Lat 21°18'35", long 157°47'10", on left bank 300 ft west of road, 0.8 mile upstream from confluence with Pukele Stream, and 5 miles east of Honolulu Post Office.

Drainage area.--1.04 sq mi.

Records available.--April to December 1911, May to December 1912, June 1926 to June 1963.

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 373.66 ft above mean sea level (Honolulu Board of Water Supply bench mark). Apr. 12, 1911, to Dec. 31, 1912, staff gage at site 0.5 mile downstream at different datum.

Average discharge.--37 years (1926-63), 1.16 mgd (1.79 cfs).

Extremes.--Maximum discharge during year, 383 mgd (593 cfs) May 14 (gage height, 5.02 ft), from rating curve extended above 90 mgd as explained below; no flow for many days.

1911-12, 1926-63: Maximum discharge, 932 mgd (1,440 cfs) Apr. 11, 1930 (gage height, 6.27 ft), from rating curve extended above 90 mgd on basis of slope-area measurement at gage height 4.74 ft; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.74	0	1.5	3.70
.8	.03	1.8	8.40
.9	.16	2.1	15.5
1.0	.40	2.5	30.0
1.1	.75	3.0	58.0
1.3	1.86		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.01	4.79	0	0.11	0.06	0.28	0.12	0.71	34.5	2.35	0.5	0.67
2	.02	1.55	0	.08	.03	.26	.11	.46	4.14	32.5	.4	.46
3	.08	.63	0	*.10	.02	.24	.11	.37	1.38	13.6	.4	.49
4	.06	.55	0	.09	.18	.24	.08	.28	.67	7.53	4.0	*.74
5	.16	.71	0	.25	.14	.22	.08	.26	.84	2.56	1.0	.74
6	.07	.59	0	.29	.06	.22	.07	.24	13.8	1.56	2.0	.40
7	.02	.59	0	.16	.03	.22	40.7	.24	1.90	1.14	1.5	.53
8	.02	.40	.17	.09	.02	.22	6.45	.20	1.14	*1.24	.6	.34
9	.27	*.24	.85	.07	.01	.22	1.98	.28	.63	1.28	1.0	.54
10	.16	.20	.26	.06	0	1.27	1.09	.24	.34	1.59	.5	.77
11	.09	.16	.14	.06	0	.67	*1.11	.16	.26	1.38	1.0	1.26
12	1.05	.14	.11	.06	0	.40	.52	.14	.22	2.05	5.0	.63
13	.46	.28	.07	.05	0	.70	.34	.20	.20	10.7	2.0	.31
14	.45	.31	.04	.03	0	15.7	.28	.16	.37	8.36	44.5	.26
15	.22	.24	.02	0	0	10.6	.22	*.12	.65	30.5	7.34	.31
16	.12	.22	.21	0	0	3.01	*5.51	.11	.89	8.93	2.57	.26
17	.30	.18	4.22	.06	0	8.57	2.82	.51	.94	3.00	3.09	.22
18	.38	.16	1.02	.07	0	4.30	.74	1.86	5.16	1.94	2.85	.36
19	.31	.12	.34	.06	0	1.44	.63	.55	1.87	1.44	1.38	.71
20	.16	.11	.22	.47	0	.89	.99	.26	1.20	.94	1.92	1.26
21	.11	.07	.18	.22	.02	.80	.49	.22	.89	.89	3.76	.71
22	.08	.05	.16	.12	.06	.98	5.33	.16	1.46	.55	1.63	.96
23	2.44	.04	.12	.08	*.13	.49	4.10	.14	1.86	.52	.89	.37
24	.49	.02	.24	.07	.20	.40	2.43	.32	1.14	.49	.63	.43
25	.22	.01	.24	.06	.20	2.12	1.69	.58	1.55	.34	.49	.63
26	.14	.01	.43	.04	.20	.87	1.55	.24	35.7	1.06	.46	.46
27	.14	0	.24	.02	.22	.37	1.18	.16	5.60	3.0	.37	.34
28	.22	0	.24	1.56	.22	.24	1.04	.31	3.85	.5	.83	.24
29	.12	0	.24	.49	.22	.20	.63	------	2.22	.7	2.14	.26
30	.16	0	.16	.18	.24	.20	.82	------	1.55	.6	2.14	1.40
31	.12	0	------	.09	------	.20	1.26	------	4.71	------	1.43	------
TOTAL	8.65	12.37	9.92	5.09	2.26	56.54	84.47	9.48	131.63	143.24	98.32	17.06
MEAN												
MGD	0.279	0.399	0.331	0.164	0.075	1.82	2.72	0.339	4.25	4.77	3.17	0.569
CFS	0.432	0.617	0.512	0.254	0.117	2.82	4.22	0.524	6.57	7.38	4.90	0.880
AC-FT	27	38	30	16	6.9	174	259	29	404	440	302	52

CALENDAR YEAR 1962:	MAX	15.7	MIN	0	MEAN MGD	0.802	MEAN CFS	1.24	AC-FT	899
FISCAL YEAR 1962-63:	MAX	44.5	MIN	0	MEAN MGD	1.59	MEAN CFS	2.46	AC-FT	1,780

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0930	3.99	164	254	4- 2	1230	3.85	144	223
3- 1	1530	3.49	100	155	4-15	1500	4.07	176	272
3- 6	0900	4.54	262	405	5- 4	1330	3.73	128	198
3-26	1100	4.58	271	419	5-14	1500	5.02	383	593

* Discharge measurement made on this day.
Note.--No gage-height record Apr. 27 to May 13.

2470. Palolo Stream near Honolulu

Location.--Lat 21°17'35", long 157°48'25", on left bank 250 ft downstream from bridge on Palolo Avenue and 3.9 miles east of Honolulu Post Office.

Drainage area.--3.63 sq mi.

Records available.--April 1952 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 95 ft (from topographic map).

Average discharge.--11 years, 3.51 mgd (5.43 cfs).

Extremes.--Maximum discharge during year, 1,080 mgd (1,670 cfs) May 14 (gage height, 4.12 ft), from rating curve extended above 86 mgd as explained below; minimum, 0.20 mgd (0.31 cfs) Nov. 10.

1952-63: Maximum discharge, 2,100 mgd (3,250 cfs) Mar. 5, 1958 (gage height, 5.33 ft), from rating curve extended above 86 mgd on basis of slope-conveyance study and slope-area measurements at gage heights 3.92 and 4.13 ft; minimum, 0.01 mgd (0.02 cfs) June 25, 1958.

Remarks.--Records good.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Aug. 1-4)

1.4	0.22	1.9	15.6
1.5	.55	2.0	28.0
1.6	1.32	2.1	44.0
1.7	3.60	2.3	100
1.8	8.00	2.5	185

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.47	6.34	0.38	0.38	0.41	0.66	0.78	1.60	141	5.60	3.20	4.40
2	.45	1.01	.34	.34	.38	.55	.72	1.46	15.6	94.6	2.50	3.60
3	.60	.93	.41	.41	.41	.50	.66	1.01	3.20	56.1	2.50	2.80
4	.50	.81	.41	.38	.66	.50	.66	.93	4.40	33.1	13.7	2.50
5	1.14	1.01	.31	*.52	.50	.56	.55	.93	2.50	13.1	5.20	*1.98
6	.45	.93	.41	.45	.41	.55	.55	.93	22.9	10.0	9.25	1.60
7	.41	1.01	.31	.38	.38	.50	*134	.93	3.20	8.60	7.83	1.75
8	.67	.78	.69	.34	.31	.50	21.0	.85	*2.50	10.2	3.20	1.32
9	.85	.66	.93	.38	.31	.50	7.00	1.14	2.10	9.30	5.73	1.75
10	.72	*.60	.45	.34	.28	2.09	*3.00	.78	1.90	8.60	2.80	1.46
11	.66	.55	.41	.31	.26	1.01	2.80	.72	1.46	8.00	4.58	1.57
12	1.44	.50	.34	.38	.26	.60	1.75	.66	1.46	8.00	20.0	1.10
13	1.10	.60	.31	.34	.28	.91	1.32	.72	1.62	34.9	6.00	1.01
14	1.01	.66	.28	.38	.26	25.6	1.20	.66	1.73	23.4	*106	1.01
15	.78	.55	.28	.34	.28	12.5	1.10	.66	1.75	89.2	29.6	1.23
16	.66	.50	1.29	.38	.26	1.90	28.2	.66	1.75	23.9	10.7	1.01
17	.93	.50	3.65	.45	.28	14.4	7.50	.62	1.75	9.30	9.54	1.01
18	1.10	.45	.66	.45	.28	4.00	1.90	2.51	21.9	6.50	12.9	1.10
19	1.01	.41	.45	.45	.28	1.90	3.09	1.32	6.65	5.20	6.00	1.60
20	.72	.41	.38	1.36	.28	1.75	2.30	1.01	2.80	4.00	5.28	2.10
21	.60	.38	.38	.50	.28	2.11	1.90	1.01	2.50	3.20	10.4	1.60
22	.60	.34	.34	.41	.34	1.75	19.4	1.01	8.03	*2.80	6.00	1.90
23	3.32	.34	.45	.38	*.25	1.46	12.8	1.01	7.00	3.92	4.40	1.60
24	.93	.34	.45	.34	.34	1.46	7.94	1.38	4.27	2.80	4.00	1.75
25	.55	.34	.45	.34	.38	4.05	5.20	1.60	13.9	2.50	4.00	1.90
26	.45	.50	.66	.31	.41	1.75	4.80	1.20	118	9.20	3.60	2.10
27	.41	.41	.45	.31	.41	1.32	3.20	1.35	20.9	11.3	2.80	1.90
28	.45	.34	.45	2.12	.41	1.10	2.50	5.81	16.8	5.19	3.50	1.90
29	.41	.41	.45	.85	.45	.85	1.90	------	8.00	6.32	6.60	2.10
30	.45	.34	.41	.55	.45	.85	3.00	------	4.80	4.80	5.86	4.67
31	.41	.45	------	.45	------	.78	2.80	------	10.7	------	5.60	------
TOTAL	24.25	23.40	17.18	15.32	10.49	88.96	285.52	34.47	457.07	513.63	323.27	57.32
MEAN												
MGD	0.782	0.755	0.573	0.494	0.350	2.87	9.21	1.23	14.7	17.1	10.4	1.91
CFS	1.21	1.17	0.886	0.765	0.541	4.44	14.2	1.90	22.8	26.5	16.1	2.96
AC-FT	74	72	53	47	32	273	876	106	1,400	1,580	992	176

CALENDAR YEAR 1962: MAX 37.7 MIN 0.25 MEAN MGD 2.12 MEAN CFS 3.28 AC-FT 2,370
FISCAL YEAR 1962-63: MAX 141 MIN 0.25 MEAN MGD 5.07 MEAN CFS 7.84 AC-FT 5,680

* Discharge measurement made on this day.

Peak discharge (base, 220 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0930	3.50	680	1,050	4- 2	1200	3.03	435	673
3- 1	1500	3.24	540	836	4-13	2130	2.84	338	523
3- 6	1000	2.65	252	390	4-15	1530	3.37	605	936
3-26	1000	4.01	1,010	1,560	5-14	1530	4.12	1,080	1,670

2500. Maunawili ditch near Waimanalo

Location.--Lat 21°20'45", long 157°45'10", on left bank 80 ft downstream from Aniani Nui Ridge tunnel, and 2.1 miles west of Waimanalo.

Records available.--March 1954 to June 1963.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 390 ft (from topographic map).

Average discharge.--9 years, 1.83 mgd (2.83 cfs).

Extremes.--1954-63: Maximum daily discharge, 7.0 mgd (10.8 cfs) Mar. 5, 1958; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Ditch diverts from headwaters of Maunawili and Makawao Streams for irrigation in vicinity of Waimanalo.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.00	1.88	1.94	1.82	1.70	1.52	1.52	0.69	1.43	0.11	0	2.3
2	1.94	1.88	1.94	1.82	1.70	1.52	1.64	.89	.20	1.26	0	2.3
3	2.00	1.82	1.88	1.82	1.76	1.52	1.70	.89	.11	.60	0	2.3
4	2.00	1.82	1.88	1.82	1.70	*1.46	1.70	.84	.08	.31	.49	2.3
5	2.06	1.82	1.88	1.82	1.70	1.46	1.70	.32	.05	.23	0	*2.24
6	1.94	1.88	1.94	1.76	1.64	1.46	1.70	0	1.22	.14	0	2.24
7	2.00	1.88	1.88	1.76	1.64	1.46	3.45	0	.17	.11	0	2.30
8	2.06	1.88	2.06	1.76	1.64	1.46	2.53	0	.11	.11	0	2.24
9	2.00	1.88	2.06	1.76	1.64	1.46	2.45	0	.08	.10	0	2.18
10	1.94	1.88	1.94	1.76	1.64	1.58	2.30	0	.05	.22	0	2.18
11	1.70	1.82	*1.94	1.76	1.58	1.46	2.38	0	.05	.08	2.3	2.24
12	1.88	1.82	1.88	1.70	1.58	1.40	2.45	0	0	.21	2.5	2.18
13	1.94	1.94	1.82	1.70	1.58	1.46	2.38	0	0	.68	2.3	2.18
14	2.00	1.82	1.82	1.70	1.52	2.02	2.30	0	0	.65	3.0	2.18
15	1.88	1.70	1.82	1.70	1.52	1.46	2.24	0	*0	1.72	2.5	2.18
16	1.88	1.76	1.88	1.70	1.52	1.16	*2.25	0	0	.29	2.4	1.94
17	2.00	1.82	2.12	1.76	1.52	1.64	1.94	0	0	.17	2.4	1.88
18	1.94	1.82	1.94	1.82	1.52	1.70	1.82	0	.08	.11	2.3	2.24
19	1.88	1.82	1.88	1.82	1.52	1.40	1.70	0	.02	.08	2.2	2.30
20	1.88	1.82	1.88	1.76	1.52	1.22	1.76	0	0	.08	2.5	2.38
21	1.88	1.82	1.88	1.52	1.52	1.46	1.88	0	0	.05	2.3	2.30
22	1.88	1.82	1.88	*1.64	1.52	1.40	2.15	0	0	.05	2.3	2.60
23	*2.05	1.82	1.88	1.70	1.52	1.40	2.05	0	0	.02	2.2	2.24
24	1.88	1.82	1.88	1.70	1.46	1.40	1.88	0	0	*0	2.2	2.24
25	1.88	1.88	1.88	1.70	1.52	1.88	1.82	0	.10	0	2.1	2.24
26	1.88	1.94	1.88	1.70	1.52	1.70	1.82	0	.89	0	2.1	2.18
27	1.88	1.88	1.82	1.70	1.52	1.64	.85	0	.22	.01	2.2	2.06
28	1.88	1.88	1.88	2.00	1.52	1.64	.65	.26	.11	0	2.5	1.94
29	1.82	1.88	1.82	1.76	1.52	1.58	.61	------	.11	0	2.3	1.82
30	1.88	1.88	1.82	1.70	1.52	1.58	.62	------	.16	0	2.4	1.70
31	1.76	1.88	------	1.70	------	1.52	.57	------	.20	------	2.3	------
TOTAL	59.59	57.26	57.00	54.14	47.28	47.02	56.81	3.89	5.44	7.39	49.79	65.60
MEAN												
MGD	1.92	1.85	1.90	1.75	1.58	1.52	1.83	0.139	0.175	0.246	1.61	2.19
CFS	2.97	2.86	2.94	2.70	2.44	2.35	2.84	0.215	0.272	0.381	2.49	3.39
AC-FT	183	176	175	166	145	144	174	12	17	23	153	201

CALENDAR YEAR	1962:	MAX	4.90	MIN	0	MEAN MGD	1.67	MEAN CFS	2.58	AC-FT	1,870
FISCAL YEAR 1962-63:		MAX	3.45	MIN	0	MEAN MGD	1.40	MEAN CFS	2.17	AC-FT	1,570

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record May 5 to June 4.

2540. Makawao Stream near Kailua

Location.--Lat 21°21'50", long 157°46'05", on left bank 650 ft upstream from mouth, 2.7 miles southwest of Kailua, and 4.3 miles southeast of Kaneohe Courthouse.

Drainage area.--2.04 sq mi (revised).

Records available.--November 1912 to June 1916, January 1958 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 80 ft (from topographic map). Prior to Jan. 1, 1958, staff gage at sites about 200 ft upstream at different datums.

Average discharge.--8 years (1913-16, 1958-63), 3.39 mgd (5.25 cfs).

Extremes.--Maximum discharge during year, 1,380 mgd (2,140 cfs) Mar. 6 (gage height, 9.03 ft), from rating curve extended above 310 mgd as explained below; minimum, 0.44 mgd (0.68 cfs) Nov. 27.

1912-16, 1958-63: Maximum discharge, 1,380 mgd (2,140 cfs) Mar. 5, 1958, Mar. 6, 1963 (gage heights, 9.08 and 9.03 ft, respectively), from rating curve extended above 310 mgd by logarithmic plotting; minimum, that of Nov. 27, 1962.

Remarks.--Records good. Maunawili ditch (see preceding page) diverts 1.5 miles above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.3	0.28	1.9	5.97
1.4	.72	2.1	10.5
1.5	1.39	2.5	24.0
1.6	2.05	3.0	50.0
1.7	2.98	3.5	87.0
1.8	4.23	4.0	135

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.17	1.38	0.83	0.83	0.67	0.62	1.17	7.20	*56.7	11.3	5.15	5.55
2	1.17	1.10	.83	.83	.62	.58	1.17	6.35	17.2	57.6	4.84	5.35
3	1.17	1.05	.78	.83	.67	.62	1.17	6.20	12.5	45.4	4.84	5.15
4	1.17	1.10	.78	.88	.67	.58	1.17	5.15	10.5	29.6	19.7	5.00
5	1.24	1.10	.72	.83	.62	.58	1.10	4.84	9.45	20.5	17.6	4.84
6	1.17	1.05	.83	.83	.78	*.53	1.10	5.00	65.5	14.9	7.60	4.67
7	1.17	1.05	.78	.78	.78	.53	48.4	5.15	16.1	12.5	6.95	4.67
8	1.17	1.05	.99	.78	.78	.53	14.5	5.75	12.5	12.7	7.60	4.50
9	1.24	.99	.88	.83	.78	.53	9.00	5.97	11.1	11.3	8.05	4.50
10	1.17	.99	.83	.78	.72	.84	6.35	5.35	9.70	13.5	7.80	4.40
11	1.17	.99	*.78	.83	.72	.62	5.15	5.00	8.75	9.45	8.05	4.40
12	1.47	.93	.78	.88	.72	.62	4.40	5.15	8.30	15.4	9.32	4.40
13	1.17	1.10	.83	.78	.72	.78	3.79	6.45	*7.60	39.4	7.80	4.40
14	1.30	.99	.78	.78	.67	12.2	3.55	5.00	7.20	50.8	53.3	4.08
15	1.10	.93	.78	.78	.67	2.29	*3.26	4.84	6.75	*96.6	16.9	4.08
16	1.05	.93	.93	.78	.62	1.36	12.9	4.67	6.55	34.4	12.9	3.79
17	1.24	.99	1.24	.83	.62	3.72	8.33	4.84	6.35	20.4	12.5	3.79
18	1.24	.99	.93	.83	.62	2.66	5.97	5.15	11.3	15.9	10.8	3.79
19	1.24	.93	.88	.88	.62	1.50	5.35	4.84	7.40	12.7	10.2	3.79
20	1.24	.88	.88	.93	.62	1.30	5.15	4.50	6.75	10.8	11.1	3.79
21	1.24	.83	.93	.78	.62	1.30	4.67	4.50	6.35	9.45	13.0	3.79
22	1.30	.83	.88	*.82	.62	1.10	10.2	4.50	6.20	8.75	10.8	3.79
23	*1.24	.83	.88	.83	.58	.99	8.91	4.40	5.97	7.80	9.95	3.67
24	1.05	.83	.88	.78	.58	1.10	6.75	4.50	5.75	*7.20	8.30	3.67
25	1.05	.83	.88	.67	.58	2.48	5.35	4.40	8.48	6.75	6.55	3.67
26	.99	.83	.88	.67	.53	1.87	6.20	4.23	42.1	7.76	6.35	3.55
27	1.05	.83	.83	.67	.53	1.50	7.40	4.08	13.3	7.28	6.20	3.43
28	1.05	.78	.88	1.05	.53	1.50	6.95	5.15	10.5	6.55	7.38	3.43
29	.99	.83	.83	.78	.58	1.36	6.55	---------	11.4	5.75	6.35	3.43
30	1.10	.78	.83	.72	.58	1.24	7.93	---------	12.2	5.55	6.58	3.55
31	1.05	.83	--------	.67	--------	1.24	8.55	---------	13.6	---------	*5.97	---------
Total	36.17	29.55	25.76	24.94	19.42	48.67	222.44	143.16	434.05	607.99	330.43	124.92
Mean												
Mgd	1.17	0.953	0.859	0.805	0.647	1.57	7.18	5.11	14.0	20.3	10.7	4.16
Cfs	1.80	1.47	1.33	1.24	1.00	2.43	11.1	7.91	21.7	31.4	16.5	6.44
Ac-ft	111	91	79	77	60	149	683	439	1,330	1,870	1,010	383

Calendar Year 1962: Max 43.2 Min 0.53 Mean mgd 2.32 Mean cfs 3.59 Ac-ft 2,610
Fiscal Year 1962-63: Max 96.6 Min 0.53 Mean mgd 5.61 Mean cfs 8.68 Ac-ft 6,280

* Discharge measurement made on this day.

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	0500	4.01	141	218	4-2	1130	4.83	244	378
3-1	1400	3.97	136	210	4-14	1730	6.18	490	758
3-6	0930	9.03	1,380	2,140	5-4	2400	4.63	214	331
3-26	1000	5.08	289	447	5-14	1430	5.43	345	534

2739. Kamooalii Stream at Kaneohe

Location.--Lat 21°24'50", long 157°48'13", on right bank at Kaneohe, 450 ft upstream from bridge on Kamehameha Highway, and 0.2 mile south of Parker School.

Drainage area.--4.38 sq mi (revised).

Records available.--January 1959 to June 1963.

Gage.--Water-stage recorder and combination masonry diversion dam and culvert control. Datum of gage is 37.82 ft above mean sea level (levels by City and County of Honolulu).

Extremes.--Maximum discharge during year, 1,730 mgd (2,680 cfs) Apr. 15 (gage height, 7.63 ft), from rating curve extended above 60 mgd on basis of slope-area measurements at gage heights 5.64 and 7.63 ft; minimum, 2.15 mgd (3.33 cfs) Aug. 28.

1959-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Aug. 28, 1962.

Flood of Oct. 23, 1958, reached a stage of 8.3 ft from floodmarks (discharge, 4,270 mgd or 6,610 cfs, from rating curve extended above 72 mgd on basis of slope-area measurement at gage height 5.69 ft).

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Many diversions for irrigation above station. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

3.6	1.30	4.2	55.0
3.7	4.85	4.5	110
3.8	10.7	5.0	237
3.9	18.8	5.5	410
4.0	29.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	5.85	7.50	4.40	4.00	4.40	4.40	5.35	11	93.0	13.6	19.6	16.9
2	5.85	6.40	4.40	4.00	4.85	4.40	5.35	14	14.2	82.2	19.6	16.9
3	5.85	5.85	4.40	4.00	4.85	4.40	6.40	13	12	50.9	19.6	16.9
4	5.85	5.85	4.00	6.0	5.35	4.40	5.35	10	10	43.5	24.8	16.9
5	6.40	5.35	3.57	5.0	5.35	*4.40	5.35	9.0	8.0	25.2	19.6	16.1
6	6.40	5.35	4.00	4.5	4.85	4.00	5.35	8.0	25	20.6	19.6	16.1
7	5.85	5.85	3.57	4.3	4.85	4.00	*69.0	8.0	13	18.8	18.8	16.1
8	5.85	5.85	4.00	4.2	4.85	4.00	17.8	7.4	11	21.0	18.8	16.1
9	6.40	5.85	4.85	4.1	4.85	4.00	12.9	8.4	10	20.2	18.8	15.3
10	6.40	5.35	4.40	4.0	4.40	5.35	10.0	7.4	9.0	21.8	18.8	15.3
11	6.40	4.85	4.00	4.0	4.40	5.35	9.40	7.2	8.4	16.9	19.6	16.1
12	6.90	4.85	4.00	4.0	4.40	4.40	8.70	7.2	8.0	27.0	18.6	15.3
13	6.40	6.40	4.40	4.0	4.40	4.85	8.10	9.0	8.0	89.1	17.8	14.5
14	6.40	5.35	4.40	4.0	4.40	15.9	7.50	8.0	9.0	144	141	13.6
15	5.85	5.85	4.00	4.0	4.40	10.0	*7.50	7.4	*10	*280	52.0	13.6
16	5.85	5.35	4.85	4.0	4.40	7.50	27.5	7.4	11	52.0	32.0	12.9
17	6.40	5.35	5.85	4.0	4.40	14.3	12.2	9.0	11	38.5	20.6	12.9
18	5.85	4.40	4.85	4.5	4.00	9.40	9.40	11	14	32.0	18.8	13.6
19	5.35	4.40	4.40	5.4	4.00	7.50	8.10	9.0	12	30.0	18.8	14.5
20	5.85	4.40	4.00	6.0	4.00	5.85	8.10	8.0	10.7	27.9	18.8	14.5
21	5.35	4.40	4.00	5.2	4.00	6.40	8.70	7.4	10.7	25.7	22.4	13.6
22	5.35	4.40	4.00	5.0	4.00	12.2	16.2	7.0	11.4	21.5	18.8	15.6
23	6.40	4.40	4.00	*4.59	4.00	5.85	12.9	6.8	10.7	23.5	17.8	12.2
24	*6.13	4.00	4.40	4.40	4.00	5.35	12.3	6.6	10.0	23.5	16.9	12.2
25	5.85	4.00	4.00	4.40	4.00	8.70	8.70	6.4	12.2	*22.5	16.9	12.9
26	5.85	5.35	4.40	4.85	4.00	6.90	11.4	6.2	53.6	27.8	16.9	12.9
27	5.85	4.40	4.40	4.40	4.00	5.85	8.70	6.0	16.9	26.9	16.9	13.6
28	5.85	4.40	4.00	10.3	3.57	6.40	8.4	15	13.6	23.5	*16.9	12.9
29	5.85	4.40	4.00	6.40	4.00	6.40	8.0	---------	16.3	21.5	16.9	12.9
30	6.40	4.40	3.57	4.85	4.00	5.85	8.0	---------	20.3	21.5	18.8	12.9
31	6.40	4.40	------	4.85	------	5.35	9.0	---------	16.9	------	16.9	------
TOTAL	187.23	158.95	127.11	147.24	130.97	203.65	361.65	240.8	499.9	1,293.1	753.1	435.8
MEAN												
MGD	6.04	5.13	4.24	4.75	4.37	6.57	11.7	8.60	16.1	43.1	24.3	14.5
CFS	9.34	7.93	6.55	7.35	6.75	10.2	18.1	13.3	24.9	66.7	37.6	22.5
AC-FT	575	488	390	452	402	625	1,110	739	1,530	3,970	2,310	1,340

CALENDAR YEAR	1962:	MAX	94.3	MIN	3.57	MEAN MGD	7.28	MEAN CFS	11.3	AC-FT	8,160
FISCAL YEAR 1962-63:		MAX	280	MIN	3.57	MEAN MGD	12.4	MEAN CFS	19.2	AC-FT	13,930

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 4-22, Jan. 28 to Feb. 28, Mar. 3-19.

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-15	1530	7.63	1,730	2,680	5-14	1600	6.90	1,200	1,860

2750. Kaiku Stream near Heeia

Location.--Lat 21°24'45", long 157°49'35", on left bank 1.7 miles west of Kaneohe Post Office and 1.8 miles southwest of Heeia.

Drainage area.--0.97 sq mi.

Records available.--January 1914 to October 1919, July 1939 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 271.9 ft above mean sea level (levels by City and County of Honolulu). Prior to Apr. 28, 1914, staff gage and Apr. 28, 1914, to Oct. 25, 1919, water-stage recorder, at same site at different datums.

Average discharge.--20 years (1943-63), 1.25 mgd (1.93 cfs).

Extremes.--Maximum discharge during year, 778 mgd (1,200 cfs) Apr. 15 (gage height, 4.05 ft), from rating curve extended above 37 mgd as explained below; minimum, 0.17 mgd (0.26 cfs) Dec. 9.

1914-19, 1939-63: Maximum discharge, 2,730 mgd (4,220 cfs) Mar. 26, 1951 (gage height, 5.39 ft), from rating curve extended above 37 mgd on basis of slope-area measurement at gage height 3.87 ft; minimum, 0.13 mgd (0.20 cfs) July 20, 1957, Sept. 17, 1961.

Remarks.--Records fair. Honolulu Board of Water Supply has diverted water from tunnel in drainage area since 1943.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.89	0.19	1.8	11.3
1.0	.46	1.9	15.0
1.1	.88	2.0	21.0
1.2	1.52	2.2	40.0
1.4	3.55	2.5	81.0
1.5	5.00		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.34	0.40	0.64	0.49	0.27	0.19	0.34	0.82	12.2	1.17	1.11	1.30
2	.37	.37	.64	.43	.27	.19	.34	1.05	2.80	14.4	1.11	1.17
3	.37	.34	.64	.49	.29	.21	.34	.99	1.17	12.9	1.11	1.17
4	.37	.34	.64	.53	.29	.19	.31	.73	.77	10.6	1.50	1.17
5	.43	.34	.60	.46	.31	.19	.31	.46	.49	3.55	1.37	*.93
6	.40	.34	.64	.46	.29	.19	.31	.46	3.88	1.99	1.23	.99
7	.37	.34	.64	.43	.29	.19	15.5	.46	1.23	1.52	1.23	.88
8	.37	.34	.68	.43	.27	.19	5.07	.43	.82	1.37	1.17	.82
9	.53	.37	.78	.43	.27	.19	1.71	.49	.56	1.65	1.11	.99
10	.40	.34	.68	.37	.27	.29	.93	.43	.46	1.71	1.05	.88
11	.37	.34	.64	.24	.27	.22	.77	.40	.46	1.30	1.38	.99
12	.46	.34	*.64	.24	.27	.22	.68	.40	.46	1.37	2.18	.99
13	.53	.40	.64	.24	.37	.29	.64	.53	*.48	22.0	1.17	1.11
14	.73	.37	.64	.24	.37	4.78	*.59	.43	.49	28.4	51.9	1.11
15	.73	.37	.64	.24	.27	3.58	.56	.43	.60	71.2	5.53	1.17
16	.73	.34	.68	.24	.27	1.23	2.49	.43	.82	9.80	3.61	1.11
17	.77	.37	.82	*.24	.27	3.34	1.40	.65	.82	5.00	3.24	1.05
18	.72	.37	.68	.31	.24	2.23	.64	.82	1.24	2.90	2.46	.77
19	.70	.37	.64	.38	.24	.88	.49	.53	1.17	1.90	1.99	.64
20	.70	.37	.64	.43	.24	.49	.49	.43	.82	1.45	1.71	.64
21	.68	.31	.60	.29	.24	.46	.53	.40	.56	1.23	1.71	.68
22	.73	.29	.60	.27	.24	.46	.89	.37	.56	1.17	1.61	1.32
23	.82	.29	.60	.24	.22	.37	.99	.37	.53	.99	1.61	1.17
24	*.77	.29	.60	.21	.22	.34	.77	.37	.49	.93	1.52	.88
25	.73	.34	.60	.21	.22	.60	.60	.37	.56	.93	1.52	.68
26	.73	.37	.60	.21	.21	.53	.73	.34	10.1	1.91	1.52	.64
27	.60	.40	.60	.21	.21	.46	.82	.34	2.72	4.76	1.45	.60
28	.40	.40	.56	4.32	.21	.43	.68	1.68	1.17	2.37	1.37	.60
29	.40	.53	.56	.68	.19	.40	.64	------	1.11	*1.77	1.37	.60
30	.43	.60	.56	.46	*.21	.37	.64	------	.93	1.17	1.37	.56
31	.34	.60	------	.31	------	.37	.77	------	1.05	------	1.23	------
TOTAL	17.02	11.58	19.12	14.73	7.80	24.07	41.97	15.61	51.52	213.41	103.44	27.61
MEAN												
MGD	0.549	0.374	0.637	0.475	0.260	0.776	1.35	0.558	1.66	7.11	3.34	0.920
CFS	0.849	0.578	0.986	0.735	0.402	1.20	2.09	0.863	2.57	11.0	5.16	1.42
AC-FT	52	36	59	45	24	74	129	48	158	655	317	85

CALENDAR YEAR	1962:	MAX	14.0	MIN	0.19	MEAN MGD	0.709	MEAN CFS	1.10	AC-FT	795
FISCAL YEAR	1962-63	MAX	71.2	MIN	0.19	MEAN MGD	1.50	MEAN CFS	2.32	AC-FT	1,680

Peak discharge (base, 100 mgd).

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3- 6	0830	2.87	151	234	4-15	1430	4.05	778	1,200
3-26	1100	2.63	105	162	5-14	1330	3.97	733	1,130
4- 3	2400	3.02	205	317					

* Discharge measurement made on this day.

2780. 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.--0.28 sq mi.

Records available.--March 1940 to June 1963.

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

Average discharge.--22 years (1940-42, 1943-63), 0.401 mgd (0.620 cfs).

Extremes.--Maximum discharge during year, 111 mgd (172 cfs) Apr. 15 (gage height, 2.92 ft), from rating curve extended above 4.0 mgd by rating for Columbus-type control and test on model of station site; minimum, 0.21 mgd (0.32 cfs) Sept. 7.

1940-63: Maximum discharge, that of Apr. 15, 1963; minimum, not determined; minimum daily, 0.10 mgd (0.16 cfs) Oct. 31 to Nov. 9, Nov. 24, 27, 1946.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	0.20	1.0	2.70
.6	.36	1.1	4.00
.7	.64	1.2	5.80
.8	1.06	1.5	13.5
.9	1.75		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.30	0.32	0.28	0.26	0.25	0.25	0.25	0.57	3.69	0.41	0.34	0.51
2	.30	.30	.26	.26	.25	.25	.26	.46	1.00	4.70	.32	.51
3	.32	.30	.26	.28	.26	.23	.25	.38	.51	3.24	.30	.51
4	.28	.30	.26	.28	.26	.23	.25	.34	.38	2.21	1.03	.51
5	.30	.30	.26	.28	.28	.23	.25	.32	.36	.70	.49	.51
6	.28	.32	.28	.26	.26	.25	.30	.32	1.67	.51	.46	*.50
7	.28	.32	*.26	.26	.26	.25	5.40	.30	.49	.41	.41	.54
8	.28	.32	.28	.26	.26	.25	1.29	.30	.36	.41	.36	.46
9	.32	.32	.45	.28	.26	.26	.61	.34	.30	.69	.36	.51
10	.32	.32	.26	.28	.25	.32	.43	.30	.26	.59	.34	.49
11	.32	.32	.23	.28	.26	.28	.36	.28	.26	.43	.69	.49
12	.51	.32	.25	.26	.26	.28	.32	.28	.25	.83	1.03	.49
13	.28	.34	.23	.26	.26	.57	.30	.58	.25	4.59	.49	.51
14	.26	.30	.23	.26	.26	3.77	*.30	.32	*.26	5.08	6.72	.54
15	.26	.30	.23	.26	.26	1.46	.28	.30	.23	13.1	1.54	.59
16	.26	.30	.26	.26	.26	.54	2.14	.28	.23	2.27	1.79	.54
17	.28	.30	.37	*.28	.26	1.86	.82	.54	.22	.96	1.19	.54
18	.28	.30	.26	.31	.26	.32	.49	.45	.54	.61	.78	.54
19	.28	.28	.26	.50	.26	.46	.38	.32	.58	.46	.67	.57
20	*.29	.28	.26	.44	.26	.34	.34	.28	.38	.41	.61	.61
21	.28	.28	.26	.26	.26	.34	.32	.28	.32	.36	.61	.57
22	.28	.28	.26	.26	.28	.28	.84	.28	.30	.34	.57	.77
23	.30	.28	.26	.26	.25	.26	.43	.28	.28	.32	.54	.57
24	.26	.28	.26	.26	.25	.25	.38	.28	.26	.30	.54	.57
25	.26	.28	.26	.26	.25	.43	.36	.28	.34	*.29	.54	.57
26	.26	.28	.26	.26	.25	.30	.66	.28	2.46	.88	.54	.61
27	.26	.28	.26	.26	.25	.28	.49	.28	1.19	1.43	.54	.61
28	.28	.26	.26	1.75	.25	.28	.43	.45	.54	.51	.54	.57
29	.28	.26	.26	.50	.25	.28	.38	------	.65	.41	.51	.57
30	.30	.26	.26	.30	*.25	.26	.38	------	.43	.36	.54	.57
31	.30	.26	------	.26	------	.25	.83	------	.69	------	.51	------
TOTAL	9.06	9.16	8.03	10.44	7.73	16.11	20.52	9.67	19.68	47.81	25.90	16.45
MEAN												
MGD	0.292	0.295	0.268	0.337	0.258	0.520	0.662	0.345	0.635	1.59	0.835	0.548
CFS	0.452	0.457	0.414	0.521	0.399	0.804	1.02	0.534	0.982	2.47	1.29	0.848
AC-FT	28	28	25	32	24	49	63	30	60	147	79	50

CALENDAR YEAR 1962: MAX 3.77 MIN 0.21 MEAN MGD 0.353 MEAN CFS 0.546 AC-FT 395
FISCAL YEAR 1962-63: MAX 13.1 MIN 0.22 MEAN MGD 0.549 MEAN CFS 0.849 AC-FT 615

* Discharge measurement made on this day.

Peak discharge (base, 15 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3- 6	0830	1.92	35.0	54.2	4-15	1500	2.92	111	172
4- 3	2400	1.63	18.3	28.3	5-14	1500	2.14	47.7	73.8

ISLAND OF OAHU

2830. Kahaluu Stream near Heeia

Location.--Lat 21°26'20", long 157°51'20", on left bank 40 ft upstream from intake of Libby ditch, 0.5 mile upstream from forest-reserve boundary, and 3.0 miles northwest of Heeia.

Drainage area.--0.28 sq mi.

Records available.--October 1935 to June 1963.

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.--16 years (1947-63), 0.514 mgd (0.795 cfs).

Extremes.--Maximum discharge during year, 308 mgd (477 cfs) Apr. 15 (gage height, 3.42 ft), from rating curve extended above 8.4 mgd by test on model of station site; minimum, 0.03 mgd (0.05 cfs) Dec. 5-9, Feb. 22-24, 26-28, Mar. 14-18.

1935-63: Maximum discharge, that of Apr. 15, 1963; minimum, 0.03 mgd (0.05 cfs) June 25, 1958, Dec. 5-9, 1962, Feb. 22-24, 26-28, Mar. 14-18, 1963.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1947. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 8, Apr. 15)

0	0	0.4	1.60
.1	.17	.6	3.20
.2	.53	1.0	7.70
.3	.98	1.5	16.2

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.09	0.11	0.11	0.11	0.17	0.05	0.09	0.41	2.65	0.23	0.10	0.11
2	.09	.09	.09	.11	.17	.05	.09	.17	.53	2.80	.10	.11
3	.11	.09	.09	.11	.17	.05	.09	.11	.20	2.90	.10	.11
4	.11	.09	.09	.14	.17	.05	.09	.09	.17	2.27	.14	.11
5	.21	.09	.11	.11	.17	*.04	.09	.09	.14	.30	.20	.11
6	.09	.09	.11	.14	.14	.03	.09	.07	.98	.23	.14	.11
7	.09	.09	.09	.11	.11	.03	5.0	.07	.23	.17	.14	.11
8	.09	.09	.11	.14	.11	.03	*.38	.07	.11	.14	.14	.11
9	.09	.09	.27	.14	.11	.03	.23	.09	.07	*.12	.14	.11
10	.09	.09	*.14	.14	.11	.09	.14	.07	.05	.23	.11	.14
11	.07	.09	.07	.14	.11	.11	.11	.07	.05	.17	.42	.11
12	.24	.09	.09	.14	.11	.09	.09	.07	.05	.84	.86	.11
13	.14	.11	.05	.14	.11	.11	.07	.11	.05	4.67	.26	.11
14	.14	.11	.05	.11	.11	3.67	.05	.07	.05	3.96	10.9	.11
15	.09	.09	.05	.11	.14	1.92	.05	.07	.03	**8.56	.73	.11
16	.07	.09	.09	*.05	.14	.41	1.18	.07	.03	.70	.30	.11
17	.09	.09	.35	.05	.14	1.66	.27	.11	.03	.20	.87	.11
18	.09	.09	.17	.14	.14	.57	.14	.14	.27	.13	.26	.11
19	.07	.09	.09	.34	.14	.23	.11	.09	.11	.11	.17	.14
20	*.07	.09	.09	.37	.11	.17	.09	.07	.05	.10	.14	.20
21	.07	.09	.09	.20	.09	.17	.09	.05	.05	.10	.14	.20
22	.09	.09	.09	.14	.05	.14	.14	.05	.05	.10	.11	.17
23	.11	.09	.09	.14	.05	.11	.11	.03	.05	.10	.11	.14
24	.09	.09	.09	.14	.05	.09	.11	.05	.05	.10	.11	.14
25	.09	.09	.09	.14	.05	.23	.11	.05	.07	.18	.11	.17
26	.09	.11	.09	.14	.05	.16	.26	.05	3.65	.66	.11	*.14
27	.09	.09	.09	.17	.05	.11	.23	.03	1.10	.80	*.11	.11
28	.09	.09	.09	6.04	.05	.11	.14	*.05	.34	.25	.11	.11
29	.09	.09	.09	.54	.05	.11	.11	------	.26	.13	.11	.11
30	.09	.09	.11	.23	.05	.10	.11	------	.23	.10	.14	.14
31	.09	.11	------	.17	------	.09	.69	------	.23	------	.11	------
TOTAL	3.12	2.89	3.23	10.89	3.22	10.81	10.55	2.47	11.93	31.35	17.49	3.78
MEAN												
MGD	0.101	0.093	0.108	0.351	0.107	0.349	0.340	0.088	0.385	1.04	0.564	0.126
CFS	0.156	0.144	0.167	0.544	0.166	0.540	0.526	0.136	0.595	1.61	0.873	0.195
AC-FT	9.6	8.9	9.9	33	9.9	33	32	7.6	37	96	54	12

CALENDAR YEAR 1962: MAX 6.04 MIN 0.03 MEAN MGD 0.227 MEAN CFS 0.351 AC-FT 254
FISCAL YEAR 1962-63: MAX 10.9 MIN 0.03 MEAN MGD 0.306 MEAN CFS 0.473 AC-FT 343

Peak discharge (base, 30 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-15	1530	3.42	308	477	5-14	1330	4.03	114	176

* Discharge measurement made on this day.
** Field estimate made on this day.
Note.--No gage-height record Dec. 21 to Jan. 7, Apr. 16 to May 3.

2836. South Fork Waihee Stream near Heeia

Location.--Lat 21°26'42", long 157°52'10", on left bank 0.6 mile upstream from confluence with North Fork, 3.0 miles southwest of Waiahole School, and 4.0 miles northwest of Heeia.

Drainage area.--0.03 sq mi.

Records available.--September 1962 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 615.74 ft above mean sea level (levels by Honolulu Board of Water Supply).

Extremes.--Maximum discharge during period September to June, 105 mgd (162 cfs) Apr. 15 (gage height, 3.25 ft), from rating curve extended above 2.6 mgd by logarithmic plotting; minimum, 0.92 mgd (1.42 cfs) on many days.

Remarks.--Records good except those for periods of no gage-height record and those above 6 mgd, which are fair.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used May 14 to June 25)

0.6	0.77	1.0	3.40
.7	1.20	1.3	7.30
.8	1.78		

DISCHARGE, IN MILLION GALLONS A DAY, SEPTEMBER 1962 to JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1			0.96	1.00	1.10	1.00	1.05	1.05	*2.0	1.00	0.92	0.92
2			.96	1.00	1.10	1.00	1.05	1.05	1.05	1.68	.92	.92
3			.96	1.00	1.10	1.00	1.05	1.05	1.00	1.94	.92	.96
4			.96	1.00	1.10	1.00	1.05	1.00	1.00	1.41	1.10	.96
5			.96	1.00	1.10	1.00	1.05	1.00	1.1	1.00	.96	.92
6			.96	1.00	1.10	1.00	1.05	1.00	1.1	1.00	1.01	.92
7			.96	1.00	1.10	1.00	3.19	1.00	.96	1.00	.96	.92
8			.96	1.00	1.10	1.00	*1.05	1.00	.96	1.00	.92	.92
9			1.00	1.00	1.10	1.00	1.00	1.00	.96	1.00	.96	.92
10			1.00	1.00	1.10	1.00	*1.00	1.00	.96	1.00	.96	.96
11			1.00	*1.00	1.05	1.00	1.00	1.00	.96	1.00	1.05	.92
12			1.00	1.05	1.05	*1.00	1.00	1.00	.96	1.00	1.14	.92
13			1.00	1.05	1.05	1.00	1.00	1.00	1.00	2.77	.96	.96
14			1.00	1.05	*1.05	2.39	1.00	1.00	1.00	2.03	4.79	.96
15			.96	1.05	1.05	1.63	1.00	1.00	.96	6.14	1.00	.96
16			.96	1.10	1.05	1.10	1.42	1.00	.96	1.15	.96	.96
17			1.64	1.10	1.05	1.46	1.05	1.00	.96	1.00	1.42	.96
18			1.05	1.15	1.05	*1.05	1.00	1.15	1.15	.96	.96	.96
19			1.00	1.28	1.05	1.05	1.00	1.05	1.00	.96	.92	.92
20			1.00	1.20	1.05	1.05	1.00	1.00	1.00	.96	.92	.96
21			1.00	1.10	1.05	1.05	*1.00	1.00	.96	.96	.96	.96
22			1.00	1.10	1.05	1.05	1.10	1.00	1.00	.96	.92	.96
23			1.00	1.10	1.05	1.05	1.05	1.00	.96	*.96	.92	.92
24			1.00	1.10	1.05	1.05	1.05	1.00	.96	.96	.92	.96
25			1.00	1.10	1.05	1.10	1.05	1.00	.96	.96	.92	.96
26			1.00	1.10	1.05	1.05	1.10	1.00	2.10	1.18	.92	.96
27			1.00	1.10	1.05	1.05	1.05	1.00	1.15	1.14	.96	.96
28			1.00	2.08	1.05	1.05	1.05	1.00	1.05	1.00	*.96	.96
29			1.00	1.15	1.00	1.05	1.05	------	1.00	.92	.92	.96
30			1.00	1.15	1.00	1.05	1.05	------	1.00	.92	.92	.96
31			------	1.10	------	1.05	1.40	------	1.00	------	.92	------
TOTAL			30.29	34.21	31.90	34.33	34.96	28.35	33.78	40.16	33.99	28.36
MEAN												
MGD			1.01	1.10	1.06	1.11	1.13	1.01	1.09	1.34	1.10	0.945
CFS			1.56	1.71	1.65	1.71	1.74	1.56	1.69	2.07	1.70	1.46
AC-FT			93	105	98	105	107	87	104	123	104	87

CALENDAR YEAR 1962:	MAX	-	MIN	-	MEAN MGD	-	MEAN CFS	-	AC-FT	-
FISCAL YEAR 1962-63	MAX	-	MIN	-	MEAN MGD	-	MEAN CFS	-	AC-FT	-

Peak discharge (base, 15 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
9-17	1230	1.77	18.1	28.0	3-26	2100	1.80	19.0	29.4
1- 7	0830	1.87	21.1	32.6	4-15	1030	3.25	105	162
3- 6	About 0900	1.87	21.1	32.6	5-14	1400	3.09	89.1	138
					5-17	1500	1.76	17.8	27.5

* Discharge measurement made on this day.
Note.--No gage-height record Sept. 1-3, Feb. 23 to Mar. 1, Mar. 5, 6, June 26-30.

2837. North Fork Waihee Stream near Heeia

Location.--Lat 21°26'46", long 157°52'18", on left bank 0.6 mile upstream from confluence with South Fork, 2.8 miles southwest of Waiahole School, and 4.3 miles northwest of Heeia.

Drainage area.--0.03 sq mi.

Records available.--September 1962 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 639.00 ft above mean sea level (levels by Honolulu Board of Water Supply).

Extremes.--Maximum discharge during period, 110 mgd (170 cfs) May 14 (gage height, 2.64 ft), from rating curve extended above 12 mgd by logarithmic plotting; minimum, 0.86 mgd (1.33 cfs) on many days.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.58
.5	.99
.6	1.52
.8	3.00
1.0	5.15

Discharge, in million gallons a day, September 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			a1.04	1.04	0.99	0.94	0.90	0.90	*1.57	0.86	0.90	0.94
2			a1.04	1.04	.99	.94	.90	.90	.90	1.52	.90	.94
3			a1.04	1.04	.99	.94	.90	.90	.86	1.58	.90	.94
4			*1.04	1.04	.99	.94	.90	.90	.86	1.13	1.09	.99
5			1.04	1.04	.99	.94	.90	.90	.88	.86	.94	.99
6			1.04	1.04	.99	.94	.90	.90	1.32	.86	1.06	.99
7			1.04	1.04	.99	.94	2.59	.90	.86	.86	.94	.99
8			1.04	.99	.99	.94	*.99	.90	.86	.86	.90	.99
9			1.04	.99	.99	.94	.94	.90	.86	.86	.90	.99
10			1.04	.99	.99	.99	*.94	.90	.86	.86	.90	.99
11			1.04	*.99	.99	.94	.90	.90	.86	.86	1.00	.99
12			1.04	.99	.99	*.94	.90	.86	.86	.86	1.11	.99
13			1.04	.99	.99	.94	.90	.86	.88	1.97	.90	.99
14			1.04	.99	.99	2.18	.90	.86	.90	1.61	4.31	.99
15			1.04	.99	*.99	1.56	.90	.86	.86	*4.59	.99	.99
16			1.04	.99	.99	.99	1.24	.86	.86	1.04	.94	1.04
17			1.51	.99	.99	1.38	.90	.86	.86	.90	1.38	1.04
18			1.18	.99	.99	*.94	.90	1.03	.99	.86	.94	1.04
19			1.13	1.12	.99	.94	.90	.86	.86	.86	.94	1.04
20			1.13	1.04	.99	.94	.90	.86	.86	.86	.94	1.04
21			1.08	.99	.99	.94	*.90	*.86	.86	.86	.94	1.08
22			1.04	.99	.99	.94	.99	.86	.90	.86	.94	1.08
23			1.04	.99	.99	.94	.90	.86	.86	*.86	.94	1.08
24			1.04	.99	.99	.94	.90	.86	.86	.86	.94	1.08
25			1.04	.99	.99	.99	.90	.86	.86	.86	.94	1.08
26			1.04	.99	.99	.94	.94	.86	*1.83	1.06	.94	1.08
27			1.04	.99	.99	.94	.90	.86	1.04	1.14	.94	1.08
28			1.04	1.79	.99	.90	.90	.86	.90	1.02	*.94	1.08
29			1.04	1.08	.94	.90	.90	--------	.86	.90	.94	1.08
30			1.04	1.04	.94	.90	.90	--------	.86	.90	.94	1.08
31			--------	1.04	--------	.90	1.23	--------	.86	--------	.94	--------
Total			32.03	32.21	29.60	31.43	30.56	24.69	29.31	33.98	33.22	30.70
Mean												
Mgd			1.07	1.04	0.987	1.01	0.986	0.882	0.945	1.13	1.07	1.02
Cfs			1.66	1.61	1.53	1.56	1.53	1.36	1.46	1.75	1.66	1.58
Ac-ft			98	99	91	96	94	76	90	104	102	94

Calendar Year 1962:			Max	-	Min	-	Mean mgd	-	Mean cfs	-	Ac-ft	-
Fiscal Year 1962-63:			Max	-	Min	-	Mean mgd	-	Mean cfs	-	Ac-ft	-

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0830	1.57	21.6	33.4	5-14	1400	2.64	110	170
3- 6	0900	1.58	22.1	34.2	5-17	1430	1.62	23.9	37.0
4-15	1130	2.42	85.2	132					

* Discharge measurement made on this day.
a No gage-height record.

2838. Waihee Stream at altitude 260 ft (corrected), near Heeia

Location.--Lat 21°26'57", long 157°51'55", on right bank 325 ft downstream from confluence of North and South Forks, 2.7 miles southwest of Waiahole School, and 3.7 miles northwest of Heeia.

Drainage area.--0.31 sq mi.

Records available.--May 1961 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 259.28 ft above mean sea level (levels by Honolulu Board of Water Supply).

Extremes.--Maximum discharge during year, 256 mgd (396 cfs) Apr. 15 (gage height, 4.91 ft), from rating curve extended above 19 mgd; minimum, 1.56 mgd (2.41 cfs) Oct. 10.

1961-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Oct. 10, 1962.

Remarks.--Records good except those for period of no gage-height record, which are fair. Honolulu Board of Water Supply tunnel draft affects flow at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Apr. 15-23)

0.3	1.22
.8	4.41
1.1	7.20
1.5	16.0
2.0	33.5

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.10	2.22	1.86	1.68	2.04	1.92	1.98	3.05	*6.63	2.61	2.49	2.67
2	2.10	2.22	1.80	1.68	1.98	1.92	2.04	2.73	2.79	7.32	2.49	2.73
3	2.10	2.16	1.80	1.74	1.98	1.92	1.98	2.67	2.43	8.22	2.55	2.73
4	2.10	2.10	1.74	1.68	2.04	1.86	1.98	2.67	2.43	5.65	3.22	2.67
5	2.35	2.04	1.80	1.68	2.04	1.86	1.98	2.55	2.55	2.92	2.86	2.67
6	2.04	1.98	1.80	1.74	2.04	1.86	1.98	2.55	*4.57	2.86	3.16	2.73
7	2.04	2.04	1.80	1.68	1.98	1.86	*13.7	2.55	2.61	2.73	2.92	2.67
8	2.10	2.04	1.86	1.68	1.98	1.86	2.92	2.55	2.43	2.67	2.61	2.67
9	2.10	2.04	1.99	1.68	1.98	1.80	2.29	2.61	2.43	2.68	2.67	2.61
10	2.04	1.98	*1.86	1.68	1.98	1.92	*2.22	2.49	2.36	2.67	2.61	2.61
11	2.04	1.98	1.92	*1.68	1.98	1.92	2.16	2.49	2.36	2.61	2.93	2.61
12	2.72	1.98	1.98	1.74	1.92	1.92	2.16	2.49	2.36	2.80	3.86	2.79
13	2.22	1.98	1.98	1.74	1.92	1.98	2.10	2.61	*2.45	11.1	2.73	2.86
14	2.22	2.04	1.98	1.74	*1.92	8.80	2.10	2.55	2.48	9.22	18.2	2.79
15	2.10	1.92	1.98	1.74	1.92	5.60	2.16	2.49	2.29	24.2	3.78	2.8
16	2.04	1.92	2.04	1.74	1.92	2.43	4.00	2.43	2.29	4.48	3.05	2.8
17	2.10	1.92	4.13	1.74	1.92	4.25	2.61	2.49	2.29	2.92	5.52	2.8
18	2.10	1.92	2.10	1.92	1.92	2.54	2.36	3.04	3.08	2.67	3.12	2.8
19	*2.10	1.86	1.98	2.37	1.86	2.22	2.29	2.55	2.43	2.55	2.73	2.9
20	2.04	1.86	1.86	2.10	1.86	2.16	2.29	2.36	2.36	2.49	2.61	3.0
21	2.04	1.86	1.86	1.92	1.92	2.16	2.43	2.22	2.29	2.43	2.73	3.0
22	1.98	1.86	1.80	1.86	1.92	2.10	2.82	2.16	2.55	2.43	2.61	3.0
23	2.16	1.86	1.80	1.92	1.92	2.04	2.55	2.16	2.43	*2.47	2.55	2.8
24	2.04	1.86	1.74	1.92	1.92	2.04	2.55	2.16	2.36	2.43	2.55	2.9
25	1.98	1.86	1.74	1.92	1.86	2.36	2.55	2.16	2.43	2.49	2.49	2.9
26	1.98	1.86	1.80	1.86	1.86	2.10	2.79	2.16	*8.65	3.29	2.43	2.8
27	1.98	1.80	1.80	1.86	1.86	2.04	2.61	2.16	4.09	4.28	2.49	2.9
28	1.98	1.80	1.74	6.00	1.86	2.04	2.49	2.29	2.99	3.31	*2.51	2.8
29	1.98	1.80	1.74	2.55	1.86	2.04	2.43	------	2.67	2.67	2.61	2.7
30	1.98	1.80	1.68	2.16	1.86	2.04	2.55	------	2.61	2.55	2.67	2.7
31	1.98	1.74	------	2.04	------	1.98	4.44	------	2.67	------	2.67	------
TOTAL	64.83	60.30	57.96	61.44	58.02	75.54	87.51	69.39	91.36	133.72	104.42	83.41
MEAN												
MGD	2.09	1.95	1.93	1.98	1.93	2.44	2.82	2.48	2.95	4.46	3.37	2.78
CFS	3.24	3.01	2.99	3.07	2.99	3.77	4.37	3.83	4.56	6.90	5.21	4.30
AC-FT	199	185	178	189	178	232	269	213	280	410	320	256

CALENDAR YEAR 1962:	MAX	12.4	MIN	1.68	MEAN MGD	2.38	MEAN CFS	3.68	AC-FT	2,660
FISCAL YEAR 1962-63:	MAX	24.2	MIN	1.68	MEAN MGD	2.60	MEAN CFS	4.02	AC-FT	2,910

* Discharge measurement made on this day.
Note.--No gage-height record June 15-30.

Peak discharge (base, 55 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0730	2.61	66.6	103	4-15	1100	4.91	256	396
3- 6	0830	2.52	61.2	94.7	5-14	1430	4.60	225	348
3-26	1000	2.44	56.4	87.3	5-17	1500	2.55	63.0	97.5

2840. Waihee Stream near Heeia

Location.--Lat 21°27'00", long 157°51'40", on left bank 70 ft upstream from intake of Kihe ditch, 120 ft downstream from forest-reserve boundary, 3.5 miles northwest of Heeia, and 4.4 miles northwest of Kaneohe.

Drainage area.--0.93 sq mi.

Records available.--December 1935 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 193.44 ft (revised) above mean sea level (levels by Honolulu Board of Water Supply).

Average discharge.--27 years (1936-63), 6.20 mgd (9.59 cfs).

Extremes.--Maximum discharge during year, 1,010 mgd (1,560 cfs) Apr. 15 (gage height, 6.06 ft, from floodmarks), from rating curve extended above 50 mgd on basis of slope-area measurement of peak flow; minimum, 2.17 mgd (3.36 cfs) Oct. 15, 16.

1935-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Oct. 15, 16, 1962.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Honolulu Board of Water Supply diverts ground water from tunnel in drainage area.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	1.90
.7	3.80
1.0	8.00
1.5	18.5
2.0	33.0
2.5	53.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.00	2.71	2.44	2.44	2.90	2.6	2.71	4.64	9.10	4.04	4.40	4.40
2	3.00	2.71	2.35	2.44	2.80	2.6	2.71	4.04	4.88	11.7	4.28	4.28
3	3.00	2.71	2.35	2.44	2.80	2.6	2.71	3.80	3.80	17.1	4.28	4.40
4	3.00	2.62	2.26	2.44	2.80	2.5	2.71	3.60	3.50	13.0	5.00	4.52
5	3.20	2.62	2.26	2.35	2.80	2.5	2.71	3.50	3.60	6.12	4.88	4.16
6	3.00	2.53	2.35	2.35	2.90	2.5	2.71	3.50	7.0	5.14	5.09	4.16
7	3.00	2.53	2.35	2.35	2.80	2.5	*23.4	3.50	4.16	4.64	5.00	4.16
8	3.00	2.53	2.35	2.35	2.80	2.5	*5.97	3.50	3.70	4.40	4.64	4.04
9	3.00	2.62	2.66	2.26	2.80	2.4	4.16	3.50	3.60	*4.40	4.64	4.16
10	3.00	2.53	*2.54	2.26	2.80	2.5	3.50	3.50	3.40	4.16	4.52	4.40
11	3.00	2.53	2.44	2.35	2.71	2.5	3.30	3.40	3.40	4.04	4.94	4.40
12	3.57	2.53	2.53	2.35	2.71	2.5	3.10	3.40	3.40	4.88	5.90	4.40
13	3.10	2.53	2.44	2.35	2.62	2.62	3.00	3.40	3.50	21.4	4.76	4.52
14	3.10	2.62	2.44	2.35	2.62	11.2	3.00	3.30	3.50	19.3	40	4.52
15	3.00	2.53	2.44	*2.26	2.71	8.59	3.00	3.30	3.30	*50	7.20	4.52
16	*2.90	2.53	2.53	2.26	2.71	4.04	6.20	3.40	3.30	13.7	5.84	4.40
17	2.90	2.53	4.83	2.35	2.71	6.40	3.92	3.50	3.30	7.04	9.42	4.40
18	2.90	2.53	3.00	2.53	2.71	4.40	3.50	3.97	4.16	5.70	6.12	4.40
19	2.90	2.53	2.71	3.12	2.62	3.50	3.40	3.40	3.40	5.12	5.28	4.52
20	2.90	2.53	2.62	2.90	2.62	3.10	3.30	*3.20	3.50	4.64	5.00	4.64
21	2.71	2.44	2.62	2.62	2.62	3.00	3.40	3.20	3.40	4.40	5.00	4.64
22	2.71	2.35	2.62	2.62	2.62	2.90	3.92	3.10	3.70	4.28	4.64	4.64
23	2.90	2.35	2.53	2.53	2.62	2.80	3.50	3.10	3.50	4.16	4.52	4.40
24	2.71	2.35	2.53	2.53	2.62	2.80	3.50	3.00	3.50	4.16	*4.40	4.52
25	2.71	2.35	2.62	2.53	2.53	3.30	3.40	3.00	3.60	4.04	4.52	4.52
26	2.71	2.35	2.62	2.53	2.53	3.00	3.70	3.00	15.8	5.13	4.64	4.40
27	2.62	2.35	2.62	2.53	*2.53	2.80	3.60	3.00	7.94	6.90	4.64	*4.27
28	2.71	2.35	2.62	7.35	2.5	2.90	3.50	3.20	5.28	5.70	4.52	4.28
29	2.53	2.35	2.53	3.70	2.5	2.80	3.50	------	*4.55	4.76	4.78	4.16
30	2.53	2.35	2.53	3.20	2.5	2.80	3.50	------	4.28	4.52	4.40	4.16
31	2.53	2.35	------	3.00	------	2.71	6.20	------	4.28	------	4.40	------
TOTAL	89.84	77.44	77.73	83.64	80.51	105.86	130.73	95.95	141.33	258.57	191.65	131.39
MEAN												
MGD	2.90	2.50	2.59	2.70	2.68	3.41	4.22	3.43	4.56	8.62	6.18	4.38
CFS	4.48	3.86	4.01	4.17	4.15	5.28	6.53	5.30	7.06	13.3	9.56	6.78
AC-FT	276	238	239	257	247	325	401	294	434	794	588	405

CALENDAR YEAR 1962:	MAX	17.8	MIN	2.26	MEAN MGD	3.43	MEAN CFS	5.31	AC-FT	3,840
FISCAL YEAR 1962-63:	MAX	50	MIN	2.26	MEAN MGD	4.01	MEAN CFS	6.20	AC-FT	4,500

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	0830	3.37	97.2	150	5-14	About 1500	-	About 730	About 1,130
3-26	0930	3.44	101	156	5-17	1430	3.38	97.8	151
4-3	2400	3.40	99.0	153					
4-15	About 1130	6.06	1,010	1,560					

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 28 to Dec. 12, Mar. 6, Apr. 15, May 14.

2850. Waiahole tunnel at Waianu, near Waiahole

Location (revised).--Lat 21°29'05", long 157°53'15", on left bank in Waiahole tunnel at Waianu Stream intake and 2.1 miles west of Waiahole School.

Records available.--December 1950 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 785.5 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.--12 years (1951-63), 24.0 mgd (37.1 cfs).

Extremes.--1950-63: Maximum daily discharge, 74.0 mgd (114 cfs) July 28, 1954; minimum daily, 16.0 mgd (24.8 cfs) Jan. 24-29, 1952.

Remarks.--Records excellent. Tunnel diverts from headwaters of nearly all streams from Waiahole Valley to Kahana Valley for irrigation in central Oahu. Occasional diversions at various intakes above station.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	20.9	*32.3	20.3	19.1	18.4	17.6	17.6	21.5	37.0	21.4	23.0	24.9
2	20.9	25.1	20.1	19.1	18.0	17.6	*17.7	19.5	20.7	32.8	22.9	24.6
3	22.6	24.0	19.9	19.9	18.6	17.4	17.6	19.1	18.8	38.7	23.1	*24.2
4	21.8	22.2	19.7	19.5	19.3	17.4	17.6	19.1	18.6	29.9	26.8	25.1
5	23.1	21.6	19.7	19.3	18.6	17.6	17.6	18.8	19.3	21.6	24.0	24.4
6	21.2	22.4	19.9	19.1	18.4	17.6	17.4	18.8	31.3	20.7	28.7	24.9
7	21.2	21.8	19.7	19.1	18.6	17.6	58.7	18.8	20.5	20.3	28.0	26.0
8	21.2	22.0	21.2	18.8	18.4	17.6	22.0	18.6	19.1	20.1	24.0	26.2
9	21.6	21.8	22.2	18.8	18.4	17.6	19.1	19.3	18.6	20.7	27.7	27.9
10	21.2	21.6	20.7	18.8	18.2	17.6	18.4	18.6	18.6	20.1	24.2	36.8
11	20.9	21.2	20.1	18.6	18.2	17.6	18.0	18.6	18.4	20.3	29.2	29.2
12	31.5	21.2	20.1	18.6	18.2	17.8	17.6	18.4	18.2	20.3	39.1	27.4
13	22.0	23.7	20.1	18.6	18.0	17.6	17.6	19.1	20.9	27.1	27.2	27.2
14	22.6	21.6	19.9	18.6	18.0	33.1	17.6	18.6	26.4	29.8	36.5	26.9
15	20.9	21.6	19.7	18.6	18.8	43.6	17.6	18.4	21.7	43.0	27.9	27.4
16	20.7	21.4	22.6	18.6	18.0	21.2	28.3	18.4	20.7	23.5	33.2	26.9
17	21.6	21.2	40.9	18.6	18.0	31.2	19.3	19.9	21.9	22.0	32.5	27.9
18	21.8	21.2	21.6	18.6	18.2	22.0	18.2	19.9	35.9	21.6	26.5	27.4
19	21.4	20.7	20.3	25.0	18.4	19.3	17.8	19.1	21.2	21.4	25.3	27.6
20	20.9	20.7	19.9	20.7	18.0	18.6	17.8	18.6	19.7	21.4	24.7	30.2
21	20.7	20.5	19.7	19.1	17.8	18.4	17.6	18.4	19.7	21.6	26.8	35.1
22	22.0	20.5	19.7	18.8	17.8	18.0	21.6	18.2	32.5	21.4	24.5	29.5
23	41.3	20.5	19.5	18.6	17.8	18.0	18.8	18.2	24.7	21.6	23.8	27.6
24	22.0	20.5	19.5	18.6	17.8	17.8	19.1	20.1	20.3	21.8	23.7	27.4
25	21.2	20.3	19.5	18.6	17.6	18.4	18.2	19.1	19.7	21.8	24.6	28.3
26	20.9	20.3	19.3	18.6	17.6	17.8	18.2	18.2	34.5	24.6	25.3	27.9
27	20.7	20.3	19.3	18.4	17.6	17.6	18.2	18.0	27.8	24.9	24.5	29.5
28	21.2	20.1	19.1	32.0	17.6	17.6	18.0	18.4	21.2	24.2	23.7	27.6
29	20.7	20.1	19.1	20.7	17.6	17.6	18.0	------	23.7	23.3	24.2	27.2
30	20.9	20.1	19.1	19.1	18.2	17.6	18.6	------	20.7	23.3	24.0	27.4
31	21.2	19.9	------	18.6	------	17.8	40.4	------	22.9	------	23.6	------
TOTAL	692.8	672.4	622.4	607.1	544.1	614.2	640.2	529.7	715.2	725.2	823.2	830.6
MEAN												
MGD	22.3	21.7	20.7	19.6	18.1	19.8	20.7	18.9	23.1	24.2	26.6	27.7
CFS	34.6	33.6	32.1	30.3	28.1	30.7	31.9	29.3	35.7	37.4	41.1	42.8
AC-FT	2,130	2,060	1,910	1,860	1,670	1,880	1,960	1,630	2,190	2,230	2,530	2,550

CALENDAR YEAR 1962:	MAX	44.9	MIN	17.4	MEAN MGD	21.7	MEAN CFS	33.6	AC-FT	24,310
FISCAL YEAR 1962-63:	MAX	58.7	MIN	17.4	MEAN MGD	22.0	MEAN CFS	34.0	AC-FT	24,600

* Discharge measurement made on this day.

2860. Waiahole tunnel wasteway at intake 31, near Waiahole

Location (revised).--Lat 21°28'30", long 157°53'15", on left bank 150 ft downstream from wasteway gates at Waiahole tunnel intake No. 31 and 2.2 miles west of Waiahole School.

Records available.--January 1951 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 742.7 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.--12 years, 0.716 mgd (1.11 cfs).

Extremes.--1951-63: Maximum daily discharge, 62.1 mgd (96.1 cfs) Dec. 1, 1957; no flow most of time.

Remarks.--Records good except those for periods of shifting control, which are fair. Station measures releases from Waiahole tunnel to Waiahole Stream.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		(*)		(*)	(*)		0	*0	2.88	*0	*0	0
2	(*)						*0	0	0	3.42	0	0
3						(*)	0	0	0	11.9	0	*0
4			(*)				0	0	*0	8.60	0	0
5							0	0	0	2.13	0	0
6							0	0	.77	1.59	0	0
7							5.20	0	0	1.35	0	0
8							.03	0	0	1.20	0	0
9							0	.04	0	1.70	.10	0
10							0	0	0	1.35	0	e.71
11							0	0	0	1.43	0	0
12							0	0	0	1.43	.08	0
13							0	0	0	7.15	0	0
14							0	0	.08	9.40	e3.87	0
15							0	0	0	e25.1	.59	0
16							3.63	0	0	4.14	0	0
17							0	.10	0	3.00	0	0
18							0	.02	0	2.70	0	0
19							0	0	0	2.50	0	0
20							0	0	0	2.40	0	.16
21							0	0	0	2.40	e4.33	e.88
22							.09	0	1.09	1.55	e6.00	0
23							0	0	.24	0	0	0
24							0	0	0	0	e4.84	0
25							0	0	0	0	0	0
26							0	0	5.98	0	0	0
27							0	0	2.37	0	0	0
28							0	0	0	0	0	0
29							0	--------	1.54	0	0	0
30							0	--------	0	0	0	0
31			--------		--------		8.91	--------	.03	--------	e4.35	--------
Total	0	0	0	0	0	0	17.86	0.16	14.98	96.44	24.16	1.75
Mean												
Mgd	0	0	0	0	0	0	0.576	0.006	0.483	3.21	0.779	0.058
Cfs	0	0	0	0	0	0	0.891	0.009	0.747	4.97	1.21	0.090
Ac-ft	0	0	0	0	0	0	55	0.5	46	296	74	5.4

Calendar Year 1962: Max 7.82 Min 0 Mean mgd 0.042 Mean cfs 0.065 Ac-ft 48
Fiscal Year 1962-63: Max 25.1 Min 0 Mean mgd 0.426 Mean cfs 0.659 Ac-ft 477

* Observation of no flow made on this day.
e Shifting-control method used.

2870. Waiahole tunnel at north portal, near Waiahole

Location.--Lat 21°28'15", long 157°53'30", on right bank in Waiahole tunnel directly below crest of Koolau Range and 2.6 miles southwest of Waiahole School.

Records available.--January 1951 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 752.5 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.--12 years, 26.0 mgd (40.2 cfs).

Extremes.--1951-63: Maximum daily discharge, 81.0 mgd (125 cfs) July 28, 1954; minimum daily, 1.48 mgd (2.29 cfs) Dec. 9, 1956.

Remarks.--Records excellent except those for periods of no gage-height record, which are good. Tunnel diverts from headwaters of nearly all streams from Kahana Valley to Waiahole Valley for irrigation in central Oahu. Occasional diversions at numerous intakes above station.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	24.5	*36.1	22.5	21.5	20.8	19.9	18.4	24.2	36.8	22.9	*a26	28.3
2	24.3	29.0	22.0	21.5	20.8	19.7	18.4	20.1	22.3	30.5	a26	28.0
3	26.3	25.3	22.3	22.3	21.5	*19.7	19.5	19.7	19.9	27.5	a26	27.5
4	24.8	25.8	22.4	22.0	22.0	19.7	19.7	19.5	19.5	23.0	a32	28.5
5	26.5	24.8	22.3	22.0	21.5	19.9	19.7	19.5	21.1	21.3	a28	28.0
6	24.5	26.0	22.3	21.8	21.3	19.9	19.3	19.3	34.1	20.8	30.3	28.3
7	24.3	24.5	22.3	21.8	21.3	19.7	58.3	19.1	21.5	20.8	32.5	29.3
8	24.3	25.3	23.5	21.5	21.1	19.7	24.5	19.1	20.1	20.6	28.3	29.5
9	24.8	25.0	26.8	21.5	21.1	19.5	20.6	19.9	19.7	21.1	32.3	31.5
10	24.5	24.3	23.8	21.5	20.8	19.7	19.9	19.3	19.5	20.8	28.8	39.5
11	24.3	24.0	22.3	21.5	20.8	19.7	19.5	19.1	19.5	20.8	33.5	32.8
12	35.7	24.0	22.3	21.3	20.6	19.7	19.3	19.1	19.3	20.8	43.7	30.8
13	26.0	26.6	22.3	21.3	20.6	19.7	19.1	19.7	21.2	a24	31.8	31.3
14	26.5	24.5	22.3	21.5	20.6	38.8	19.1	19.3	31.1	a26	39.4	31.5
15	24.8	24.3	22.0	21.3	21.8	49.6	19.1	19.3	24.5	a28	31.0	32.3
16	24.5	24.0	25.3	21.3	20.6	24.0	26.6	19.1	23.5	20.8	35.5	31.8
17	25.0	23.8	45.9	21.3	20.6	35.2	20.6	19.8	24.8	20.1	35.0	31.3
18	25.3	23.5	24.3	21.5	20.6	24.8	a20	21.8	39.1	20.1	29.8	30.0
19	24.8	23.5	22.8	27.9	21.1	21.8	a20	20.8	22.8	20.1	28.5	30.5
20	24.3	23.3	22.5	24.0	20.6	21.1	a20	21.1	21.5	20.1	27.5	33.0
21	24.0	23.3	22.3	21.5	19.9	20.8	a19	20.8	21.3	20.1	24.9	38.4
22	24.8	23.3	22.3	21.1	19.1	20.6	a24	20.8	31.8	21.8	21.2	35.0
23	40.5	23.0	22.0	21.1	19.9	20.3	20.6	20.8	26.5	24.0	27.0	32.8
24	25.5	23.0	22.0	20.6	20.3	20.3	20.6	23.1	22.0	24.0	21.3	32.8
25	24.5	23.0	22.0	20.6	20.1	21.1	19.7	22.0	22.0	24.3	28.0	34.5
26	24.3	23.0	21.8	20.6	19.9	20.3	19.5	21.1	30.4	a28	28.8	32.8
27	24.3	23.0	21.8	20.6	19.7	20.1	19.5	20.8	27.5	a28	28.0	34.5
28	24.5	23.0	21.8	37.5	19.7	19.1	19.3	20.8	22.8	a28	27.0	32.5
29	24.0	22.5	21.8	23.5	19.7	18.6	19.3	------	24.2	a26	27.5	32.3
30	24.3	22.5	21.5	21.3	20.3	18.6	19.3	------	21.8	a26	27.5	32.5
31	24.3	22.5	------	21.1	------	18.6	31.4	------	24.8	------	22.0	------
TOTAL	795.0	759.7	701.5	689.8	618.7	690.2	673.8	569.0	756.9	700.3	909.1	951.8
MEAN												
MGD	25.6	24.5	23.4	22.3	20.6	22.3	21.7	20.3	24.4	23.3	29.3	31.7
CFS	39.7	37.9	36.2	34.4	31.9	34.4	33.6	31.4	37.8	36.1	45.3	49.1
AC-FT	2,440	2,330	2,150	2,120	1,900	2,120	2,070	1,750	2,320	2,150	2,790	2,920

CALENDAR YEAR 1962:	MAX	49.6	MIN	18.6	MEAN MGD	24.5	MEAN CFS	37.9	AC-FT	27,410
FISCAL YEAR 1962-63:	MAX	58.3	MIN	18.4	MEAN MGD	24.2	MEAN CFS	37.4	AC-FT	27,060

* Discharge measurement made on this day.
a No gage-height record.

2872. Waiahole tunnel at adit 8, near Waipahu

Location.--Lat 21°27'00", long 157°57'30", on left bank at adit 8, 2,700 ft downstream from Ewa Forest Reserve and 5.2 miles northeast of Waipahu Post Office.

Records available.--August 1956 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 709.0 ft above mean sea level (levels by Waiahole Water Co.).

Average discharge.-- 6 years (1957-63), 30.9 mgd (47.8 cfs).

Extremes.--1956-63: Maximum daily discharge, 97.4 mgd (151 cfs) Oct. 23, 1958; minimum daily, 6.0 mgd (9.3 cfs) Dec. 9, 1956.

Remarks.--Records good. Records represent entire flow of Waiahole water-development tunnel; water is used for irrigation of sugar cane in vicinity of Waipahu.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	*28.6	*40.5	*26.2	*25.6	*24.5	22.8	22.2	*27.0	41.2	*27.4	*30.2	32.5
2	28.6	33.1	25.6	25.6	24.2	22.5	*22.2	23.6	26.2	34.2	30.2	32.1
3	30.2	29.6	25.9	26.2	24.5	*22.5	22.8	23.1	24.2	35.5	30.5	*32.5
4	28.9	29.6	25.9	25.9	25.0	22.5	23.1	22.8	*23.9	31.0	33.8	34.1
5	30.9	28.6	25.9	25.6	24.5	22.5	23.1	22.8	25.0	25.9	31.8	32.5
6	28.9	29.3	26.2	25.6	24.5	22.5	22.8	22.5	37.1	25.9	34.0	32.1
7	28.6	28.9	25.9	25.3	24.5	22.5	69.9	22.5	25.6	25.3	37.0	33.4
8	28.6	29.6	26.8	25.3	24.2	22.5	29.3	22.2	24.5	25.0	32.8	33.4
9	28.9	28.9	30.9	24.7	24.2	22.2	25.6	22.8	24.2	25.3	36.4	35.7
10	29.3	28.3	28.7	24.7	23.9	22.5	24.7	22.2	23.9	25.0	33.7	41.6
11	28.9	28.0	26.2	24.7	23.9	22.5	24.5	22.2	23.6	25.0	36.5	36.0
12	39.9	28.0	26.2	24.7	23.6	22.5	23.6	22.0	23.3	25.0	47.3	34.4
13	30.9	30.2	26.2	24.5	23.6	22.2	23.3	22.5	24.7	30.7	36.4	34.4
14	31.2	28.6	25.9	24.7	23.6	40.6	23.3	22.2	37.3	36.5	65.8	34.4
15	29.3	28.3	25.6	24.5	24.2	62.2	23.1	22.0	28.8	46.2	43.0	35.0
16	29.3	28.0	28.3	24.5	23.6	28.9	30.0	22.0	28.0	32.5	51.5	34.4
17	29.6	27.4	54.8	24.2	23.3	37.9	25.0	22.2	29.1	27.1	50.6	34.1
18	29.3	27.4	29.9	24.2	23.3	29.3	23.6	24.2	43.0	26.8	38.7	33.1
19	29.6	27.1	28.0	30.1	23.6	26.8	23.1	23.1	27.1	26.5	36.0	33.7
20	28.3	26.8	27.7	27.4	23.3	25.6	22.5	23.3	25.6	26.2	34.4	36.0
21	28.3	26.8	27.4	25.0	22.8	25.3	22.5	23.3	25.6	26.2	32.5	39.3
22	28.6	26.5	26.8	24.5	22.0	24.7	26.2	23.3	35.6	27.1	27.7	38.3
23	43.5	26.5	26.5	24.2	22.8	24.5	23.9	23.1	30.5	29.3	32.8	36.0
24	29.9	26.5	26.5	24.2	23.1	24.2	24.2	24.5	26.2	29.3	27.4	35.7
25	28.9	26.2	26.2	23.9	23.1	25.0	23.3	24.2	26.5	29.3	33.1	37.0
26	28.6	26.5	26.2	23.9	22.8	24.5	23.1	23.3	37.0	33.1	32.8	35.7
27	28.3	26.5	25.9	23.0	22.8	23.9	22.8	23.3	32.3	34.4	32.8	36.7
28	28.3	26.2	25.9	41.7	22.8	23.1	22.5	23.3	27.4	32.1	31.5	35.4
29	28.0	26.2	25.9	27.7	22.8	22.8	22.5	------	29.3	30.5	31.8	34.7
30	28.3	26.2	25.9	25.0	23.3	22.5	22.5	------	26.8	30.2	34.1	34.7
31	28.3	26.2	------	24.5	------	22.2	35.8	------	28.9	------	27.5	------
TOTAL	926.8	876.5	830.0	796.5	703.3	806.2	797.0	645.5	892.4	884.5	1,114.6	1,048.9
MEAN												
MGD	29.9	28.3	27.7	25.7	23.5	26.0	25.7	23.1	28.8	29.5	36.0	35.0
CFS	46.3	43.7	42.8	39.7	36.5	40.2	39.8	35.7	44.5	45.6	55.6	54.2
AC-FT	2,840	2,690	2,550	2,440	2,170	2,470	2,450	1,980	2,740	2,710	3,420	3,220

CALENDAR YEAR 1962:	MAX	62.2	MIN	22.0	MEAN MGD	28.7	MEAN CFS	44.4	AC-FT	32,100
FISCAL YEAR 1962-63:	MAX	69.9	MIN	22.0	MEAN MGD	28.3	MEAN CFS	43.8	AC-FT	31,680

* Discharge measurement made on this day.

2910. Waiahole Stream at altitude 250 ft, near Waiahole

Location.--lat 21°28'35", long 157°52'30", on left bank 1.5 miles southwest of Waiahole School and 2.7 miles northwest of Kahaluu.

Drainage area.--0.99 sq mi.

Records available.--July 1955 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 250 ft (from topographic map).

Average discharge.--8 years, 4.63 mgd (7.16 cfs).

Extremes.--Maximum discharge during year, 1,440 mgd (2,230 cfs) Apr. 15 (gage height, 4.80 ft), from rating curve extended above 72 mgd on basis of field estimate at gage height 4.23 ft and slope-area measurement of peak flow; minimum, 1.48 mgd (2.29 cfs) Oct. 7-13.

1955-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Oct. 7-13, 1962.

Remarks.--Records good. During the fiscal year, an average of 0.88 million gallons a day was diverted above station by pumping into Waiahole tunnel for irrigation in central Oahu. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge in million gallons a day)

0.4	1.00	1.2	15.5
.5	1.72	1.6	33.5
.7	4.00	2.0	61.0
.9	7.50	2.5	114

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.20	2.30	2.20	1.56	2.30	1.90	3.61	6.24	12.6	5.12	5.60	6.17
2	2.30	2.30	2.51	1.56	2.20	1.90	3.61	4.64	5.60	15.6	5.44	5.98
3	2.30	2.20	2.00	1.56	2.20	1.90	2.73	4.32	4.32	29.0	5.60	6.17
4	2.20	2.20	2.00	1.56	2.30	1.90	2.20	4.16	4.00	19.2	6.02	5.79
5	2.20	2.20	2.00	1.56	2.30	1.90	2.20	4.16	3.09	8.22	5.98	5.60
6	2.10	2.20	2.00	1.56	2.20	1.90	2.73	4.16	11.7	6.93	5.79	5.60
7	2.10	2.51	*1.90	1.48	2.10	1.90	32.5	4.16	4.96	6.55	5.44	5.60
8	2.10	2.20	2.00	1.56	2.10	1.90	7.47	4.16	4.48	6.17	5.12	5.60
9	2.10	2.20	6.77	*1.56	2.10	2.10	4.80	4.32	4.00	6.74	5.52	5.98
10	2.10	2.20	3.27	1.48	2.10	2.10	4.16	4.16	4.00	6.17	5.28	6.32
11	2.10	2.10	2.20	1.56	2.10	2.00	3.87	4.16	3.87	6.36	5.49	5.44
12	2.30	2.10	1.90	1.56	2.00	1.90	3.87	4.16	*4.16	*7.59	6.69	5.44
13	2.10	2.20	1.90	1.56	2.00	2.00	3.74	4.96	3.35	32.2	5.12	4.96
14	2.10	2.00	1.72	1.56	2.00	6.06	*3.61	4.32	3.76	35.5	26.7	4.32
15	2.00	2.10	1.72	1.56	2.00	10.2	3.61	4.16	2.97	*111	8.42	3.87
16	2.00	2.00	1.90	1.56	2.00	3.87	8.83	4.16	2.97	15.1	6.55	3.74
17	2.00	2.00	4.26	1.56	2.00	4.61	4.80	4.32	2.85	7.12	6.26	4.64
18	2.00	2.00	2.51	1.72	2.00	3.61	4.00	4.32	4.61	6.93	5.98	5.28
19	*2.10	2.10	1.81	2.10	1.90	2.73	3.87	3.48	4.80	6.74	5.79	5.28
20	2.30	2.00	1.72	2.00	1.90	2.40	3.74	2.85	4.48	6.74	5.79	5.60
21	2.10	2.00	1.72	1.72	2.20	2.40	3.87	2.73	4.48	6.74	8.69	5.56
22	2.10	2.00	1.72	1.64	2.97	2.30	5.67	2.62	5.47	6.17	9.53	4.00
23	2.30	2.00	1.64	1.64	2.10	2.20	4.64	2.62	4.80	5.12	*5.79	3.74
24	2.20	2.00	1.64	1.64	1.81	2.20	4.48	2.73	4.48	4.96	8.70	3.87
25	2.10	2.00	1.64	1.64	1.81	2.62	4.32	2.62	3.35	5.12	5.79	4.73
26	2.10	2.10	1.64	1.56	1.81	2.40	4.32	2.62	21.7	8.06	5.79	4.48
27	2.10	2.10	1.64	1.56	1.81	2.30	4.32	2.62	10.9	9.55	5.98	4.00
28	2.10	2.00	1.64	6.94	1.90	3.09	4.00	2.85	6.63	7.23	6.17	3.74
29	2.10	2.00	1.64	4.63	*1.90	3.61	4.00	------	7.97	6.17	6.17	3.61
30	2.20	2.00	1.64	2.73	1.90	3.61	4.16	------	5.44	5.79	6.17	3.48
31	2.20	2.00	------	2.40	------	3.61	21.4	------	5.28	------	9.94	------
TOTAL	66.30	65.31	64.85	60.28	62.01	89.12	175.13	106.78	177.07	409.89	217.40	148.59
MEAN												
MGD	2.14	2.11	2.16	1.94	2.07	2.87	5.65	3.81	5.71	13.7	7.01	4.95
CFS	3.31	3.26	3.34	3.01	3.20	4.45	8.74	5.90	8.84	21.1	10.8	7.66
AC-FT	203	200	199	185	190	274	537	328	543	1,260	667	456

CALENDAR YEAR	1962:	MAX	25.7	MIN	1.48	MEAN MGD	2.80	MEAN CFS	4.33	AC-FT	3,140
FISCAL YEAR 1962-63:		MAX	111	MIN	1.48	MEAN MGD	4.50	MEAN CFS	6.96	AC-FT	5,040

* Discharge measurement made on this day.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1- 7	0400	2.54	120	186	4-15	1530	4.80	1,440	2,230
1-31	1700	2.48	111	172	5-14	1400	3.87	440	681
3-26	1000	2.59	128	198					

2949. Waikane Stream at altitude 75 ft, at Waikane

Location.--Lat 21°30'00", long 157°51'54", on right bank 0.3 mile downstream from Waikeekee Stream, 0.7 mile west of Waikane, and 1.2 miles northwest of Waiahole School.

Drainage area.--2.22 sq mi (revised).

Records available.--December 1959 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 75 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,950 mgd (4,560 cfs) Apr. 15 (gage height, 9.46 ft, from floodmarks), from rating curve extended above 74 mgd on basis of slope-area measurements at gage heights 4.88 and 9.46 ft; minimum, 0.77 mgd (1.19 cfs) Oct. 10, 11.

1959-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Oct. 10, 11, 1962.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Mar. 7-12)

1.3	0.43	2.1	23.5
1.4	1.07	2.5	54.0
1.5	2.13	3.0	106
1.6	3.70	3.5	175
1.7	6.00	4.0	263
1.9	13.0	5.0	500

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.15	2.63	1.15	1.54	1.75	1.33	2.56	9.0	29.9	11.4	7.55	4.39
2	1.15	2.71	1.15	1.54	1.54	1.33	2.42	6.0	11.8	27.3	6.93	4.16
3	1.33	1.64	1.15	1.64	1.64	1.33	2.85	5.0	7.55	60	6.62	4.16
4	1.15	1.43	1.07	1.54	1.75	1.33	2.42	4.5	6.31	50	19.4	4.39
5	1.43	1.43	1.07	1.54	1.75	1.33	2.28	4.2	6.00	20.2	11.8	3.93
6	1.25	1.43	*1.15	1.54	1.64	1.33	2.28	3.8	47.5	14.5	9.10	3.93
7	1.15	1.43	1.07	1.54	1.64	1.25	83.0	3.6	10.1	14.0	9.10	3.93
8	1.07	1.64	1.64	1.43	1.54	1.25	18.0	3.5	7.24	12.7	7.24	3.70
9	1.33	1.43	1.55	1.22	1.43	1.25	7.86	3.5	6.31	11.2	7.86	3.93
10	1.33	1.33	1.65	.99	1.43	1.33	5.77	3.4	5.77	9.88	7.24	31.5
11	1.25	1.33	1.25	.99	1.43	1.33	*4.88	3.4	5.31	11.7	7.27	6.00
12	3.49	1.33	1.25	1.07	1.43	1.33	4.16	3.4	4.83	16.5	12.6	5.08
13	1.54	2.19	1.25	.99	1.33	1.54	3.70	4.5	5.08	30	7.86	4.62
14	1.25	1.54	1.25	1.07	1.33	16.7	3.36	4.0	5.77	90	101	4.16
15	1.15	1.64	1.25	1.07	1.33	14.9	3.19	3.7	4.39	*300	26.4	4.16
16	1.07	1.43	1.54	1.07	1.33	4.85	11.6	3.4	3.93	70	27.2	3.70
17	1.15	1.33	9.10	1.07	1.25	22.9	6.00	3.3	3.70	30.8	19.7	3.70
18	*1.15	1.25	2.71	1.25	1.25	9.99	4.5	5.6	12.5	19.3	12.2	3.70
19	1.15	1.25	1.75	1.86	1.25	5.08	4.0	4.0	10.4	14.5	9.88	3.70
20	1.15	1.25	1.54	2.00	1.25	3.93	3.7	3.5	6.00	11.4	8.79	4.63
21	1.15	1.25	1.54	1.25	1.25	3.53	3.5	3.4	5.08	9.88	8.79	4.81
22	1.15	1.15	1.64	1.15	1.25	3.19	7.4	3.3	5.54	8.17	7.55	4.62
23	3.14	1.15	1.54	1.25	1.25	2.85	5.0	3.2	5.08	7.55	6.62	3.70
24	1.64	1.15	1.64	1.15	1.15	2.71	4.7	3.3	4.62	6.31	6.00	3.53
25	1.33	1.07	1.64	1.15	1.15	3.19	4.0	3.3	4.62	5.77	5.54	3.93
26	1.33	1.07	1.64	1.15	1.07	2.85	3.7	3.3	46	17.6	5.08	3.70
27	1.25	1.07	1.54	1.15	1.15	2.56	3.5	*3.53	18.4	39.6	*4.97	3.70
28	1.33	1.07	1.64	8.74	1.15	2.85	3.5	4.16	10.7	16.8	5.08	3.53
29	1.25	.99	1.54	4.85	*1.25	3.19	3.4	-------	16.0	*10.3	5.77	3.19
30	1.33	.99	1.54	2.42	1.33	2.85	3.8	-------	10.3	8.79	5.77	3.19
31	1.33	1.07	------	2.00	------	2.56	46	-------	13.0	------	4.62	------
TOTAL	42.92	43.67	51.44	53.22	41.29	127.94	267.03	112.79	339.73	956.15	391.53	149.37
MEAN												
MGD	1.38	1.41	1.71	1.72	1.38	4.13	8.61	4.03	11.0	31.9	12.6	4.98
CFS	2.14	2.18	2.65	2.66	2.13	6.38	13.3	6.24	17.0	49.4	19.5	7.70
AC-FT	132	134	158	163	127	393	819	346	1,040	2,930	1,200	458

CALENDAR YEAR 1962:	MAX	48.6	MIN	0.99	MEAN MGD	3.41	MEAN CFS	5.28	AC-FT	3,820
FISCAL YEAR 1962-63:	MAX	300	MIN	0.99	MEAN MGD	7.06	MEAN CFS	10.9	AC-FT	7,900

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3- 6	1000	4.95	500	774	5-14	1430	7.47	1,550	2,400
4-15	About 1530	9.46	2,950	4,560	6-10	0430	4.58	399	617

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 18 to Feb. 26, Mar. 26, Apr. 3, 4, 13-16.

2965. Kahana Stream at altitude 30 ft, near Kahana

Location.--Lat 21°32'38", long 157°53'07", on right bank 600 ft upstream from East Branch, 1.1 miles southest of Kahana, and 2.2 miles southwest of Kaaawa Post Office.

Drainage area.--3.74 sq mi.

Records available.--December 1958 to June 1963.

Gage.--Water-stage recorder and concrete-masonry control. Altitude of gage is 30 ft (from topographic map).

Extremes.--Maximum discharge during year, 3,510 mgd (5,430 cfs) Apr. 15 (gage height, 8.10 ft), from rating curve extended above 350 mgd on basis of computation of peak flow over submerged weir; minimum, 7.36 mgd (11.4 cfs) Dec. 9, 12.

1958-63: Maximum discharge, that of Apr. 15, 1963; minimum, 6.50 mgd (10.1 cfs) Sept. 17, 18, 20, 1961.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Approximately 6 mgd is diverted by Waiahole Water Co. at 800 ft elevation, 2.3 miles above station. Continuous records of rainfall are obtained at station.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to June 3

1.2	7.10	2.5	95.0
1.7	15.0	3.0	255
1.9	21.8	4.0	650
2.1	36.0	5.0	1,150
2.3	59.0		

June 4-30

1.5	9.70	2.1	67.5
1.6	15.1	2.5	145
1.8	30.8		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	10.4	26.4	10	10	10.1	8.68	10.6	19.3	34.6	24.9	25.5	19.0
2	10.4	17.3	11	10	9.80	8.54	10.6	15.8	15.8	47.7	22.4	18.2
3	12.8	14.0	11	*11	10.4	8.14	13.5	14.4	13.3	113	26.4	26.2
4	10.4	13.7	10	10	12.3	8.14	10.9	13.7	12.1	90.7	57.4	*38.5
5	14.5	13.3	10	10	10.6	8.14	10.6	13.1	12.9	39.0	25.5	18.7
6	11.0	14.0	*9.80	10	10.1	7.88	10.3	12.9	78.6	30.4	32.6	16.5
7	10.7	*13.5	8.82	10	10.1	7.75	114	12.4	17.2	26.8	28.8	14.6
8	10.6	14.1	10.5	9.5	9.66	7.62	23.7	12.1	15.0	24.3	21.8	14.0
9	11.0	13.3	12.5	9.0	9.24	7.49	17.5	12.1	14.4	36.6	26.7	19.4
10	10.6	12.7	12.8	9.0	9.10	7.75	15.6	11.6	13.3	*27.2	21.8	138
11	11	12.1	9.80	9.0	8.96	7.75	*14.7	11.3	12.7	24.8	37.5	28.5
12	28	11.6	9.66	9.5	8.82	7.49	14.0	11.3	12.6	23.7	61.4	22.2
13	14	15.1	9.38	9.5	8.82	7.88	13.3	13.5	17.2	111	25.5	20.1
14	12	12.7	9.24	9.5	8.68	32.2	12.6	11.3	33.6	239	189	18.7
15	11	12.4	9.10	9.0	11.1	135	12.4	10.9	21.4	*1,130	37.0	18.7
16	11	12.3	14.0	*8.68	9.24	21.4	28.2	10.6	20.5	127	102	17.2
17	12	11.5	95.6	8.40	9.10	46.4	16.1	13.0	54.7	54.5	83.8	17.2
18	*12.3	11.0	15.9	8.68	9.24	21.8	14.0	16.6	213	36.5	36.0	16.5
19	12.6	10.7	12.6	23.2	11.2	17.5	13.3	12.3	32.8	28.8	28.0	17.9
20	11.6	10.4	11.5	16.2	9.24	15.3	12.9	11.2	24.9	25.5	25.5	23.8
21	11.2	10.3	11.0	11.3	8.82	14.6	12.6	10.6	23.7	25.4	30.5	28.9
22	11.6	10.1	10.9	10.3	8.68	13.7	20.1	10.3	41.1	21.8	*24.9	22.9
23	35.3	9.80	10	9.95	8.68	12.6	15.9	10.1	30.6	21.8	22.4	16.5
24	*14.8	9.66	11	9.52	8.40	12.3	15.6	12.0	23.7	20.2	21.4	16.5
25	13.3	9.52	11	9.38	8.27	12.9	14.0	11.3	21.4	20.2	19.8	26.1
26	12.4	9.80	11	9.10	8.27	11.8	13.5	10.4	79.6	91.8	21.0	21.8
27	12.1	9.80	10	8.96	8.14	11.2	12.6	*10.1	42.4	92.8	26.7	23.2
28	13.2	9.5	11	28.8	*8.33	11.0	12.1	10.4	26.1	40.3	19.8	18.7
29	11.6	9.0	11	15.0	8.40	11.3	11.8	------	32.1	26.1	19.8	16.5
30	12.1	9.0	10	*11.3	10.1	11.8	11.9	------	23.9	34.8	23.0	17.9
31	11.9	9.5	------	10.4	------	11.2	78.8	------	34.5	------	19.4	------
TOTAL	407.40	378.08	410.10	344.17	281.89	527.25	607.7	344.6	1,049.7	2,656.6	1,163.3	732.9
MEAN												
MGD	13.1	12.2	13.7	11.1	9.40	17.0	19.6	12.3	33.9	88.6	37.5	24.4
CFS	20.3	18.9	21.2	17.2	14.5	26.3	30.3	19.0	52.4	137	58.1	37.8
AC-FT	1,250	1,160	1,260	1,060	865	1,620	1,860	1,060	3,220	8,150	3,570	2,250

CALENDAR YEAR 1962: MAX 177 MIN 7.49 MEAN MGD 16.0 MEAN CFS 24.8 AC-FT 17,900
FISCAL YEAR 1962-63: MAX 1,130 MIN 7.49 MEAN MGD 24.4 MEAN CFS 37.8 AC-FT 27,320

Peak discharge (base, 800 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3- 6	1000	4.60	950	1,470	4-15	1630	8.10	3,510	5,430
3-18	0630	5.26	1,310	2,030	5-14	1400	6.80	2,360	3,650
3-26	1030	4.33	815	1,260	6-10	0430	5.40	1,390	2,150

* Discharge measurement made on this day.
Note.--No gage-height record July 11-17, Aug. 28 to Sept. 5, Sept. 23 to Oct. 15.

3020. Punaluu ditch near Punaluu

Location.--Lat 21°33'40", long 157°54'10", on right bank 800 ft downstream from intake, 1.7 miles southwest of bridge on Kamehameha Highway at Punaluu, and 3.3 miles southeast of Hauula Post Office.

Records available.--May 1953 to June 1963.

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

Average discharge.--10 years, 7.22 mgd (11.2 cfs).

Extremes.--1953-63: Maximum daily discharge, 22.3 mgd (34.5 cfs) Sept. 17, 1962; minimum daily, 0.02 mgd (0.03 cfs) Jan. 9, 14, 1955, Nov. 8, 9, 1957, Nov. 3, 4, 9-13, 1961.

Remarks.--Records good. Ditch diverts from Punaluu Stream for irrigation of sugar cane in the Punaluu area.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	10.0	11.6	9.32	9.04	3.51	0.91	6.88	0.06	6.15	0.18	2.51	15.2
2	10.0	10.8	9.32	8.90	3.51	.71	7.13	.05	6.04	.20	2.51	14.5
3	10.2	10.2	9.32	9.46	3.59	6.50	7.25	.06	5.83	.24	2.51	14.7
4	10.3	10.2	9.32	9.18	3.51	9.46	7.00	.07	5.73	.32	2.51	14.7
5	10.3	10.0	*9.32	9.18	3.63	9.46	7.00	.07	5.83	.27	2.51	14.5
6	10.0	9.88	9.74	9.04	3.59	9.46	7.13	.07	6.25	.24	2.51	14.5
7	10.0	10.0	9.46	8.76	3.59	6.80	9.44	.07	6.04	.12	2.51	14.5
8	10.0	10.0	9.74	8.76	3.59	2.31	8.34	.07	5.94	*.04	2.45	14.5
9	9.88	10.0	11.5	8.76	3.59	2.38	*8.06	3.43	5.52	.05	2.45	15.4
10	9.88	9.88	11.9	8.76	3.59	6.98	7.78	5.94	4.92	.09	2.51	17.2
11	10.2	9.88	10.5	*8.76	3.59	9.46	7.78	5.83	4.92	.12	2.51	15.6
12	12.1	9.88	10.0	8.76	3.59	9.32	7.50	5.83	4.92	.14	2.58	15.4
13	10.5	10.2	9.88	8.76	3.59	9.74	7.25	5.83	5.20	1.38	2.51	15.0
14	11.1	10.0	9.74	9.18	3.51	7.06	7.25	5.83	7.00	3.08	1.89	14.7
15	10.0	10.0	9.74	8.90	3.59	3.68	7.13	5.83	4.57	7.05	.49	14.7
16	9.88	9.88	10.2	8.90	3.51	3.42	8.06	5.83	3.85	.18	.49	14.5
17	*9.88	9.74	22.3	8.76	3.51	3.42	7.78	5.94	3.85	.07	.49	14.5
18	9.60	9.74	10.6	9.04	3.59	3.04	7.50	6.15	1.55	.07	.49	14.5
19	9.46	9.74	10.0	13.0	3.68	2.96	7.50	*5.94	.06	2.12	.49	14.5
20	9.46	9.60	9.88	13.0	3.51	2.88	7.38	5.83	.07	3.19	.49	14.5
21	9.46	9.60	9.74	11.1	3.42	2.88	7.25	5.83	.11	3.11	.49	14.9
22	9.60	9.46	9.60	7.66	3.42	2.88	7.78	5.73	.11	3.04	.49	14.5
23	10.2	9.46	9.32	3.42	3.42	2.73	7.50	5.62	.08	2.96	1.37	14.0
24	9.46	9.46	9.32	3.42	3.42	2.65	7.38	5.73	.05	2.96	2.45	14.1
25	9.32	9.46	9.32	3.34	3.27	2.65	7.25	5.73	.06	2.96	2.31	14.9
26	9.32	9.46	9.32	3.34	*7.66	2.65	7.13	5.62	.12	3.04	2.10	14.7
27	9.74	9.46	9.18	3.34	9.74	2.65	7.00	5.62	.06	3.04	2.04	14.3
28	10.2	9.32	9.18	3.68	9.88	4.60	6.88	5.52	.08	2.88	2.04	13.8
29	10.0	9.32	9.18	3.59	9.88	7.25	7.00	------	.18	2.88	11.2	13.4
30	9.88	9.18	9.04	3.51	6.46	7.25	7.38	------	.14	2.80	16.5	14.0
31	9.88	9.32	------	3.51	------	7.25	2.93	------	.18	------	15.4	------
TOTAL	309.80	304.72	304.98	236.81	131.94	155.39	226.62	114.13	95.41	48.82	93.80	440.2
MEAN												
MGD	9.99	9.83	10.2	7.64	4.40	5.01	7.31	4.08	3.08	1.63	3.03	14.7
CFS	15.5	15.2	15.7	11.8	6.80	7.75	11.3	6.31	4.76	2.52	4.68	22.7
AC-FT	951	935	936	727	405	477	695	350	293	150	288	1,350

CALENDAR YEAR	1962:	MAX	22.3	MIN	0.49	MEAN MGD	6.80	MEAN CFS	10.5	AC-FT	7,620
FISCAL YEAR	1962-63:	MAX	22.3	MIN	0.04	MEAN MGD	6.75	MEAN CFS	10.4	AC-FT	7,560

* Discharge measurement or observation of no flow made on this day.

3030. Punaluu Stream near Punaluu

Location.--Lat 21°33'35", long 157°54'05", on left bank at Punaluu ditch diversion dam, 1.8 miles southwest of Punaluu, and 3.5 miles southeast of Hauula.

Drainage area.--2.78 sq mi.

Records available.--May 1953 to June 1963.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 212 ft (from topographic map).

Average discharge.--10 years, 8.48 mgd (13.1 cfs).

Extremes.--Maximum discharge during year, 1,780 mgd (2,750 cfs) Apr. 15 (gage height, 5.77 ft), from rating curve extended above 110 mgd on basis of slope-area measurement of peak flow; no flow for many days.

1953-63: Maximum discharge, 2,570 mgd (3,980 cfs) Nov. 1, 1961 (gage height, 6.06 ft), from rating curve extended above 110 mgd; no flow at times.

Remarks.--Records fair except those for periods of no gage-height record and those below 0.5 mgd, which are poor. Records do not include flow of Punaluu ditch (see preceding page).

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Apr. 14

0.02	0	0.8	10.2
.1	.13	.9	14.8
.2	.55	1.0	21.0
.3	1.27	1.2	39.0
.4	2.35	1.5	82.0
.6	5.40	2.0	195

Apr. 15 to June 30

0.4	2.95	1.2	39.0
.6	6.60	1.5	82.0
.8	12.0	4.0	990
1.0	21.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.50	1.19	0.50	0.13	5.24	6.40	2.98	19.7	a13	19.1	20.1	5.00
2	.44	.69	.39	.13	5.03	6.60	3.61	15.4	8.40	38.1	17.5	3.80
3	.50	.44	0	.16	5.40	2.13	4.52	14.2	a7.0	78.2	17.5	4.38
4	.55	.44	0	.13	6.60	0	3.28	12.5	a7.0	65.3	22.7	4.83
5	.55	.39	*0	.19	5.26	0	2.98	12.1	a6.4	31.4	17.0	3.65
6	.50	.39	.08	.13	5.24	0	2.98	11.7	a17	25.3	20.1	3.50
7	.50	.39	.08	.13	5.24	1.94	71.4	11.3	7.90	21.0	18.9	3.50
8	.50	.39	.08	.13	4.85	5.03	3.14	10.9	7.20	*19.3	16.5	3.50
9	.50	.39	7.02	.13	4.85	5.03	*9.85	7.90	a6.5	28.7	18.3	6.09
10	.55	.39	1.38	.13	4.68	1.84	8.15	5.24	a6.5	24.5	16.0	16.3
11	.50	.39	.19	**.08	4.50	0	7.00	5.03	6.00	22.1	19.1	4.60
12	2.44	.39	.19	0	4.50	0	6.20	5.03	5.80	23.1	23.7	4.00
13	.55	.55	.19	0	4.50	0	5.80	5.40	a30	50.7	17.5	3.65
14	1.83	.50	.19	0	4.50	14.9	5.40	4.85	a40	120	86.8	3.35
15	.55	.61	.16	0	7.49	42.8	5.24	4.68	a17	*653	28.7	3.65
16	.50	.50	.19	0	4.85	14.2	26.1	4.50	a15	83.7	27.0	3.20
17	*.55	.44	2.84	0	4.68	38.8	9.72	8.52	a20	46.8	27.0	3.35
18	.50	.44	.22	0	5.75	19.1	7.00	10.6	a120	31.2	23.1	3.35
19	.50	.39	.16	10.1	12.1	12.1	6.40	*7.20	30.5	23.6	19.5	3.35
20	.61	.39	.16	1.39	4.35	9.85	6.00	5.80	21.0	19.5	19.0	3.65
21	.67	.39	.13	.16	4.85	8.90	5.80	5.40	18.4	18.5	20.0	5.33
22	.67	.44	.13	1.89	4.50	8.15	13.2	5.03	21.6	17.0	*19.0	5.00
23	2.34	.50	.13	4.68	4.50	7.68	8.40	a5.0	18.4	16.5	17.0	3.50
24	1.02	.50	.13	4.50	4.35	7.20	7.90	a5.5	15.9	15.6	15.6	4.00
25	.80	.50	.13	4.50	4.35	7.68	7.00	a6.0	15.4	15.6	15.2	6.52
26	.73	.61	.13	4.35	*1.49	7.00	7.00	5.40	45.2	25.7	15.2	6.23
27	.50	.61	.13	4.22	0	6.80	6.80	5.03	26.6	38.4	14.8	5.00
28	.44	.55	.13	14.0	0	5.77	6.20	4.85	21.0	20.5	14.8	4.20
29	.39	.55	.13	8.31	0	3.42	5.80	------	36.4	17.5	8.16	4.20
30	.39	.44	.13	6.00	2.63	3.42	5.80	------	21.0	31.2	10.2	3.65
31	.39	.44	------	5.40	------	3.28	53.5	------	21.9	------	4.60	------
TOTAL	21.96	15.23	15.32	70.97	136.28	250.02	325.15	224.76	654.20	1,641.1	630.56	138.33
YEAR												
MGD	0.708	0.491	0.511	2.29	4.54	8.07	10.5	8.03	21.1	54.7	20.3	4.61
CFS	1.10	0.760	0.790	3.54	7.03	12.5	16.2	12.4	32.6	84.6	31.5	7.13
AC-FT	67	47	47	218	418	767	998	690	2,010	5,040	1,940	425

CALENDAR YEAR 1962: MAX 121 MIN 0 MEAN MGD 5.55 MEAN CFS 8.59 AC-FT 6,220
FISCAL YEAR 1962-63: MAX 653 MIN 0 MEAN MGD 11.3 MEAN CFS 17.5 AC-FT 12,670

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-18	About 0700	-	-	-	4-15	1300	5.77	1,780	2,750
3-26	1030	3.47	728	1,130	5-14	1330	3.97	975	1,510

* Discharge measurement or observation of no flow made on this day.
** Field estimate made on this day.
a No gage-height record.

3300. Kamananui Stream at Maunawai

Location.--Lat 21°38'20", long 158°03'27", on right bank at Maunawai, 25 ft upstream from Elehaba Stream, 4.9 miles northeast of Waialua School, and 7.3 miles southwest of Kahuku School.

Drainage area.--9.79 sq mi.

Records available.--February 1958 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Average discharge.--5 years, 8.48 mgd (13.1 cfs).

Extremes.--Maximum discharge during year, 2,230 mgd (3,450 cfs) Apr. 15 (gage height, 7.92 ft), from rating curve extended above 210 mgd on basis of slope-area measurement at gage height 7.72 ft; no flow for many days.

1958-63: Maximum discharge, that of Apr. 15, 1963; no flow at times.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.04	0	1.6	2.27	3.5	102
1.1	.02	1.7	3.56	4.0	162
1.2	.10	1.9	7.00	4.5	245
1.3	.33	2.2	15.0	5.0	360
1.4	.74	2.5	28.0	5.5	520
1.5	1.37	3.0	59.0	6.0	750

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.30	6.74	0	0	0.55	0	0.90	29.9	42.6	15.1	13.3	5.86
2	.69	14.2	0	0	.27	0	.64	7.68	15.2	67.9	7.96	5.10
3	.43	4.68	0	0	.12	0	.73	4.79	3.93	98.6	9.40	4.64
4	.43	1.91	0	0	.08	*0	1.84	3.30	2.53	182	9.94	16.2
5	14.9	1.23	0	0	.03	0	.85	3.30	*2.00	45.4	11.3	16.2
6	3.94	.85	0	0	2.14	0	.51	2.79	6.55	60.3	8.92	7.48
7	1.46	*.79	0	.16	1.95	0	89.3	2.18	5.59	34.8	13.5	8.44
8	.96	1.03	0	.08	2.66	0	15.3	2.00	2.17	19.0	7.24	8.44
9	1.03	.64	0	.03	1.03	0	4.20	1.91	1.73	14.4	39.6	7.24
10	1.16	.36	4.17	.05	.51	0	2.53	1.82	1.30	13.0	16.4	18.7
11	1.82	.22	1.73	.24	.27	.21	3.04	1.55	1.09	14.3	10.5	8.20
12	4.74	.22	*.68	.43	.12	1.03	2.81	1.23	.96	*17.4	88.3	5.48
13	6.21	.33	.33	.20	.05	.74	1.55	1.16	.85	18.6	18.2	4.33
14	2.53	.51	.20	.08	.02	41.8	1.12	1.03	10.1	225	390	3.87
15	1.30	2.44	.24	.03	.01	75.1	.90	.90	3.72	681	76.0	3.71
16	.85	3.04	.20	.01	.01	8.90	*66.2	.85	10.6	158	33.6	4.64
17	.51	1.16	5.94	.01	.01	20.0	23.8	.74	9.34	132	37.5	3.56
18	.39	.59	8.32	0	0	17.8	5.04	20.7	79.7	52.7	19.4	3.56
19	.30	.36	1.73	*.01	0	4.20	2.79	8.83	9.98	33.0	14.7	3.30
20	.27	.20	.79	17.1	0	2.66	2.27	2.66	4.63	25.0	13.0	3.71
21	.20	.09	.39	2.09	0	1.82	2.00	1.64	3.30	20.8	13.8	18.3
22	.12	.05	.18	.90	0	1.30	2.09	1.16	5.75	16.4	11.6	23.7
23	12.9	.02	.08	.47	0	.96	2.79	.90	11.5	14.7	12.8	8.20
24	5.05	.01	.03	.20	0	.79	3.62	.90	5.43	13.3	9.40	4.79
25	1.55	0	.01	.07	0	6.13	5.17	2.37	10.1	11.3	7.72	5.35
26	.85	.01	.01	.02	0	4.17	2.09	2.00	108	13.6	7.00	11.8
27	.55	0	0	.01	0	1.82	1.73	1.16	26.8	46.6	11.0	7.61
28	.30	0	0	7.57	0	1.09	1.46	.90	14.7	14.4	7.24	6.24
29	.22	0	0	21.4	0	.79	1.16	------	22.9	11.0	7.24	4.18
30	.14	0	0	2.92	0	1.23	1.09	------	9.99	9.94	13.9	3.87
31	.14	0	------	1.09	------	.96	130	----	15.7	------	*7.82	------
TOTAL	67.24	41.68	25.03	55.17	9.83	193.50	379.52	110.35	448.74	2,079.54	948.28	236.70
MEAN												
MGD	2.17	1.34	0.834	1.78	0.328	6.24	12.2	3.94	14.5	69.3	30.6	7.89
CFS	3.36	2.08	1.29	2.75	0.507	9.66	18.9	6.10	22.4	107	47.3	12.2
AC-FT	206	128	77	169	30	594	1,160	339	1,380	6,380	2,910	726

CALENDAR YEAR 1962:	MAX	233	MIN	0	MEAN MGD	4.81	MEAN CFS	7.44	AC-FT	5,390
FISCAL YEAR 1962-63:	MAX	681	MIN	0	MEAN MGD	12.6	MEAN CFS	19.5	AC-FT	14,100

Peak discharge (base, 300 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-31	1830	5.64	576	891	4-4	0100	5.94	720	1,110
3-18	0900	5.27	441	682	4-15	1600	7.92	2,230	3,450
3-26	1200	5.60	560	866	5-14	1400	7.82	2,130	3,300

* Discharge measurement or observation of no flow made on this day.

3450. Opaeula Stream near Wahiawa

Location.--Lat 21°33'55", long 158°00'10", on left bank 8.1 miles east of Waialua School and 4.3 miles northeast of Leilehua High School in Wahiawa.

Drainage area.--2.98 sq mi.

Records available.--August 1959 to June 1963. See also Note below.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,460 mgd (2,260 cfs) Apr. 15 (gage height, 8.12 ft), from rating curve extended above 46 mgd on basis of slope-area measurement at gage height 6.74 ft; minimum, 0.20 mgd (0.31 cfs) Dec. 9, 10.

1959-63: Maximum discharge, that of Apr. 15, 1963; minimum, that of Dec. 9, 10, 1962.

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

Note.--Published records for high-water periods in the fiscal year 1960 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.2	0.14	1.6	1.09	2.0	4.50	3.5	100
1.3	.26	1.7	1.60	2.3	10.5	4.0	190
1.4	.45	1.8	2.25	2.6	21.0	5.0	410
1.5	.72	1.9	3.20	3.0	46.0	6.0	675

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.45	23.4	0.57	0.98	0.55	2.74	1.45	15.0	19.4	9.89	22.8	4.67
2	.91	17.5	.45	.57	.41	1.14	1.09	4.84	9.20	42.7	5.35	5.35
3	.68	5.55	.68	2.02	.39	1.09	4.53	3.20	2.20	97.1	7.26	6.63
4	1.70	2.44	.62	5.82	7.08	.68	1.96	2.35	1.14	51.8	7.09	16.5
5	14.4	3.13	.43	3.86	5.01	.41	.87	1.99	.94	11.7	10.2	6.96
6	3.71	2.82	1.59	4.15	3.52	.30	.60	1.60	6.65	9.54	7.10	4.67
7	1.29	4.52	3.79	1.67	5.23	.28	104	1.45	5.59	5.86	26.5	4.84
8	.87	*2.44	1.44	.98	3.09	.25	17.9	1.29	*1.67	5.35	5.01	8.26
9	1.70	2.19	3.52	.68	1.49	.22	4.70	1.40	1.05	6.58	20.5	10.0
10	4.63	1.50	a15	.57	.79	.30	2.12	2.64	.76	9.41	8.00	30.1
11	3.46	1.35	a1.5	.50	.55	*2.21	2.16	1.50	.62	5.69	9.08	6.39
12	30.7	1.09	a1.0	.62	.45	1.37	2.31	.94	.52	3.85	52.5	3.98
13	8.91	3.08	a5.0	.60	.41	.65	1.24	.76	.47	25.2	7.72	2.82
14	3.24	5.38	*a1.3	.68	.39	22.6	.91	.68	19.1	104	123	2.44
15	3.95	7.30	1.05	.47	2.06	70.8	.79	.68	25.6	465	22.3	2.44
16	1.55	4.29	.68	.35	3.52	8.61	39.8	.76	59.6	44.0	13.0	3.01
17	1.45	1.99	24.5	.39	1.05	17.1	12.5	.62	49.5	48.3	23.7	2.44
18	1.42	1.24	8.25	.45	.87	10.2	2.75	9.53	184	14.0	15.1	2.74
19	2.06	.94	1.94	59.1	9.53	2.79	1.50	7.78	9.30	11.7	8.10	7.02
20	1.73	.83	1.02	19.7	2.54	2.49	1.24	1.99	5.35	8.34	6.58	14.4
21	1.73	.65	.76	4.71	1.55	1.60	1.14	1.05	8.55	10.9	18.1	32.7
22	1.45	.55	.62	1.50	.76	4.78	15.0	.68	30.4	6.20	11.8	19.3
23	23.0	.50	.72	.87	.47	1.67	*9.79	.60	23.7	8.84	6.96	6.96
24	6.05	.43	.94	.60	.37	1.15	9.56	.57	7.34	8.70	5.52	4.37
25	1.99	.39	.62	*.52	.33	10.2	5.62	8.04	6.20	6.58	4.37	11.7
26	1.19	.39	1.26	.50	.31	4.51	2.12	2.79	85.4	15.8	3.85	14.5
27	.91	.39	2.06	.45	.28	1.55	4.06	1.14	25.1	39.4	5.01	6.46
28	.76	.41	1.19	13.0	.28	.98	2.12	.83	13.4	12.3	5.35	5.71
29	1.73	.50	1.27	12.9	.30	1.47	1.40	------	84.5	6.39	7.39	8.17
30	1.28	.41	1.90	1.98	2.34	1.79	1.45	------	8.10	*31.0	27.4	6.14
31	2.63	.43	------	.87	------	3.47	94.7	------	13.6	------	*8.80	------
TOTAL	132.53	98.03	85.67	143.06	55.92	179.40	351.38	76.70	708.95	1,126.12	505.44	261.67
MEAN												
MGD	4.28	3.16	2.86	4.61	1.86	5.79	11.3	2.74	22.9	37.5	16.3	8.72
CFS	6.61	4.89	4.43	7.14	2.88	8.95	17.5	4.24	35.4	58.1	25.2	13.5
AC-FT	407	301	263	439	172	551	1,080	235	2,180	3,460	1,550	803

CALENDAR YEAR 1962:	MAX	206	MIN	0.22	MEAN MGD	6.33	MEAN CFS	9.79	AC-FT	7,100
FISCAL YEAR 1962-63:	MAX	465	MIN	0.22	MEAN MGD	10.2	MEAN CFS	15.8	AC-FT	11,440

* Discharge measurement made on this day.
a No gage-height record.

Peak discharge (base, 470 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-31	1830	5.42	525	812	3-29	0230	5.63	568	879
3-18	0600	6.81	948	1,470	4-15	0930	8.12	1,460	2,260
3-26	1030	6.17	726	1,120	5-14	1430	7.41	1,180	1,830

4000. Halawa Stream near Halawa

Location.--Lat 21°09'30", long 156°45'53", on right bank 600 ft downstream from confluence of Hipuapua and Moaula Streams, 1.5 miles west of Halawa, and 6.0 miles northeast of Pukoo.

Drainage area.--4.62 sq mi.

Records available.--July 1917 to July 1932, November 1937 to June 1963.

Gage.--Water-stage recorder and log control. Altitude of gage is 200 ft (from topographic map). Prior to June 25, 1923, at site 350 ft upstream at different datum.

Average discharge.--40 years (1917-32, 1938-63), 19.5 mgd (30.2 cfs).

Extremes.--Maximum discharge during year, 2,460 mgd (3,810 cfs) May 4 (gage height, 8.76 ft), from rating curve extended above 34 mgd on basis of slope-area measurements at gage heights 6.7 and 13.6 ft; minimum, 0.49 mgd (0.76 cfs) about Nov. 23.

1917-32, 1937-63: Maximum discharge, 7,040 mgd (10,900 cfs) Jan. 1, 1961 (gage height, 13.6 ft), from rating curve extended above 46 mgd on basis of slope-area measurements at gage height 6.7 ft and of peak flow; minimum, that of about Nov. 23, 1962.

Remarks.--Records fair except those for period of no gage-height record, which are poor. No diversion above station.

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

0.8	1.00	2.6	34.0
1.0	1.55	3.0	68.0
1.3	2.70	3.5	135
1.6	4.85	4.0	240
1.9	8.80	5.0	540
2.2	16.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.70	22.5	3.31	3.44	1.7	6.76	2.57	17.1	140	132	11.9	14.6
2	2.66	27.6	4.34	3.06	1.6	3.65	2.21	5.80	16.1	53.6	*9.18	9.56
3	9.03	15.4.	2.62	15.3	5.0	8.90	2.21	4.60	5.90	22.6	17.8	13.9
4	7.24	9.75	2.17	20.0	15	8.99	10.1	3.79	4.60	25.3	407	15.1
5	11.2	7.07	2.01	8.99	4.5	4.00	4.34	3.93	4.51	9.18	141	12.8
6	4.43	7.52	9.71	6.16	3.7	2.25	2.57	3.18	51.9	7.68	33.5	12.5
7	4.91	10.7	3.44	4.34	3.2	1.89	275	3.06	10.4	74.7	63.9	14.1
8	6.55	5.69	2.25	3.65	2.8	1.67	48.0	2.82	5.90	168	16.9	23.6
9	28.2	4.68	2.01	*3.3	2.5	1.43	13.0	2.61	4.60	23.5	16.6	29.9
10	35.6	4.60	4.02	2.9	2.3	2.39	6.94	2.57	3.86	133	52.9	*26.4
11	8.80	4.00	2.39	2.7	2.1	5.31	7.52	2.52	3.58	30.9	20.0	27.4
12	86.1	3.65	2.17	2.5	2.0	1.93	5.27	*12.7	3.44	23.2	50.9	11.6
13	14.5	10.6	2.05	2.4	1.8	22.4	4.34	84.7	20.3	193	17.5	9.18
14	10.5	10.6	1.82	2.3	1.7	409	*3.91	11.2	11.6	198	231	7.84
15	6.42	10.3	1.76	2.2	1.6	181	3.58	5.06	5.38	145	69.8	7.36
16	4.96	5.90	73.7	2.1	1.5	24.7	86.3	3.79	5.48	38.0	63.0	6.81
17	13.5	5.90	186	2.0	1.6	169	14.6	10.2	4.77	38.2	186	15.1
18	13.9	14.5	7.07	20	1.7	57.4	5.27	152	42.3	19.0	45.8	24.2
19	7.84	5.59	4.00	7.0	1.5	13.6	4.68	21.6	69.4	14.2	24.0	10.0
20	5.48	4.26	5.49	150	1.4	8.32	23.1	8.16	9.42	14.5	74.8	13.1
21	6.42	*3.58	16.5	30	1.3	8.72	6.03	5.69	33.6	13.6	20.0	43.8
22	74.3	3.18	12.1	8.0	1.2	14.6	36.2	4.85	*30.2	10.9	15.1	17.0
23	127	2.94	8.80	5.0	1.1	4.96	54.4	4.34	16.6	11.2	12.8	9.56
24	12.5	2.66	9.94	3.8	1.3	4.00	12.5	4.17	7.52	19.7	11.6	28.0
25	7.52	2.43	4.51	3.2	1.5	3.65	7.68	3.93	5.69	10.1	10.5	41.3
26	6.03	2.61	6.55	2.8	1.4	3.24	5.59	5.69	137	67.9	10.5	13.6
27	5.69	2.48	7.07	2.5	1.6	2.88	5.27	4.85	37.7	48.8	11.4	17.1
28	27.3	2.43	6.03	2.2	2.0	2.57	4.26	3.79	107	21.6	10.5	16.8
29	6.55	2.25	4.17	2.0	2.5	2.39	4.51	------	13.9	13.6	18.4	15.4
30	8.80	2.13	3.44	1.9	*45	6.03	4.00	------	8.00	20.9	22.3	13.4
31	7.20	2.05	------	1.8	--------	3.86	95.1	------	18.4	------	9.75	------
TOTAL	573.83	219.55	401.44	327.54	118.1	991.49	761.05	398.70	839.05	1,601.86	1,706.33	521.01
MEAN												
MGD	18.5	7.08	13.4	10.6	3.94	32.0	24.6	14.2	27.1	53.4	55.0	17.4
CFS	28.6	11.0	20.7	16.4	6.10	49.5	38.0	22.0	41.9	82.6	85.2	26.9
AC-FT	1,760	674	1,230	1,010	362	3,040	2,340	1,220	2,570	4,920	5,240	1,600

CALENDAR YEAR 1962: MAX 564 MIN 0.75 MEAN MGD 21.2 MEAN CFS 32.8 AC-FT 23,740
FISCAL YEAR 1962-63: MAX 409 MIN 1.1 MEAN MGD 23.2 MEAN CFS 35.9 AC-FT 25,970

Peak discharge (base, 950 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-20	About 0700	6.17	968	1,500	4- 7	2200	7.32	1,540	2,380
					4-13	1930	7.61	1,710	2,650
1- 7	0730	7.27	1,520	2,350	5- 4	1730	8.76	2,460	3,810
4- 1	0100	6.75	1,260	1,950	5-14	1700	6.87	1,320	2,040

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 9 to Nov. 30.

4055. Waikolu Stream at altitude 900 ft, near Kalaupapa

Location (revised).--Lat 21°08'43", long 156°55'18", on right bank 1.8 miles southwest of Haupu Bay, 2.3 miles upstream from mouth, and 5.2 miles southeast of Kalaupapa.

Drainage area.--1.99 sq mi.

Records available.--May 1956 to October 1961, July 1962 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 900 ft (from topographic map). Prior to July 1, 1962, at site 200 ft upstream at datum 6.14 ft higher.

Average discharge.--6 years, 6.53 mgd (10.1 cfs).

Extremes.--Maximum discharge during year, 608 mgd (941 cfs) May 14 (gage height, 4.07 ft), from rating curve extended above 14 mgd on basis of approximate gage height for flood of Oct. 31, 1961; minimum, 0.32 mgd (0.50 cfs) Jan. 15, 16.

1956-61, 62-63: Maximum discharge, 790 mgd (1,220 cfs) Dec. 29, 1958 (gage height, 6.60 ft, site and datum then in use), from rating curve extended above 37 mgd; minimum, that of Jan. 15, 16, 1963.

Flood of Oct. 31, 1961, reached a stage of 13.62 ft, from floodmarks, former site and datum (discharge, 4,020 mgd or 6,220 cfs, by slope-area measurement of peak flow).

Remarks.--Records good except those for periods of no gage-height record and those above 14 mgd, which are poor. Water diverted above station at times, either into or from Molokai water tunnel.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.1	0	1.6	15.0
1.2	.63	1.8	29.4
1.3	2.30	2.2	73.0
1.4	5.50		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.7	19.8	1.36	1.04	1.04	3.69	1.2	8.91	70.4	3.70	3.10	1.72
2	1.7	9.55	1.20	.90	1.20	1.72	1.2	4.00	6.40	4.00	1.54	1.72
3	1.7	4.70	1.20	1.90	1.36	1.20	1.2	1.90	1.90	2.80	3.70	2.80
4	2.1	2.55	1.20	2.10	1.54	1.04	1.1	1.36	1.72	1.90	18.7	4.30
5	2.8	1.90	1.20	1.54	1.36	.90	1.1	1.54	1.36	2.10	*7.63	4.30
6	2.4	1.36	1.20	*1.32	1.20	.90	1.1	3.35	5.20	1.90	3.40	2.30
7	2.1	1.20	1.20	1.72	1.04	.90	50	3.70	3.10	2.10	23.9	1.90
8	1.8	1.20	1.20	*1.36	1.04	.90	15	*1.90	1.72	8.84	3.70	*1.90
9	5.0	1.04	1.04	1.20	1.04	.90	*2.30	5.42	1.36	5.10	5.10	*1.72
10	3.0	.76	1.04	1.20	1.04	27.6	1.54	*14.5	1.20	2.80	5.95	1.72
11	2.0	.51	1.04	1.20	1.04	4.70	11.1	2.30	1.20	1.72	4.30	1.72
12	6.4	.51	1.04	1.20	1.04	1.72	1.90	2.10	1.20	1.54	14.4	1.54
13	2.8	.63	.90	1.20	1.04	25.1	1.20	13.8	2.25	17.0	4.30	1.36
14	2.1	.90	.90	1.20	1.04	40	1.04	4.30	12.2	45.9	57.9	1.36
15	1.6	1.04	.90	1.20	1.04	9.0	.76	2.10	7.18	40.1	27.2	1.36
16	1.5	.76	.90	1.20	1.04	2.5	61.8	1.54	7.65	18.6	27.6	1.36
17	1.5	.63	1.04	1.72	1.04	50	6.85	9.08	8.27	23.5	17.8	1.36
18	1.4	*.86	1.20	2.80	1.04	17	1.90	31.9	3.40	8.65	6.40	3.40
19	1.8	*1.04	1.20	1.36	1.04	2.5	1.72	5.50	3.70	4.70	4.30	2.80
20	1.6	.63	1.20	33.2	1.04	2.5	14.2	2.10	*1.72	5.10	29.5	8.59
21	1.4	.76	1.90	2.80	1.04	2.2	2.80	1.72	3.10	3.40	4.30	15.6
22	2.5	1.04	1.54	1.54	1.04	2.7	36.7	1.36	9.10	2.55	2.55	6.40
23	5.0	1.04	1.20	1.20	1.20	1.7	7.30	1.36	10.0	6.28	1.90	2.80
24	2.1	1.04	1.36	1.20	1.20	1.3	12.4	3.23	*3.40	11.7	1.90	4.70
25	2.55	1.04	1.20	1.04	1.20	1.3	3.70	1.90	1.72	4.00	1.72	4.30
26	1.72	1.04	1.04	1.04	1.36	1.2	4.70	1.36	48.2	5.95	1.72	2.55
27	1.36	1.04	.90	1.04	*1.36	1.2	6.48	1.20	17.3	5.95	1.72	1.90
28	1.36	1.20	.90	1.04	1.04	1.1	2.10	1.20	39.1	4.00	2.10	1.72
29	1.36	1.20	1.04	1.04	.90	1.2	2.55	------	3.10	4.70	13.5	2.80
30	1.36	1.20	1.04	1.04	5.83	1.2	2.55	------	1.90	4.00	2.80	4.00
31	4.05	1.20	------	1.04	------	1.2	21.0	------	3.70	------	1.90	------
TOTAL	71.76	63.37	34.28	74.58	38.43	211.07	280.49	134.63	283.75	254.58	306.53	96.00
MEAN												
MGD	2.31	2.04	1.14	2.41	1.28	6.81	9.05	4.81	9.15	8.49	9.89	3.20
CFS	3.57	3.16	1.77	3.72	1.98	10.5	14.0	7.44	14.2	13.1	15.3	4.95
AC-FT	220	194	105	229	118	648	861	413	871	781	941	295

CALENDAR YEAR	1962:	MAX	-	MIN	-	MEAN MGD	-	MEAN CFS	-	AC-FT	-
FISCAL YEAR 1962-63:		MAX	70.4	MIN	0.51	MEAN MGD	5.07	MEAN CFS	7.84	AC-FT	5,670

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	1830	3.58	413	639	3-26	1200	4.02	588	910
1-22	0900	3.42	357	552	3-28	0430	3.45	368	569
3- 1	0800	3.68	452	699	5-14	1830	4.07	608	941

* Discharge measurement made on this day.
Note.--No gage-height record July 1-24, Dec. 14 to Jan. 8.

4080. Waikolu Stream below pipeline crossing, near Kalaupapa

Location.--Lat 21°09'45", long 156°55'54", on left bank 0.7 mile upstream from mouth and 4.4 miles southeast of Kalaupapa Lighthouse.

Drainage area.--3.68 sq mi.

Records available.--July 1919 to November 1930, August 1931 to July 1932, September 1937 to January 1948, July 1948 to June 1963. Prior to August 1931, published as "at pipeline crossing, near Kalaupapa."

Gage.--Water-stage recorder. Datum of gage is 252 ft (revised) above mean sea level (hand levels by Bureau of Reclamation). Prior to Aug. 14, 1931, at site 500 ft upstream at different datums. Sept. 20, 1937, to Jan. 25, 1948, at present site at datum 1.49 ft higher and July 30, 1948, to June 30, 1962, at present site at datum 1.00 ft higher than present datum.

Average discharge.--34 years (1919-30, 1938-47, 1949-63), 12.2 mgd (18.9 cfs).

Extremes.--Maximum discharge during year, 809 mgd (1,250 cfs) May 14 (gage height, 5.83 ft), from rating curve extended above 25 mgd on basis of slope-area measurement at gage height 12.75 ft; minimum, 3.50 mgd (5.42 cfs) Feb. 24, 28.

1919-32, 1937-63: Maximum discharge, 4,290 mgd (6,640 cfs) Oct. 31, 1961 (gage height, 12.75 ft, from floodmarks), from rating curve extended above 25 mgd on basis of slope-area measurement of peak flow; minimum, 1.3 mgd (2.0 cfs) Nov. 1, 2, 1925, June 5, 1926.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Water is diverted above station for domestic use in Kalaupapa, and since Nov. 16, 1960, water has been diveted above atation both to and from Molokai water tunnel.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used May 25-28, May 31 to June 2, June 6-17, 19, 23, 26-29)

0.9	2.30	1.6	27.2
1.0	4.30	2.0	59.0
1.3	12.6	2.5	112

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	6.40	20.8	5.70	5.45	4.65	7.57	5.70	12.3	76.0	7.33	7.81	5.70
2	6.40	12.3	5.45	5.20	4.95	6.20	5.70	7.33	12.9	7.33	6.85	5.45
3	6.40	8.06	5.20	6.40	5.45	4.65	5.70	5.20	7.81	6.60	7.57	6.40
4	7.09	7.09	5.20	6.85	5.45	4.30	5.45	3.90	a5.0	a5.6	18.9	6.60
5	7.81	6.20	5.45	6.40	4.95	4.10	5.45	4.65	a4.0	a6.0	*10.2	6.40
6	7.57	5.90	5.70	*5.70	4.65	4.10	5.45	4.63	a8.0	a5.6	8.55	6.20
7	7.09	5.70	5.45	5.90	4.65	4.10	70.5	7.53	8.78	a6.2	30.1	5.45
8	6.40	5.70	5.20	5.45	4.65	3.90	19.2	4.95	6.60	9.71	9.02	5.20
9	10.3	5.45	5.20	5.20	4.30	4.30	11.9	6.99	6.40	8.30	9.02	*5.20
10	8.30	5.20	5.20	5.20	4.30	30.7	*6.40	16.9	5.90	a7.0	9.26	5.70
11	6.85	4.95	5.20	5.20	4.30	11.7	16.9	5.20	5.45	a5.6	8.30	5.20
12	11.6	4.95	5.45	5.20	4.30	6.40	7.09	4.95	5.45	a5.0	13.4	4.65
13	8.06	5.20	5.45	4.95	4.30	33.7	6.40	16.0	5.85	a22	8.30	4.30
14	6.60	5.45	5.20	4.95	4.30	42.5	6.20	7.81	15.1	47.7	75.2	4.30
15	6.40	5.45	5.20	4.95	4.30	23.5	5.45	5.20	9.66	36.6	30.5	4.30
16	6.20	5.20	5.45	4.95	4.30	9.02	70.3	4.65	11.3	16.4	24.9	4.30
17	5.90	4.95	5.45	5.20	4.10	71.3	15.2	16.5	11.4	20.4	13.4	4.65
18	6.40	*5.70	5.70	7.33	4.10	28.8	7.09	59.8	7.33	11.1	8.30	5.90
19	6.60	5.70	5.20	5.90	4.10	9.02	5.45	11.7	8.06	8.06	7.09	5.90
20	6.40	5.45	5.45	41.4	4.10	7.81	19.4	6.40	*5.90	8.06	32.2	7.92
21	6.20	5.45	6.40	7.57	4.10	7.57	7.09	5.45	7.09	7.57	8.30	15.7
22	7.09	5.45	6.20	5.70	4.10	8.54	37.5	4.65	11.6	7.33	6.60	7.33
23	10.3	5.45	6.20	5.45	4.10	6.85	11.9	3.90	11.9	8.67	6.20	5.90
24	6.85	5.45	6.20	4.95	4.10	6.20	17.0	4.95	7.09	14.2	6.20	6.60
25	6.20	5.45	5.90	4.95	4.10	6.20	8.30	4.95	6.20	7.57	6.20	6.60
26	5.90	5.45	5.70	4.65	4.65	5.90	7.48	3.90	41.1	8.78	5.90	5.90
27	5.90	5.45	5.20	4.65	4.65	5.90	10.9	3.70	17.6	9.26	5.90	4.95
28	5.70	5.45	5.20	4.65	*4.30	5.70	5.90	3.50	45.7	8.30	5.90	4.65
29	5.70	5.45	5.45	4.65	4.30	5.90	6.40	------	7.33	8.54	11.6	5.90
30	5.90	5.45	5.70	4.65	8.43	5.70	6.60	------	a5.6	8.06	6.40	6.40
31	8.33	5.45	------	4.65	------	5.70	24.5	------	a7.2	------	6.20	------
TOTAL	218.84	195.35	165.65	204.30	137.03	387.83	444.50	247.59	395.30	338.87	414.27	179.65
MEAN												
MGD	7.06	6.30	5.52	6.59	4.57	12.5	14.3	8.84	12.8	11.3	13.4	5.99
CFS	10.9	9.75	8.54	10.2	7.07	19.4	22.2	13.7	19.8	17.5	20.7	9.26
AC-FT	672	600	508	627	421	1,190	1,360	760	1,210	1,040	1,270	551

CALENDAR YEAR 1962:	MAX	195	MIN	3.90	MEAN MGD	11.7	MEAN CFS	18.1	AC-FT	13,090
FISCAL YEAR 1962-63:	MAX	76.0	MIN	3.50	MEAN MGD	9.12	MEAN CFS	14.1	AC-FT	10,210

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	1900	4.59	478	740	5-14	1830	5.83	809	1,250
3-26	1300	4.70	505	781					

* Discharge measurement made on this day.
a No gage-height record.

4140. Kaunakakai Gulch at Kaunakakai

Location.--Lat 21°06'21", long 157°00'34", 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.--6.57 sq mi.

Records available.--December 1949 to June 1963. Prior to July 1958, published as Kaunakakai Stream at Kaunakakai.

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

Average discharge.--13 years (1950-63), 1.01 mgd (1.56 cfs).

Extremes.--Maximum discharge during year, 278 mgd (430 cfs) Jan. 16 (gage height, 4.55 ft); no flow for many days.

1949-63: Maximum discharge, 1,980 mgd (3,060 cfs) Oct. 31, 1961 (gage height, 9.30 ft), from rating curve extended above 400 mgd on basis of slope-area measurement of peak flow; no flow for many days each year.

Remarks.--Records fair.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.29	0	1.8	1.20
1.3	.01	2.0	2.55
1.4	.05	2.2	4.70
1.5	.19	2.4	8.00
1.6	.41	2.6	13.5
1.7	.74	2.9	26.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1		0		0		0	0	2.18	23.3	0	0	
2		0		0		*0	0	.02	5.28	0	0	
3		0		0		0	0	0	.28	0	*0	
4		0		0		0	0	0	0	0	0	
5		0		*0		0	0	0	0	0	0	
6		0		0		0	0	0	.24	0	0	(*)
7		0		0		0	22.5	0	.02	0	0	
8		0		0		0	3.22	0	0	0	0	
9		0		0		0	.12	0	0	0	0	
10		0		0		1.49	.40	.37	0	.10	0	
11		0		0		2.24	1.64	.01	0	0	0	
12		0		0		0	.14	*0	0	0	0	
13		0		0		2.22	*0	0	0	0	0	
14		0		0		.88	0	0	0	2.32	1.50	
15		.05		0		.62	0	0	0	3.76	8.04	
16		.03		0		.04	22.8	0	0	1.66	1.40	
17		0		0		.04	9.10	0	0	2.65	2.04	
18		0		0		9.08	.29	0	0	.49	.12	
19		0		0		.15	0	0	0	0	0	
20		*0		12.3		0	0	0	0	0	0	
21		0		.31		0	.09	0	*0	0	0	
22		0		0		0	13.5	0	0	0	0	
23		0		0		0	4.16	0	0	0	0	
24		0		0		0	1.61	0	0	0	0	
25		0		0		0	2.15	0	0	0	0	
26		0		0		0	.01	0	12.2	0	0	
27		0		0		0	.02	0	12.6	0	0	
28		0		0		0	0	0	25.0	0	0	
29		0		0		0	0	---------	2.01	0	0	
30		0		0		0	0	---------	.11	0	0	
31		0	---------	0	--------	0	0	---------	.32	------	0	--------
TOTAL	0	0.08	0	12.61	0	16.76	81.75	2.58	81.36	10.98	13.10	0
MEAN												
MGD	0	0.003	0	0.407	0	0.541	2.64	0.092	2.62	0.366	0.423	0
CFS	0	0.004	0	0.629	0	0.836	4.08	0.143	4.06	0.566	0.654	0
AC-FT	0	0.2	0	39	0	51	251	7.9	250	34	40	0

CALENDAR YEAR	1962:	MAX	127	MIN	0	MEAN MGD	0.784	MEAN CFS	1.21	AC-FT	878
FISCAL YEAR 1962-63:		MAX	25.0	MIN	0	MEAN MGD	0.601	MEAN CFS	0.930	AC-FT	673

Peak Discharge (base, 500 mgd).--No peak above base.

* Observation of no flow made on this day.

4150. East Fork Kawela Gulch near Kamalo
(Formerly published as Right Branch of East Fork Kawela Gulch near Kamalo)

Location.--Lat 21°06'46", long 156°54'23", on left bank at Molokai Ranch pipeline intake, 4.7 miles northwest of Kamalo, and 7.6 miles northeast of Kaunakakai.

Drainage area.--0.45 sq mi.

Records available.--September 1946 to June 1963. Published as Right Branch of East Fork Kawela Stream near Kamalo prior to July 1958 and as Right Branch of East Fork Kawela Gulch near Kamalo July 1958 to June 1962.

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

Average discharge.--16 years (1947-63), 1.54 mgd (2.38 cfs).

Extremes.--Maximum discharge during year, 176 mgd (272 cfs) Mar. 26 (gage height, 4.72 ft), from rating curve extended above 4.3 mgd as explained below; no flow for many days.

1946-63: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 4.3 mgd by test on model of station site; no flow at times each year.

Remarks.--Records fair. Molokai Ranch diverts from gage pool.

Rating table (gage height, in feet, and discharge, in million gallons a day)

2.34	0	2.9	2.15
2.4	.04	3.0	3.14
2.5	.19	3.1	5.10
2.6	.46	3.2	8.10
2.7	.86	3.3	12.5
2.8	1.43	3.5	25.5

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0	10.4	0	0	0	2.29	0	3.12	21.4	0.43	1.05	0.05
2	0	4.25	0	0	0	.52	0	2.19	1.62	1.46	.37	.09
3	.01	2.50	0	2.92	0	.05	0	1.01	.13	.87	*2.63	1.17
4	.05	1.18	0	1.29	.61	0	0	.43	0	.49	6.17	1.51
5	2.11	1.76	0	.43	.05	0	0	1.03	0	.74	2.21	1.93
6	.24	.04	0	1.07	0	0	0	2.45	1.31	.56	.93	*.74
7	.09	.46	0	.84	0	0	16.5	2.07	.69	.04	5.94	.46
8	1.07	.05	0	.12	0	0	1.56	.76	.01	2.82	.82	.23
9	4.57	0	0	.20	0	0	.23	2.95	0	1.72	2.41	.09
10	2.64	0	0	.13	0	11.3	.70	5.04	0	1.38	2.33	.31
11	.75	0	0	0	0	1.78	*3.53	.65	0	.26	1.81	.28
12	5.29	0	0	0	0	.09	.12	.28	0	0	4.50	.01
13	1.60	.49	0	0	0	7.14	0	1.97	3.42	3.36	1.52	.03
14	.33	1.71	0	0	0	4.59	0	*1.11	5.86	8.19	11.9	.01
15	0	1.84	0	0	0	4.89	0	.34	2.62	8.84	4.31	0
16	0	.46	0	0	0	.60	17.5	.13	2.64	5.98	3.53	0
17	0	.23	.41	.90	0	5.10	2.51	.07	2.31	6.83	3.00	.12
18	.78	.98	.05	1.40	0	2.23	.17	1.73	2.23	2.48	1.92	.95
19	.72	.29	0	.13	0	.21	.34	.97	1.51	1.57	1.06	1.48
20	.28	*.04	.98	21.2	0	.02	3.65	.21	.11	16.7	5.51	4.12
21	.46	0	2.01	1.34	0	.61	.48	.05	*1.61	1.18	.98	5.78
22	.90	0	.72	.24	0	.97	12.7	0	4.61	.93	.18	2.15
23	3.96	0	.40	0	.07	.04	4.53	0	3.56	3.87	0	.90
24	.47	0	.98	0	0	0	4.89	0	.76	4.45	0	2.33
25	.02	0	.09	0	0	0	1.29	0	.10	1.78	0	1.27
26	0	0	.01	0	.90	0	1.26	0	16.9	2.47	0	.58
27	0	0	.10	0	.81	0	2.54	0	6.60	2.33	0	.26
28	.12	0	.82	0	0	0	1.15	0	9.18	1.98	0	.71
29	0	0	.27	0	*.11	0	2.07	------	1.41	2.07	.36	1.52
30	.13	0	0	0	3.48	0	2.47	------	.24	1.48	.14	1.91
31	2.82	0	------	0	------	0	7.45	------	.01	------	0	------
TOTAL	29.41	26.68	6.84	32.21	6.03	42.43	87.64	28.56	90.84	87.26	65.58	30.99
MEAN												
MGD	0.949	0.861	0.228	1.04	0.201	1.37	2.83	1.02	2.93	2.91	2.12	1.03
CFS	1.47	1.33	0.353	1.61	0.311	2.12	4.37	1.58	4.53	4.50	3.27	1.60
AC-FT	90	82	21	99	19	130	269	88	279	268	201	95

CALENDAR YEAR	1962:	MAX	29.2	MIN	0	MEAN MGD	1.10	MEAN CFS	1.70	AC-FT	1,230
FISCAL YEAR 1962-63:		MAX	21.4	MIN	0	MEAN MGD	1.46	MEAN CFS	2.26	AC-FT	1,640

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	0930	4.23	105	162	3-26	1230	4.72	176	272
3-1	0700	4.26	111	172					

* Discharge measurement or observation of no flow made on this day.

4160. Punaula Gulch near Pukoo

Location.--lat 21°05'50", long 156°48'48", on right bank 1.8 miles northwest of Pukoo and 5.2 miles northeast of Kamalo.

Drainage area.--0.24 sq mi.

Records available.--March 1947 to June 1963. Prior to July 1958, published as Punaula Stream near Pukoo.

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

Average discharge.--16 years, 0.804 mgd (1.24 cfs).

Extremes.--Maximum discharge during year, 215 mgd (333 cfs) Apr. 13 (gage height, 4.66 ft), from rating curve extended above 6.5 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) on several days in November and December.

1947-63: Maximum discharge, 330 mgd (511 cfs) Apr. 2, 1948 (gage height, 6.35 ft), from rating curve extended above 6.5 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Mar. 13, 1947, Feb. 19, 1954.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.02	0.9	1.45
.5	.06	1.0	2.60
.6	.18	1.2	5.80
.7	.41	1.5	12.1
.8	.81	2.0	27.6

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.03	1.71	0.05	0.07	0.03	*0.09	0.04	0.66	5.04	0.45	0.41	0.36
2	.07	1.09	.06	.06	.03	.05	.04	.23	.49	.76	.23	.16
3	.33	.62	.07	.55	.09	.12	.03	.19	.12	.48	.53	.26
4	.60	.30	.04	.86	.28	.10	1.28	.12	.07	.44	10.4	.25
5	.79	.21	.03	.19	.06	.06	.13	.09	.05	.18	1.99	.25
6	.18	.13	.06	.12	.04	.03	.06	.09	1.40	.13	*1.07	.56
7	.19	.32	.06	.09	.02	.03	9.97	.09	.26	.11	2.96	*.21
8	.45	.12	.04	.07	.03	.02	.98	.07	.09	1.13	.47	.21
9	1.76	.11	.04	.06	.03	.02	.40	.06	.06	.35	.38	.25
10	1.83	.09	.04	*.06	.03	.09	.15	.14	.04	4.08	1.35	.56
11	.32	.08	.04	.05	.03	.15	.21	.07	.03	.30	.84	.54
12	3.76	.07	.03	.04	.03	.04	*.09	.07	.03	.68	1.20	.15
13	.54	.48	.03	.04	.03	.26	.06	*.72	.07	14.9	.58	.53
14	.32	.27	.03	.04	.03	4.64	.06	.30	.23	5.44	6.89	.15
15	.16	.58	.03	.04	.03	5.63	.05	.09	.09	3.23	2.22	.06
16	.10	.21	.35	.04	.02	1.00	2.54	.06	.09	1.19	2.90	.05
17	.35	*.15	5.00	.04	.03	3.37	.61	.05	.08	1.23	2.38	.64
18	1.07	.08	.30	.09	.03	1.45	.13	.17	1.85	.50	1.77	1.18
19	.27	.19	.10	.05	.03	.23	.08	.21	2.74	.32	.50	.28
20	.16	.11	.22	3.70	.02	.11	.22	.08	.64	.35	3.22	.39
21	.12	.09	.69	.21	.02	.08	.12	.05	1.26	.32	.38	.43
22	1.93	.07	.75	.09	.02	.11	1.94	.04	1.48	.25	.25	1.09
23	3.15	.06	.35	.06	.02	.06	.99	.04	.72	.72	.19	.16
24	.50	.06	.25	.05	.03	.05	.06	.04	.25	1.27	.19	.78
25	.25	.06	.13	.04	.03	.04	.39	.04	*.18	.35	.15	1.52
26	.13	.05	.75	.04	.02	.04	.14	.17	1.26	1.60	.12	.25
27	.11	.05	.32	.03	.03	.04	.45	.08	2.39	1.66	.11	.23
28	.53	.05	.21	.02	.03	.03	1.45	.05	3.49	.96	.10	.67
29	.13	.05	.12	.03	.03	.03	.79	------	.52	.50	.15	.46
30	.25	.04	.08	.03	.35	.14	.23	------	.19	.86	.16	1.13
31	.27	.04	------	.03	------	.08	1.49	------	.16	------	.10	--------
TOTAL	20.69	9.18	19.24	8.70	1.51	18.19	23.53	4.07	31.37	44.74	44.17	13.76
MEAN												
MGD	0.667	0.306	0.643	0.280	0.050	0.587	0.624	0.145	1.01	1.49	1.42	0.459
CFS	1.03	0.470	0.995	0.433	0.078	0.908	1.27	0.225	1.57	2.31	2.20	0.710
AC-FT	63	29	31	17	3.0	36	78	12	96	137	136	42

CALENDAR YEAR 1962:	MAX	21.3	MIN	0.02	MEAN MGD	0.597	MEAN CFS	0.924	AC-FT	669
FISCAL YEAR 1962-63:	MAX	14.9	MIN	0.02	MEAN MGD	0.628	MEAN CFS	0.972	AC-FT	702

* Discharge measurement made on this day.

Peak discharge (base, 70 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-7	0730	3.13	83.8	130	5-4	1700	3.36	99.2	153
4-13	1930	4.66	215	333					

5010. Palikea Stream below diversion dam, near Kipahulu

Location.--Lat 20°41'05", long 156°04'10", on left bank 50 ft downstream from old diversion dam, 2 miles northwest of Kipahulu, and 2.1 miles upstream from mouth.

Drainage area.--6.29 sq mi.

Records available.--February 1927 to September 1929, December 1931 to September 1935, December 1935 to February 1938, May to October, December 1938, January 1939, August 1939 to June 1963. Published as Oheo Stream at elevation 1,550 ft, near Kipahulu 1927-29 and as Oheo Stream below diversion dam, near Kipahulu 1930-56.

Gage.--Water-stage recorder. Datum of gage is 1,546 ft above mean sea level (by vertical angles). Prior to Sept. 6, 1929, at site 100 ft upstream at different datum.

Average discharge.--28 years (1927-29, 1932-35, 1940-63), 36.6 mgd (56.6 cfs).

Extremes.--Maximum discharge during year, 5,870 mgd (9,080 cfs) Mar. 13 (gage height, 12.68 ft), from rating curve extended above 2,200 mgd as explained below; minimum, 0.01 mgd (0.02 cfs) Nov. 10-15, Dec. 29.

1927-29, 1931-63: Maximum discharge, 9,690 mgd (15,000 cfs), revised, Dec. 20, 1955 (gage height, 17.5 ft, from floodmarks), from rating curve extended above 2,200 mgd on basis of computations of peak flow over dam at gage heights 12.68 and 17.5 ft; no flow at times.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.05	0.01	1.5	27.0
.1	.02	2.0	52.5
.2	.22	2.5	88.0
.3	.65	3.0	134
.4	1.32	4.0	260
.6	3.40	5.0	435
.9	7.95	7.0	940
1.1	12.6		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.22	128	0.19	0.29	0.02	52.4	0.13	27.1	3.41	24.0	58.8	165
2	4.58	39.1	.45	.62	.02	13.8	.06	1.95	2.42	2.94	7.95	33.3
3	48.0	13.4	.16	13.4	.22	182	.13	1.10	.13	1.32	58.2	66.2
4	8.69	11.2	.06	13.2	.16	95.7	.22	.71	.04	.89	35.6	44.5
5	12.4	6.43	.05	23.8	.04	7.31	23.0	.55	2.92	.77	24.7	84.1
6	.58	1.95	6.25	92.0	.02	2.06	35.2	.50	14.6	.50	48.3	13.9
7	.32	.96	.19	21.9	.02	3.32	17.6	.36	.92	3.84	90.4	6.99
8	.19	4.45	.04	14.1	.02	1.42	18.3	.25	.29	128	6.63	4.70
9	8.07	.71	.02	17.5	.02	.60	3.66	.19	.10	65.3	27.8	138
10	20.4	.65	.05	3.57	.01	.40	.77	.13	.04	36.1	80.7	34.2
11	24.2	.40	*1.10	.50	.01	.32	1.73	.08	.03	22.2	200	*8.67
12	294	.36	7.67	.25	.01	.25	.65	.13	.02	19.9	89.0	1.58
13	18.0	.40	23.4	.16	.01	.19	.32	.16	*172	37.6	33.5	.65
14	18.5	22.4	1.37	14.6	.01	4.74	.22	.04	143	440	528	.45
15	2.35	46.5	.50	12.8	6.63	103	.16	.02	482	714	108	.40
16	1.03	2.70	57.4	.77	2.12	16.3	249	.14	279	685	58.0	.32
17	36.9	.50	344	1.28	46.1	10.4	19.5	.16	387	679	79.5	14.8
18	102	.55	8.53	.55	11.2	7.79	1.17	.10	a500	352	50.5	28.8
19	12.1	.40	1.66	5.35	2.26	1.58	.77	1.73	a280	203	9.43	14.8
20	4.67	.29	22.6	1.08	16.4	.65	1.24	.16	25.6	120	26.1	63.1
21	5.46	.19	13.1	34.7	18.5	.40	.45	.04	181	42.8	4.97	55.9
22	47.9	.10	25.3	5.18	6.94	.29	21.6	.02	a340	52.8	15.4	38.3
23	78.7	.06	8.92	1.17	52.2	.19	6.16	.02	108	110	3.51	10.3
24	*9.05	.04	4.29	.71	27.2	.13	2.60	.02	a12	163	1.10	27.2
25	4.98	.04	.83	.45	6.17	.06	.50	.02	a8.0	212	.60	91.4
26	1.48	5.82	1.80	.36	10.8	.04	.32	.16	a170	236	.96	33.9
27	.77	.50	1.24	.22	1.30	.02	.25	.13	a30	271	.50	18.7
28	8.88	.40	6.98	.16	11.5	.02	.19	.70	34.8	109	4.77	9.08
29	.60	.16	2.27	.08	17.6	.02	.10	------	*13.8	114	1.74	11.0
30	.55	.13	.29	.05	93.3	21.8	65.2	------	1.95	255	58.6	80.5
31	19.0	.16	------	.02	------	1.28	223	------	162	------	25.9	------
TOTAL	794.57	288.95	540.71	280.02	330.81	528.48	694.20	36.67	3,355.07	5,101.96	1,739.16	1,100.74
MEAN												
MGD	25.6	9.32	18.0	9.06	11.0	17.0	22.4	1.31	108	170	56.1	36.7
CFS	39.7	14.4	27.9	14.0	17.1	26.4	34.6	2.03	167	263	86.8	56.8
AC-FT	2,440	887	1,660	862	1,020	1,620	2,130	113	10,300	15,660	5,340	3,380

CALENDAR YEAR 1962: MAX 668 MIN 0.01 MEAN MGD 21.0 MEAN CFS 32.5 AC-FT 23,580
FISCAL YEAR 1962-63: MAX 714 MIN 0.01 MEAN MGD 40.5 MEAN CFS 62.7 AC-FT 45,410

* Discharge measurement made on this day.
a No gage-height record.

Peak discharge (base, 1,600 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	1830	9.52	2,580	3,990	4-16	1500	9.00	1,900	2,940
3-13	0900	12.68	5,870	9,080	5-14	1700	9.68	3,380	5,230

5020. Hahalawe Gulch near Kipahulu
(Formerly published as Right Branch Hahalawe Stream near Kipahulu)

Location.--Lat 20°40'54", long 156°02'50", on left bank at old ditch intake, 0.7 mile upstream from mouth, and 1.8 miles northeast of Kipahulu Church.

Drainage area.--0.43 sq mi.

Records available.--February 1927 to March 1935, May 1935 to April 1937, May 1938 to June 1963. Monthly discharge only May, June 1938, published in WSP 1319. Published as Right Branch Hahalawe Stream near Kipahulu 1927-56 and as Right Branch Hahalawe Stream near Kipahulu 1956-62.

Gage.--Water-stage recorder and concrete control. Datum of gage is 885 ft above mean sea level (by vertical angles). Prior to May 1, 1938, at same site at datum 8.0 ft lower.

Average discharge.--33 years (1927-34, 1935-36, 1938-63), 3.51 mgd (5.43 cfs).

Extremes.--Maximum discharge during year, 845 mgd (1,310 cfs) Mar. 13 (gage height, 4.65 ft), from rating curve extended above 54 mgd as explained below; minimum, 0.50 mgd (0.77 cfs) Nov. 11, 12.

1927-63: Maximum discharge, 2,300 mgd (3,560 cfs) Apr. 29, 1937 (gage height, 15.74 ft, datum then in use), from rating curve extended above 54 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Dec. 18, 1929.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.8	0.35	1.4	4.80
.9	.62	1.5	6.80
1.0	1.01	1.7	12.4
1.1	1.54	1.9	22.7
1.2	2.30	2.2	44.0
1.3	3.30		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.41	7.99	1.37	1.20	0.62	2.93	0.92	2.64	2.26	5.04	2.40	7.46
2	2.47	4.98	1.55	1.95	.68	1.47	.79	1.35	1.17	2.05	2.10	1.95
3	4.13	3.39	1.10	2.20	2.44	15.5	1.18	1.10	.79	1.73	3.92	2.54
4	2.30	2.10	.87	1.66	1.10	*11.4	2.40	.97	.68	1.60	5.90	3.08
5	1.54	1.73	.87	1.73	.83	1.73	2.23	.92	*2.52	1.47	10.3	4.77
6	1.20	1.73	2.80	2.39	.71	1.30	1.71	.79	3.38	1.41	4.73	1.60
7	1.15	1.47	.97	2.00	.62	2.32	3.09	.75	1.46	2.27	8.00	2.19
8	.97	2.30	.79	1.66	.58	1.25	2.43	.68	1.05	17.6	2.20	2.53
9	2.36	1.60	.71	1.71	.55	1.01	1.41	.65	.79	6.13	4.20	14.2
10	2.76	1.73	.79	1.35	.65	.92	1.01	.62	.68	6.76	6.19	3.33
11	3.22	1.35	*2.53	1.15	.55	1.15	2.23	.58	.62	18.4	5.25	*3.07
12	16.7	1.20	2.86	.92	.53	.87	1.01	4.84	.62	9.65	4.68	1.66
13	2.75	1.61	2.33	.87	.68	.79	.83	1.42	28.2	4.48	3.96	1.54
14	2.40	3.46	1.15	3.67	.55	11.7	.75	.79	2.10	12.6	37.7	1.41
15	1.54	2.29	1.05	2.54	.98	15.0	1.10	.68	8.36	16.4	8.79	1.47
16	1.54	1.66	16.6	1.05	.68	4.24	13.8	1.16	8.73	19.4	7.64	1.35
17	2.17	1.35	39.3	1.23	1.15	13.6	1.73	.98	8.18	7.80	*11.0	9.59
18	6.11	1.41	2.30	.92	.92	4.67	1.10	1.87	18.8	4.20	4.30	5.58
19	2.14	1.30	1.54	3.55	.79	2.20	.97	8.81	32.9	4.26	3.20	3.05
20	1.54	1.25	2.82	1.05	.87	1.66	1.25	1.05	2.88	2.65	7.23	5.62
21	1.47	1.10	1.54	27.2	.97	1.35	.83	.87	5.24	3.22	2.40	3.05
22	8.40	.92	3.03	2.69	.83	1.20	*3.38	.75	20.7	2.45	2.73	5.14
23	10.9	.87	1.87	*1.41	1.81	1.10	1.22	.68	5.76	3.93	1.95	2.30
24	*2.55	.83	1.73	1.15	1.51	1.01	2.78	.62	2.40	*5.00	1.80	5.22
25	1.80	.79	1.35	1.05	1.20	.97	1.01	.58	2.05	4.73	1.60	7.92
26	1.54	2.92	1.66	.92	1.51	.92	.87	.87	15.9	14.7	2.05	2.95
27	1.41	1.74	1.41	.83	.97	.83	.79	.65	3.71	21.0	1.60	3.24
28	2.22	1.55	1.95	.79	1.37	.83	.71	3.22	9.55	8.79	4.58	3.07
29	1.35	1.10	1.35	.75	1.83	.75	.68	------	2.65	4.37	3.07	2.25
30	1.50	1.05	1.15	.71	2.73	2.05	18.6	------	1.95	4.96	5.44	6.97
31	4.06	1.05	------	.65	------	.97	26.5	------	17.2	------	2.05	------
TOTAL	97.60	59.82	101.34	72.95	31.21	107.69	99.31	40.89	213.28	219.05	172.96	120.10
MEAN												
MGD	3.15	1.93	3.38	2.35	1.04	3.47	3.20	1.46	6.88	7.30	5.58	4.00
CFS	4.87	2.99	5.23	3.64	1.61	5.37	4.96	2.26	10.6	11.3	8.63	6.19
AC-FT	300	184	311	224	96	330	305	125	655	672	531	369

CALENDAR YEAR 1962:	MAX	39.3	MIN	0.37	MEAN MGD	2.45	MEAN CFS	3.79	AC-FT	2,740
FISCAL YEAR 1962-63:	MAX	39.3	MIN	0.53	MEAN MGD	3.66	MEAN CFS	5.66	AC-FT	4,100

* Discharge measurement made on this day.

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-21	1900	3.52	372	576	3-18	0200	3.28	289	447
1-16	1700	3.10	233	361	4- 8	0600	3.10	233	361
1-30	1930	3.09	230	356	5-14	1630	3.43	340	526
3-13	0800	4.65	845	1,310					

5060. Makapipi ditch near Nahiku

Location.--Lat 20°48'17", long 156°06'25", on right bank at entrance to tunnel No. 1, 1.8 miles south of Nahiku, and 4.7 miles southeast of Keanae.

Records available.--July 1948 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 1,300 ft above mean sea level (by stadia survey).

Average discharge.--15 years, 2.85 mgd (4.41 cfs).

Extremes.--1948-63: Maximum daily discharge, 7.8 mgd (12.1 cfs) Nov. 21, 1951; minimum daily, 0.42 mgd (0.65 cfs) Mar. 22, 23, 25, Apr. 13, 14, 1958.

Remarks.--Records good. Ditch diverts water from water-development tunnels into Koolau ditch for power, domestic use, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.72	3.50	1.50	1.41	1.00	1.08	1.55	0.92	0.72	2.85	6.81	3.00
2	*.69	3.36	1.46	1.41	1.00	1.12	1.50	.88	.69	2.65	6.05	2.85
3	.69	3.50	1.41	1.41	.96	1.25	1.46	.88	.65	2.46	5.33	2.78
4	.69	3.66	1.36	1.41	.92	1.41	1.41	.84	.65	2.21	5.15	2.72
5	.65	3.66	1.36	1.41	.92	1.50	1.36	.84	.62	2.10	4.30	2.78
6	.65	3.66	1.46	1.50	.92	1.66	1.31	.80	.72	1.93	5.15	2.78
7	.62	3.50	1.36	1.55	.88	1.71	1.31	.76	.72	1.82	5.15	2.78
8	.62	3.28	1.31	1.60	.84	1.71	1.98	.72	.72	1.71	5.33	2.78
9	.62	3.14	1.26	1.60	.84	1.66	2.28	.72	.69	1.60	5.51	3.21
10	.62	2.85	*1.22	1.60	.80	1.60	1.82	.72	.69	1.55	5.69	*3.90
11	.62	2.59	1.22	1.60	.80	1.55	1.71	.69	.69	1.46	6.34	3.90
12	2.15	2.40	1.22	1.60	.76	1.50	1.66	.69	.72	1.41	6.72	3.66
13	1.22	2.28	1.22	1.60	.76	1.64	1.55	.72	1.84	1.36	6.81	3.50
14	1.17	2.15	1.22	1.60	.72	4.30	1.50	.69	2.34	2.31	7.10	3.28
15	1.08	2.64	1.17	1.55	.72	5.96	1.50	.65	2.72	3.98	7.50	3.14
16	1.00	2.40	1.22	1.55	.69	4.90	1.55	.62	3.14	4.56	6.90	2.85
17	1.00	2.40	1.71	1.55	.69	3.98	1.55	.62	3.74	5.24	6.81	2.85
18	1.91	2.40	1.66	1.50	.69	4.38	1.41	1.96	4.47	5.87	6.81	2.92
19	1.50	2.40	1.60	1.50	.65	4.06	1.36	2.23	3.98	6.43	6.50	2.78
20	1.55	2.34	1.55	1.46	.65	3.66	1.31	1.36	3.66	6.50	6.24	3.58
21	1.55	2.28	1.50	1.36	.65	3.36	*1.26	1.08	4.30	6.34	6.05	3.90
22	1.76	2.21	1.50	1.36	.62	3.14	1.22	1.00	4.64	5.87	5.60	3.28
23	*2.15	2.10	1.50	1.36	.95	2.85	1.17	.88	5.60	5.60	5.15	3.28
24	2.40	1.98	1.50	1.31	1.28	2.65	1.12	.84	5.87	5.42	4.56	3.36
25	2.46	1.88	1.50	1.26	.80	2.40	1.12	.80	5.24	*5.69	4.06	3.58
26	2.46	1.88	1.50	1.22	.80	2.28	1.08	.76	4.56	5.96	3.82	3.66
27	2.46	1.76	1.46	1.17	.80	2.04	1.04	.72	4.06	6.62	3.58	3.66
28	2.46	1.66	1.46	1.12	.84	1.93	1.04	.72	4.14	7.00	3.50	3.50
29	2.34	1.60	1.46	1.08	.84	1.82	1.00	--------	3.66	7.00	3.43	3.36
30	2.21	1.55	1.46	1.04	1.00	1.76	.96	--------	3.36	7.00	3.07	3.28
31	2.36	1.50	--------	1.04	--------	1.66	.96	--------	3.21	--------	2.85	--------
Total	44.38	78.51	42.33	43.73	24.79	76.52	43.05	25.11	82.81	122.50	167.87	96.90
Mean												
Mgd	1.43	2.53	1.41	1.41	0.826	2.47	1.39	0.897	2.67	4.08	5.42	3.23
Cfs	2.21	3.91	2.18	2.18	1.28	3.82	2.15	1.39	4.13	6.31	8.39	5.00
Ac-ft	136	241	130	134	76	235	132	77	254	376	515	297

Calendar Year 1962: Max 5.96 Min 0.56 Mean mgd 1.86 Mean cfs 2.88 Ac-ft 2090
Fiscal Year 1962-63: Max 7.50 Min 0.62 Mean mgd 2.32 Mean cfs 3.59 Ac-ft 2600

* Discharge measurement made on this day.

5080. Hanawi Stream near Nahiku

Location.--Lat 20°48'35", long 156°07'00", on left bank 200 ft upstream from Koolau ditch intake and trail, 1.9 miles southwest of Nahiku, and 4.5 miles southeast of Keanae.

Drainage area.--3.49 sq mi.

Records available.--January 1914 to January 1916, November 1921 to June 1963. Monthly discharge only April to June 1915, published in WSP 1319.

Gage.--Water-stage recorder. Datum of gage is 1,318 ft above mean sea level (by vertical angles). Prior to Nov. 1, 1921, at site 50 ft downstream at datum 0.12 ft lower.

Average discharge.--42 years (1914-15, 1922-63), 14.5 mgd (22.4 cfs).

Extremes.--Maximum discharge during year, 1,290 mgd (2,000 cfs) May 14 (gage height, 7.03 ft), from rating curve extended above 270 mgd as explained below; minimum, 1.00 mgd (1.55 cfs) Nov. 14, Feb. 17.

1914-16, 1921-63: Maximum discharge, about 3,600 mgd (about 5,570 cfs) Jan. 18, 1916 (gage height, 11.6 ft, present site and datum), from rating curve extended above 270 mgd by test on model of station site; minimum, that of Nov. 14, 1962, Feb. 17, 1963.

Remarks.--Records good except those above 300 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.1	1.00	2.5	56.0
.3	2.10	3.0	85.0
.6	4.50	4.0	176
1.0	9.60	4.5	250
1.5	19.4	5.0	370
2.0	34.0		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.28	16.4	2.45	1.67	1.18	3.36	1.54	1.13	1.43	2.04	10.0	8.12
2	1.48	10.2	2.17	1.79	1.18	2.17	1.48	1.13	1.38	1.91	7.43	5.79
3	1.73	4.92	1.91	2.31	1.23	1.98	1.48	1.13	1.23	1.98	12.0	6.15
4	1.79	6.26	1.79	2.17	1.18	1.91	1.43	1.13	1.18	1.79	10.8	5.55
5	2.17	3.52	1.85	1.73	1.18	*1.67	1.38	1.13	1.99	1.73	10.6	8.84
6	1.67	2.96	5.10	2.74	1.18	1.60	1.33	1.08	*3.99	1.67	75.6	6.74
7	1.38	2.66	2.24	2.96	1.18	1.54	4.07	1.08	1.85	1.60	109	6.82
8	1.33	2.38	1.91	2.10	1.18	1.48	40.6	1.08	1.60	1.54	20.0	6.22
9	1.73	2.24	1.79	2.89	1.13	1.43	3.99	1.08	1.43	1.48	37.4	7.58
10	2.31	2.10	1.73	2.52	1.18	1.38	2.24	1.04	1.33	1.48	44.7	9.74
11	3.18	1.98	1.79	1.91	1.08	1.33	1.85	1.04	1.60	1.43	108	13.2
12	18.6	1.91	*2.10	1.73	1.08	1.28	1.73	1.38	3.27	1.43	59.0	*5.24
13	3.04	2.39	6.41	1.60	1.13	4.72	1.67	1.48	3.11	1.54	29.8	4.92
14	2.10	8.40	2.24	1.60	1.08	57.5	1.60	1.23	3.17	16.2	255	4.50
15	1.79	15.0	1.73	1.54	1.08	22.3	1.54	1.13	14.0	140	77.7	3.96
16	1.85	3.36	2.20	1.48	1.13	4.31	26.0	1.04	8.28	186	40.5	3.52
17	2.31	2.52	5.41	1.43	1.18	3.93	5.86	1.07	9.40	183	34.5	6.65
18	13.7	2.45	2.24	1.38	1.13	6.79	1.54	15.0	21.8	76.6	22.4	16.4
19	4.00	3.31	1.85	1.38	1.04	2.96	1.48	4.13	3.98	12.2	33.5	7.51
20	2.96	2.52	1.85	1.33	1.04	2.38	1.43	1.79	4.15	15.2	65.6	36.8
21	3.28	2.10	2.10	1.33	1.23	2.10	1.38	1.60	28.9	18.3	14.2	21.8
22	4.99	1.98	2.73	1.33	1.28	1.91	1.38	1.43	63.1	30.9	11.2	7.43
23	6.80	1.91	2.59	1.66	38.5	1.79	*1.33	1.38	22.2	43.9	9.30	11.9
24	3.69	1.85	2.24	*2.41	17.8	1.67	1.28	1.33	5.49	75.9	8.55	8.35
25	*3.04	1.79	1.91	1.60	2.79	1.60	1.23	1.28	3.52	*59.5	7.70	5.13
26	2.66	2.31	1.85	1.43	1.91	1.54	1.23	1.28	3.88	33.7	7.16	4.23
27	2.38	1.98	1.79	1.33	2.60	1.48	1.18	1.23	4.52	70.6	6.63	3.87
28	2.17	1.91	2.04	1.28	3.06	1.43	1.18	1.23	11.0	80.4	8.97	3.60
29	2.04	1.79	1.91	1.28	1.98	1.54	1.18	------	4.51	32.2	7.44	3.78
30	2.17	1.73	1.67	1.23	8.89	3.41	1.13	------	2.45	19.7	6.89	6.56
31	16.4	1.79	------	1.23	------	2.04	1.13	------	2.24	------	5.67	------
TOTAL	120.02	118.62	71.59	54.37	102.81	146.53	117.87	51.06	241.98	1,115.92	1,157.24	250.90
MEAN												
MGD	3.87	3.83	2.39	1.75	3.43	4.73	3.80	1.82	7.81	37.2	37.3	8.36
CFS	5.99	5.92	3.69	2.71	5.30	7.31	5.88	2.82	12.1	57.5	57.8	12.9
AC-FT	368	364	220	167	316	450	362	157	743	3,420	3,550	770

CALENDAR YEAR 1962:	MAX	260	MIN	1.04	MEAN MGD	6.71	MEAN CFS	10.4	AC-FT	7,510
FISCAL YEAR 1962-63:	MAX	255	MIN	1.04	MEAN MGD	9.72	MEAN CFS	15.0	AC-FT	10,890

Peak discharge (base, 850 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	1800	7.03	1,290	2,000

* Discharge measurement made on this day.

5100. Kapaula Gulch near Nahiku

Location.--Lat 20°48'45", long 156°07'05", on right bank 40 ft upstream from Koolau ditch intake, 300 ft upstream from ditch trail, 1.9 miles southwest of Nahiku, and 4 miles southeast of Keanae.

Drainage area.--0.69 sq mi.

Records available.--November 1921 to January 1963 (discontinued). Prior to July 1958, published as Kapaula Stream near Nahiku.

Gage.--Water-stage recorder. Datum of gage is 1,346 ft above mean sea level (by vertical angles).

Average discharge.--40 years (1922-62), 10.7 mgd (16.6 cfs).

Extremes.--Maximum discharge during period July to January, 134 mgd (207 cfs) Dec. 14 (gage height, 2.95 ft); minimum, 0.26 mgd (0.40 cfs) on several days in November.

1921-63: Maximum discharge, 1,800 mgd (2,790 cfs) Dec. 13, 1921 (gage height, 8.45 ft), from rating curve, extended above 220 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) Nov. 23-25, Dec. 26, 31, 1933, Jan. 1, 1934, Oct. 2-5, 1938.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. No diversion above station. Water is diverted by Koolau ditch, 40 ft below station, for domestic supply and irrigation of sugar cane in central Maui.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.37	0.26	0.9	6.50
.4	.38	1.2	13.4
.5	1.08	1.5	16.8
.7	3.35	2.0	44.0

Discharge, in million gallons a day, July 1962 to January 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.29	16.0	2.09	0.87	0.33	4.08	0.66					
2	.45	11.3	1.86	1.01	.33	2.09	.59					
3	.94	4.22	1.30	1.75	.33	1.64	.59					
4	1.42	6.35	1.01	1.42	.29	1.42	.52					
5	2.20	2.54	1.08	.87	.29	*.94	.38					
6	.87	2.09	4.72	2.43	.29	.73	.29					
7	.59	1.75	1.98	2.20	.29	.59	5.56					
8	.52	1.30	1.08	1.30	.26	.59	11.0					
9	1.08	1.08	.94	2.66	.26	.52	2.4					
10	2.20	.94	.80	1.4	.26	.45	.87					
11	2.15	.87	1.01	1.2	.26	.38	.66					
12	16.0	.87	1.64	1.1	.26	.38	.59					
13	3.09	1.42	3.57	.94	.29	3.69	.52					
14	1.75	7.87	2.20	1.2	.26	41.2	.45					
15	.94	12.7	1.19	.94	.26	21.4	.45					
16	.87	3.24	1.95	.80	.29	3.69	1.1					
17	2.09	1.98	5.07	.73	.38	3.27	.94					
18	12.7	1.75	1.98	.66	.33	9.28	.59					
19	4.28	2.66	1.19	.59	.29	2.66	.45					
20	2.54	1.98	1.08	.59	.33	1.42	.45					
21	3.08	1.30	1.75	.59	*.52	1.01	.45					
22	5.28	1.08	2.09	.52	2.07	.80	.52					
23	7.21	.94	2.09	1.1	34.2	.73	.45					
24	3.24	.87	1.86	*2.0	19.5	.66	-					
25	*2.32	.80	1.30	.80	4.41	.59	-					
26	1.75	1.64	1.01	.59	3.26	.52	-					
27	1.30	1.30	.87	.52	2.30	.52	-					
28	1.01	1.19	1.30	.45	5.29	.45	-					
29	.87	1.01	1.19	.38	3.24	.52	-					
30	1.08	.87	.80	.38	9.50	3.00	-					
31	13.0	1.08	--------	.38	--------	1.30	-					
Total	97.11	94.99	52.00	32.37	90.17	110.52	-					
Mean												
Mgd	3.13	3.06	1.73	1.04	3.00	3.56	-					
Cfs	4.84	4.73	2.68	1.61	4.64	5.51	-					
Ac-ft	298	292	160	99	277	339	-					

Calendar Year 1962: Max 103 Min 0.26 Mean mgd 4.43 Mean cfs 6.85 Ac-ft 4,970
Fiscal Year 1962-63: Max - Min - Mean mgd - Mean cfs - Ac-ft -

Peak discharge (base, 450 mgd).--No peak above base.

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 10-24, Nov. 18-20, Jan. 8-23.

5120. Koolau ditch at Nahiku weir, near Nahiku

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

Records available.--February 1919 to June 1963.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft above mean sea level, datum of 1929. Prior to Apr. 28, 1922, staff gage at same site and datum.

Average discharge.--44 years, 21.8 mgd (33.7 cfs).

Extremes.--1919-1963: Maximum daily discharge, 64.4 mgd (99.6 cfs) May 11, 1963; no flow at times.

Remarks.--Records excellent except those for period of no gage-height record, which are fair. Ditch diverts water from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.12	42.5	11.2	7.92	5.60	15.1	7.92	5.36*	7.55	12.4	40.5	33.6
2	5.60	40.0	10.2	8.48	5.60	10.8	7.64	4.64	7.64	11.2	31.1	27.5
3	6.32	24.3	9.04	10.2	5.60	10.2	7.36	4.40	5.60	11.2	35.0	28.4
4	7.36	31.1	8.20	9.60	5.36	9.91	6.80	4.40	4.88	10.2	38.5	25.5
5	8.20	20.5	8.48	8.20	5.12	8.76	6.56	4.40	7.08	9.60	32.2	32.4
6	6.08	18.0	18.6	12.4	5.12	8.48	6.56	1.46	17.4	9.04	60.5	28.4
7	5.60	15.8	10.5	12.7	5.12	7.92	15.8	1.46	7.92	8.76	62.0	28.4
8	5.36	14.1	8.76	10.5	5.12	7.36	28.7	4.18	6.80	8.20	52.5	a 27
9	6.32	13.0	8.20	13.4	4.88	7.08	16.1	3.96	6.08	7.92	59.5	a 30
10	7.92	12.1	7.92	11.2	4.88	6.80	9.91	4.40	5.84	7.64	62.0	a 43
11	9.67	11.5	8.20	9.32	4.88	6.80	9.32	4.40	6.32	7.36	64.4	a 49
12	39.8	10.5	9.32	8.48	4.64	6.56	8.48	5.84	12.2	7.36	62.6	27.1
13	13.0	11.8	15.2	8.20	4.88	12.6	7.92	6.56	14.6	7.58	60.6	23.5
14	9.91	26.3	9.60	8.76	4.64	59.5	7.36	5.60	14.7	33.9	61.5	21.6
15	7.92	36.4	8.20	7.64	4.64	52.0	7.08	4.88	42.3	61.5	59.5	19.4
16	7.64	16.8	10.9	7.36	4.88	23.9	14.4	4.64	33.3	62.0	59.5	17.6
17	9.60	13.7	22.0	7.08	5.12	21.5	16.4	4.64	37.4	60.5	60.0	27.2
18	32.0	13.7	11.8	6.80	4.88	37.0	7.36	30.9	47.0	54.0	58.0	43.0
19	17.2	15.4	9.60	6.80	4.64	19.8	6.56	16.7	21.3	40.0	59.5	28.8
20	13.4	13.4	9.32	6.56	4.64	15.4	6.32	9.04	19.1	41.0	60.5	52.0
21	13.4	11.8	9.91	6.32	5.12	13.7	*6.08	7.64	53.0	43.0	50.0	51.0
22	20.5	10.5	11.5	*6.56	7.07	12.4	6.56	6.80	62.0	37.0	42.0	31.1
23	27.9	10.2	10.8	8.20	45.2	11.5	6.32	6.56	54.5	*57.0	36.0	38.5
24	17.2	9.32	10.2	10.2	37.5	10.5	6.08	6.08	27.5	60.0	33.0	34.0
25	15.4	9.04	9.04	7.36	12.3	9.60	5.84	5.84	22.4	61.0	31.6	25.5
26	13.7	11.5	9.04	6.56	9.60	9.04	5.60	5.60	23.1	61.0	32.5	22.4
27	12.7	9.91	8.48	6.32	8.48	8.48	5.60	5.36	21.6	63.8	29.8	20.9
28	11.8	9.04	9.60	6.08	13.7	8.20	5.60	5.12	33.9	62.6	33.6	19.8
29	10.8	8.76	8.76	5.84	9.60	8.20	5.36	-------	21.9	57.5	33.0	19.4
30	11.5	8.20	7.92	5.60	26.9	13.4	5.36	-------	14.7	55.5	29.8	26.5
31	30.2	8.48	-------	5.60	-------	9.32	5.36	-------	13.4	-------	25.5	-------
Total	409.12	507.65	310.49	256.24	275.71	461.81	268.31	180.86	673.01	1029.76	1456.7	902.5
Mean												
Mgd	13.2	16.4	10.3	8.27	9.19	14.9	8.66	6.46	21.7	34.3	47.0	30.1
Cfs	20.4	25.4	15.9	12.8	14.2	23.1	13.4	10.0	33.6	53.1	72.7	46.6
Ac-ft	1260	1560	953	786	846	1420	823	555	2060	3160	4470	2770

Calendar Year 1962:	Max	60.0	Min	4.64	Mean mgd	14.9	Mean cfs	23.1	Ac-ft	16,730
Fiscal Year 1962-63:	Max	64.4	Min	1.46	Mean mgd	18.4	Mean cfs	28.5	Ac-ft	20,660

* Discharge measurement made on this day.
a No gage-height record.

5150. Waiohue Gulch near Nahiku

Location.--Lat 20°49'05", long 156°07'45", on left bank 200 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 2.4 miles southwest of Nahiku, and 3.5 miles southeast of Keanae.

Drainage area.--0.32 sq mi.

Records available.--October 1921 to April 1963 (discontinued). Prior to July 1958, published as Waiohue Stream near Nahiku.

Gage.--Water-stage recorder. Datum of gage is 1,316.2 ft above mean sea level (by stadia traverse).

Average discharge.--40 years (1922-62), 7.44 mgd (11.5 cfs).

Extremes.--Maximum discharge during period July to April, 245 mgd (379 cfs) Jan. 8 (gage height, 4.10 ft), from rating curve extended above 94 mgd as explained below; minimum, 1.36 mgd (2.10 cfs) Feb. 11, 12, 17, Feb. 27 to Mar. 1.

1921-63: Maximum discharge, 702 mgd (1,090 cfs) Apr. 16, 1960 (gage height, 6.24 ft), from rating curve exteaded above 94 mgd on basis of slope-area measurements at gage heights 4.57 and 5.60 ft; maximum gage height, 6.24 ft Apr. 7, 1938, Apr. 16, 1960; minimum discharge, 1.36 mgd (2.10 cfs) Oct. 9, 10, 1953, Feb. 11, 12, 17, Feb. 27 to Mar. 1, 1963.

Remarks.--Records good. No diversion above station. Water is diverted by Koolau ditch, 200 ft below station, for domestic supply and irrigation of sugar cane in central Maui.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	1.12	1.0	7.00
.5	1.61	1.2	11.1
.6	2.23	1.5	20.0
.8	4.10	1.9	38.5

Discharge, in million gallons a day, July 1962 to April 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.51	8.42	3.46	2.30	1.67	2.70	2.23	1.51	2.53	2.50		
2	1.67	7.08	2.70	2.30	1.67	2.04	2.23	1.51	1.73	2.40		
3	1.98	3.90	2.55	2.70	1.73	*1.98	2.11	1.46	1.41	2.50		
4	2.38	6.76	2.30	2.55	1.61	2.17	2.04	1.46	*1.41	2.30		
5	2.11	3.45	2.50	2.17	1.61	1.92	1.98	1.46	2.19	2.23		
6	1.67	3.15	4.50	3.45	1.61	1.92	1.98	1.46	3.86	2.23		
7	1.61	2.90	2.55	2.90	1.61	1.92	5.55	1.41	1.92	2.23		
8	1.56	2.70	2.30	2.50	1.56	1.92	18.2	1.41	1.61	2.17		
9	1.80	2.65	2.23	2.80	1.51	1.86	2.90	1.41	1.56	2.11		
10	1.98	2.55	*2.04	2.50	1.51	1.86	2.40	1.41	1.51	2.11		
11	2.79	2.50	2.17	2.23	1.51	1.86	2.23	1.36	1.46	2.04		
12	10.0	2.30	2.70	2.17	1.51	1.80	2.11	1.84	2.41	2.04		
13	2.30	2.65	2.80	2.11	1.51	6.73	2.04	2.04	2.04	3.35		
14	2.04	6.26	2.30	2.17	1.46	34.1	1.98	1.67	1.98	6.28		
15	1.80	7.03	2.17	2.04	1.46	13.0	1.98	1.46	8.21	30.9		
16	1.86	3.15	3.24	2.04	1.46	3.80	2.51	1.41	3.91	43.9		
17	2.40	2.80	5.41	1.98	1.51	4.80	2.51	1.41	8.13	32.9		
18	7.31	2.90	2.50	1.98	1.46	7.09	1.98	18.4	5.66	20.5		
19	2.90	3.76	2.23	1.92	1.41	3.15	1.92	3.46	2.55	5.60		
20	2.30	2.90	2.23	1.92	1.46	2.70	1.92	1.80	2.51	6.18		
21	2.30	2.65	2.40	1.92	1.56	2.65	1.80	1.61	9.50	7.67		
22	4.48	2.50	2.55	1.86	2.45	2.50	1.80	1.56	26.1	12.9		
23	*5.14	2.40	2.55	2.17	14.8	2.40	1.73	1.51	11.0	*8.30		
24	2.90	2.30	2.50	2.17	7.39	2.30	1.67	1.46	3.55	-		
25	2.70	2.30	2.23	1.92	2.17	2.23	1.67	1.46	2.95	-		
26	2.50	3.05	2.30	1.86	1.92	2.23	1.61	1.41	2.90	-		
27	2.30	2.65	2.23	1.80	2.01	2.17	1.61	1.41	2.90	-		
28	2.23	2.50	2.55	1.80	2.98	2.17	1.61	1.36	6.83	-		
29	2.17	2.40	2.23	1.73	2.11	2.23	1.56	---------	3.15	-		
30	2.55	2.23	2.11	1.73	5.12	4.00	1.51	---------	2.65	-		
31	11.0	2.65	---------	1.67	---------	2.50	1.51	---------	2.55	-------		
Total	94.24	107.44	78.53	67.36	73.35	126.70	80.88	61.13	132.67	-		
Mean												
Mgd	3.04	3.46	2.62	2.17	2.44	4.09	2.61	2.18	4.28	-		
Cfs	4.70	5.35	4.05	3.36	3.78	6.33	4.04	3.37	6.62	-		
Ac-ft	289	330	241	207	225	389	248	189	407	-		

Calendar Year 1962:		Max	64.6	Min	1.41	Mean mgd	3.73	Mean cfs	5.77	Ac-ft	4180
Fiscal Year 1962-63:		Max	-	Min	-	Mean mgd	-	Mean cfs	-	Ac-ft	-

Peak discharge (base, 300 mgd).--No peak above base.

* Discharge measurement made on this day.

5180. West Wailuaiki Stream near Keanae

Location.--Lat 20°49'15", long 156°08'37", on left bank 500 ft upstream from Koolau ditch crossing and trail bridge and 2.8 miles south of Keanae Post Office.

Drainage area.--3.66 sq mi.

Records available.--January 1914 to December 1915, May 1916 to October 1917, November 1921 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder. Datum of gage is 1,343.6 ft above mean sea level (by vertical angles).

Average discharge.--43 years (1914-15, 1916-17, 1922-63) 23.7 mgd (36.7 cfs).

Extremes.--Maximum discharge during year, 2,330 mgd (3,610 cfs) May 14 (gage height, 9.56 ft), from rating curve extended above 420 mgd as explained below; minimum, 0.87 mgd (1.35 cfs) Nov. 19, 20.

1914-17, 1921-63: Maximum discharge, about 4,500 mgd (about 6,960 cfs) Jan. 14, 1923 (gage height, 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. No diversion above station. Water is diverted by Koolau ditch, 500 ft below station, for domestic supply and irrigation of sugar cane in central Maui.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.1	0.87	2.5	73.0
.4	2.43	3.0	121
.7	4.85	3.5	185
1.1	10.3	4.0	270
1.5	19.2	5.0	510
2.0	39.5		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.59	27.7	4.57	3.26	1.54	6.34	2.56	3.48	17.5	4.85	11.2	7.98
2	2.02	14.2	3.66	3.50	1.59	4.19	2.70	1.75	7.06	4.09	8.70	5.73
3	3.03	7.12	3.03	4.47	1.85	*3.50	2.26	1.54	2.56	3.82	14.2	5.95
4	3.50	9.99	2.77	3.34	1.54	3.18	2.02	1.49	*2.08	4.28	14.4	5.07
5	5.40	5.18	3.18	2.77	1.33	2.77	1.97	1.38	2.65	4.09	10.1	9.60
6	2.37	4.66	11.4	4.96	1.24	2.43	1.91	1.33	13.3	3.34	104	7.25
7	1.91	3.90	3.66	4.38	1.24	2.31	27.0	1.24	4.28	3.26	192	7.54
8	1.75	3.50	2.97	3.66	1.15	2.14	94.3	1.19	3.42	3.03	27.5	7.88
9	2.97	3.18	2.63	7.43	1.10	2.02	9.71	1.19	2.70	3.58	46.1	9.45
10	4.00	2.97	*2.50	4.47	1.69	1.91	4.66	1.15	2.31	3.90	66.0	*16.0
11	4.20	2.83	2.63	3.42	1.33	1.91	3.74	1.15	2.43	5.72	152	25.1
12	26.1	2.70	6.05	2.97	1.24	1.85	2.97	21.4	2.68	4.57	76.2	7.69
13	3.90	4.19	13.8	2.77	1.49	7.89	2.63	9.03	3.26	4.44	36.9	6.47
14	2.70	19.9	3.90	2.63	1.24	111	2.37	3.82	2.43	21.0	386	7.29
15	2.26	20.0	3.10	2.50	1.24	49.6	2.20	2.26	7.12	87.0	80.1	6.21
16	2.37	5.40	3.44	2.20	1.24	8.41	14.7	1.85	6.36	166	70.5	5.18
17	3.10	4.19	9.42	2.20	1.24	12.2	14.3	1.69	4.96	105	57.1	12.3
18	29.2	4.09	3.74	2.20	1.10	24.7	3.42	155	7.54	48.1	29.8	30.2
19	6.34	5.84	3.03	2.08	.96	7.12	2.77	13.5	4.09	11.4	56.2	14.1
20	4.85	3.74	3.90	2.14	1.01	4.96	2.50	4.28	12.1	11.8	116	61.9
21	7.00	3.18	4.38	2.14	1.64	4.19	*2.26	3.18	38.1	19.6	19.2	34.6
22	8.46	2.97	6.08	*2.14	6.58	3.66	2.20	2.70	87.8	55.5	13.8	12.1
23	*10.5	2.77	4.09	3.84	84.4	3.18	2.63	2.31	32.3	*74.9	10.3	22.1
24	5.62	2.56	4.00	5.77	42.2	2.83	2.20	2.02	9.02	113	9.02	13.2
25	4.85	2.50	3.50	2.50	7.98	2.63	2.02	1.91	6.34	71.4	7.69	8.56
26	3.90	5.13	3.26	2.14	7.91	2.43	1.85	1.80	8.54	39.0	7.25	7.25
27	3.34	3.42	3.03	2.02	5.95	2.31	1.75	1.75	10.7	81.7	6.60	6.47
28	3.03	2.97	3.90	1.85	14.2	2.31	1.64	1.64	39.5	121	9.94	6.08
29	2.83	2.77	3.03	1.80	6.08	2.35	1.59	------	12.2	48.7	10.3	6.34
30	3.50	2.56	2.63	1.64	12.8	8.85	1.43	------	6.21	17.3	8.70	12.1
31	27.7	3.18	------	1.59	------	3.18	1.43	------	5.40	------	6.21	------
TOTAL	194.29	189.29	131.28	94.78	216.10	298.85	221.69	247.03	366.94	1,145.37	1,664.01	387.69
MEAN												
MGD	6.27	6.11	4.38	3.06	7.20	9.64	7.15	8.82	11.8	38.2	53.7	12.9
CFS	9.70	9.45	6.77	4.73	11.1	14.9	11.1	13.6	18.3	59.1	83.0	20.0
AC-FT	596	581	403	291	663	917	680	758	1,130	3,520	5,110	1,190

CALENDAR YEAR	1962:	MAX	269	MIN	0.96	MEAN MGD	9.31	MEAN CFS	14.4	AC-FT	10,430
FISCAL YEAR	1962-63:	MAX	386	MIN	0.96	MEAN MGD	14.1	MEAN CFS	21.8	AC-FT	15,840

* Discharge measurement made on this day.

Peak discharge (base, 1,200 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-8	1600	7.93	1,550	2,400	5-14	2130	9.56	2,330	3,610
2-18	1500	8.42	1,750	2,710					

5220. Taro patch feeder ditch at Keanae

Location.--Lat 20°51'40", long 156°09'00", on left bank at Keanae, 80 ft downstream from intake on Palauhulu Stream, 500 ft downstream from highway bridge, 4.2 miles northwest of Nahiku, and 4.8 miles southeast of Kailua.

Records available.--September 1934 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 51 ft (from topographic map).

Average discharge.--28 years (1935-63), 2.31 mgd (3.57 cfs).

Extremes.--1934-63: Maximum daily discharge, 7.9 mgd (12.2 cfs) June 30, 1941, Feb. 10, 1955; minimum daily, 0.05 mgd (0.08 cfs) Mar. 5, 1939.

Remarks.--Records good. Ditch diverts from Palauhulu Stream for irrigation of taro at Keanae.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.77	2.57	1.73	1.64	1.46	1.38	1.55	1.50	1.90	1.73	2.71	2.81
2	1.77	2.10	1.73	1.59	1.46	1.38	1.55	1.50	1.90	1.73	2.65	2.76
3	1.77	1.86	1.73	1.59	1.46	1.38	1.55	1.50	1.59	1.77	2.76	2.76
4	1.82	1.86	1.68	1.64	1.42	1.38	1.55	1.46	1.55	1.73	2.86	2.76
5	1.77	1.82	1.68	1.59	1.42	1.34	1.55	1.46	1.59	1.73	2.76	2.76
6	1.77	1.82	1.73	1.64	1.42	1.34	1.50	1.46	2.27	1.73	1.73	2.76
7	1.73	1.82	1.68	1.64	1.42	1.30	2.00	1.46	1.95	1.73	4.47	2.71
8	1.73	1.82	1.64	1.59	1.42	1.30	2.46	1.46	1.68	1.73	3.20	2.81
9	1.73	1.82	1.64	1.59	1.38	1.30	1.59	1.42	1.59	1.73	3.43	2.76
10	1.73	1.77	1.59	1.59	1.38	1.30	1.21	1.42	1.55	1.68	3.78	2.81
11	1.77	1.77	1.59	1.59	1.38	1.30	1.18	1.42	1.46	1.68	4.71	2.81
12	2.61	1.77	1.59	1.55	1.38	1.30	1.59	1.59	1.42	1.77	3.78	2.60
13	1.77	1.82	1.81	1.55	1.38	1.32	1.59	1.86	1.46	1.82	3.37	2.55
14	1.73	2.49	1.50	1.59	1.38	4.14	1.59	1.73	1.50	2.24	5.30	2.49
15	1.73	2.29	1.50	1.55	1.38	3.54	1.59	1.50	1.55	3.13	2.47	2.44
16	1.77	1.82	1.55	1.55	1.38	2.29	1.83	1.50	1.55	4.17	3.32	2.39
17	1.73	1.82	*1.68	1.55	1.38	1.87	2.45	1.50	1.59	4.06	3.35	2.49
18	2.62	1.82	1.64	1.50	1.38	2.86	1.64	3.46	1.77	3.84	2.97	2.86
19	1.73	1.82	1.55	1.50	1.34	1.82	1.59	2.97	1.55	2.60	3.26	2.55
20	1.73	1.82	1.55	1.50	1.34	1.68	1.59	2.20	1.71	2.49	3.80	3.20
21	1.91	1.82	1.55	1.50	1.34	1.64	1.59	1.77	3.31	2.65	2.60	3.14
22	2.05	1.77	1.59	1.50	1.34	1.55	1.59	1.68	4.02	2.65	2.49	2.71
23	2.24	1.77	1.64	1.55	3.05	1.55	1.55	1.68	3.43	*3.14	2.34	2.86
24	1.95	1.77	1.64	1.50	2.17	1.55	*1.55	1.64	2.60	3.84	2.29	2.76
25	1.86	1.77	1.64	1.50	1.42	1.55	1.55	1.64	2.05	3.48	2.20	2.60
26	1.86	1.82	1.64	1.50	1.42	1.55	1.55	1.59	1.77	3.31	2.15	2.49
27	1.82	1.77	1.64	1.46	1.42	1.55	1.55	1.59	1.73	3.66	2.65	2.44
28	1.77	1.73	1.64	1.46	1.38	1.55	1.55	1.59	2.43	4.22	3.03	2.44
29	1.77	1.73	1.64	*1.46	1.38	1.55	1.50	------	2.10	3.43	3.03	2.39
30	1.77	1.73	1.59	1.46	1.38	1.59	1.42	------	1.77	2.92	2.92	2.39
31	2.26	1.73	------	1.46	------	1.55	1.50	------	1.82	------	2.81	------
TOTAL	58.04	57.91	49.00	47.88	44.26	52.70	50.05	47.55	60.16	78.39	95.19	80.30
MEAN												
MGD	1.87	1.87	1.63	1.54	1.48	1.70	1.61	1.70	1.94	2.61	3.07	2.68
CFS	2.90	2.89	2.53	2.39	2.28	2.63	2.50	2.63	3.00	4.04	4.75	4.14
AC-FT	178	178	150	147	136	162	154	146	185	241	292	246

CALENDAR YEAR 1962:	MAX	5.24	MIN	1.30	MEAN MGD	1.98	MEAN CFS	3.06	AC-FT	2,210
FISCAL YEAR 1962-63:	MAX	5.30	MIN	1.18	MEAN MGD	1.98	MEAN CFS	3.06	AC-FT	2,210

* Discharge measurement made on this day.

5230. Koolau ditch near Keanae

Location.--Lat 20°49'53", long 156°10'30", on right bank on west side of Keanae Valley, 2.6 miles southwest of Keanae Post Office, and 5.1 miles southeast of Kailua.

Records available.--January 1910 to December 1912, November 1917 to February 1918, April 1918 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 1,237.7 ft above mean sea level (by plane-table traverse). Jan. 1, 1910, to Dec. 31, 1912, staff gage at same site and datum.

Average discharge.--47 years (1910-12, 1918-63), 66.1 mgd (102 cfs).

Extremes.--1910-12, 1917-63: Maximum daily discharge, 172 mgd (266 cfs) Apr. 19, 1935; no flow at times.

Remarks.--Records good. Ditch diverts at altitude 1,260 ft from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.2	133	43.1	29.2	16.7	50.4	24.5	22.0	37.7	40.2	109	94.3
2	*18.0	125	35.0	30.6	16.9	33.0	25.2	15.3	56.5	34.4	83.6	64.5
3	24.2	71.0	28.8	39.4	18.2	29.2	22.9	14.8	20.2	34.8	90.9	71.9
4	30.2	107	25.4	32.0	16.2	28.4	21.4	14.4	17.7	33.2	107	58.9
5	37.6	53.0	28.7	26.4	15.7	24.5	20.5	14.1	22.4	31.5	89.2	98.4
6	19.7	46.6	88.7	45.8	15.7	22.7	20.2	11.6	88.8	27.7	147	81.2
7	16.7	40.2	32.0	43.0	15.5	21.5	83.0	10.8	*36.2	26.2	143	83.8
8	16.2	35.4	26.7	33.8	14.8	20.6	100	13.3	26.6	25.9	132	83.9
9	24.5	32.3	24.8	54.4	14.4	19.7	66.3	13.0	22.0	25.9	147	94.2
10	30.9	30.6	23.6	38.2	16.0	19.2	35.6	13.3	19.4	24.9	147	115
11	36.9	28.8	25.1	30.6	14.6	19.2	31.9	13.0	19.6	29.0	147	126
12	119	27.0	44.7	27.0	14.4	18.4	27.3	49.4	33.7	29.2	147	*72.9
13	37.8	36.9	68.1	25.4	15.5	29.7	23.9	51.9	35.0	31.4	76.1	61.3
14	27.0	102	33.0	26.0	14.4	123	22.9	26.6	32.4	118	81.6	58.9
15	22.4	116	27.4	23.9	14.4	127	22.3	17.7	88.2	*128	97.0	53.6
16	23.0	47.4	31.1	22.7	14.4	76.2	38.6	15.8	83.0	*147	135	46.7
17	34.3	37.8	92.7	22.1	14.6	61.6	71.0	15.0	81.6	67.5	146	98.4
18	110	37.8	35.4	21.5	14.4	112	26.6	95.5	104	94.6	145	127
19	55.8	56.2	29.5	20.9	13.5	59.6	22.3	82.5	49.6	120	146	92.7
20	41.0	37.0	32.0	20.6	13.5	45.1	21.7	34.4	53.6	113	146	136
21	53.6	31.2	36.2	20.3	16.9	39.3	19.9	25.9	143	124	129	136
22	82.4	28.8	46.2	19.7	33.5	34.4	19.9	22.6	146	108	111	105
23	102	27.0	37.0	27.9	123	31.5	21.1	20.8	142	146	96.3	113
24	51.8	25.4	34.2	42.0	121	28.8	*18.5	19.1	86.2	145	87.7	118
25	43.8	24.8	30.6	21.8	50.6	26.9	17.5	18.0	60.5	147	77.3	78.1
26	36.6	44.7	29.8	19.5	44.6	25.5	17.5	17.5	68.8	144	76.2	63.3
27	32.3	30.2	28.4	19.2	36.2	24.2	17.0	17.0	78.4	146	68.8	58.9
28	29.8	28.1	33.4	18.2	78.1	23.9	16.7	16.5	112	147	86.3	57.3
29	27.4	25.7	28.4	*17.7	41.0	27.1	15.5	--------	87.1	146	95.2	57.2
30	32.3	24.2	25.1	17.2	101	73.2	15.3	--------	49.6	144	82.6	96.4
31	105	30.8	--------	16.9	--------	31.5	15.5	--------	42.6	--------	61.7	--------
Total	1,337.4	1,521.9	1,105.1	853.9	949.7	1,307.3	922.5	701.8	1,944.4	2,579.4	3,434.5	2,602.8
Mean												
Mgd	43.1	49.1	36.8	27.5	31.6	42.2	29.8	25.1	62.7	86.0	111	86.8
Cfs	66.7	76.0	56.9	42.5	48.9	65.3	46.1	38.8	97.0	133	172	134
Ac-ft	4,100	4,670	3,390	2,620	2,910	4,010	2,830	2,150	5,970	7,920	10,540	7,990

Calendar Year 1962:	Max	142	Min	13.5	Mean mgd	43.8	Mean cfs	67.8	Ac-ft	48,990
Fiscal Year 1962-63:	Max	147	Min	10.8	Mean mgd	52.8	Mean cfs	81.7	Ac-ft	59,100

* Discharge measurement made on this day.

5240. Honomanu Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'19", long 156°12'15", on left bank at Haiku-uka trail crossing, 4.5 miles southwest of Keanae, 4.8 miles southeast of Kailiili, and 5 miles south of Kailua.

Drainage area.--2.54 sq mi (revised).

Records available.--October 1919 to February 1927, July 1932 to December 1934, June 1962 to July 1963.

Gage.--Water-stage recorder. Altitude of gage is 2,900 ft (from topographic map).

Average discharge.--9 years (1920-26, 1932-34, 1962-63), 8.75 mgd (13.5 cfs).

Extremes.--1962: Maximum discharge during June, 1.17 mgd (1.81 cfs) June 10, 11 (gage height, 0.87 ft); minimum, 0.14 mgd (0.22 cfs) June 25.

1962-63: Maximum discharge during fiscal year, 811 mgd (1,250 cfs) May 14 (gage height, 7.53 ft), from rating curve extended above 75 mgd; minimum, 0.06 mgd (0.09 cfs) Nov. 20.

1919-27, 1932-34, 1962-63: Maximum discharge, 1,290 mgd (2,000 cfs) Jan. 14, 1923 (gage height, 9.93 ft) from rating curve extended above 75 mgd; minimum, that of Nov. 20, 1962.

Remarks.--Records good except those above 200 mgd, which are fair. No diversion above station.

Discharge, in million gallons a day, June 1962

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
June 1.....	-	June 9.....	0.42	June 17.....	0.21	June 25.....	0.16
2.....	-	10.....	.59	18.....	.25	26.....	.16
3.....	-	11.....	.90	19.....	.39	27.....	.19
4.....	0.34	12.....	.48	20.....	.29	28.....	.29
5.....	.34	13.....	.36	21.....	.23	29.....	.31
6.....	.34	14.....	.29	22.....	.19	30.....	.23
7.....	.34	15.....	.25	23.....	.19		
8.....	.36	16.....	.23	24.....	.18		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.29	3.79	1.63	0.71	0.12	1.35	0.55	12.7	0.56	0.80	1.94	2.18
2	.59	3.40	1.42	1.17	.13	.85	.45	.80	.80	.76	1.35	1.56
3	1.94	1.73	.90	1.35	.18	.67	.36	.52	.36	.59	3.21	1.23
4	1.86	1.63	*.67	.90	.14	1.17	.29	.36	.25	.52	7.98	1.05
5	3.00	1.55	1.03	.62	.13	.71	.27	.31	.31	1.24	14.7	3.03
6	1.11	1.17	6.02	1.54	.12	.52	.25	.27	.71	1.49	41.9	2.62
7	.67	.95	1.23	1.49	.11	.39	5.91	.23	.85	1.17	95.0	2.42
8	.52	.80	.85	1.00	.10	.31	11.1	.21	.39	1.21	9.74	15.6
9	1.52	.80	.62	2.09	.09	.27	2.08	.19	.25	1.17	18.2	4.85
10	1.78	.90	.52	1.23	.13	.23	.95	.18	.18	.71	19.8	5.86
11	2.44	.95	.45	.80	.11	.23	1.00	.16	.16	*.55	50.9	5.94
12	10.2	2.42	3.16	.59	.09	.21	.76	.15	.18	.45	28.4	2.03
13	1.56	4.00	4.06	.45	.10	1.17	.52	.80	.19	1.73	9.12	1.49
14	.95	11.3	1.29	.39	.09	35.4	*.39	.59	.14	10.6	136	1.23
15	.35	6.32	.90	.36	.09	24.1	.36	.34	.18	20.7	34.9	1.23
16	.90	1.78	1.26	.31	.09	3.41	54.9	.23	.48	51.7	32.8	1.63
17	1.23	1.11	9.96	.29	.08	8.08	13.7	.19	.52	21.9	29.6	5.75
18	*15.2	1.05	1.63	*.27	.07	10.4	1.05	10.6	5.45	4.68	8.62	13.0
19	2.42	1.35	1.00	.25	.07	1.78	.71	2.13	1.63	1.78	22.5	4.51
20	1.29	1.05	1.35	.23	.08	1.11	.67	.76	8.43	1.70	47.0	19.0
21	2.03	.76	1.56	.19	.16	.85	.55	.48	14.6	4.20	4.77	8.92
22	4.11	.62	2.12	.18	4.07	.71	.67	.34	39.7	31.3	2.42	3.16
23	5.54	.55	1.56	.43	35.2	.55	1.00	.29	10.6	35.4	1.86	7.56
24	1.94	.48	1.23	.67	12.5	.48	.67	.25	2.42	49.7	1.56	4.90
25	1.63	.42	1.00	.34	2.32	.42	.52	.21	1.49	22.6	1.35	2.94
26	1.23	2.25	.80	.23	2.74	.36	.39	.19	2.45	16.0	5.53	1.94
27	1.17	1.17	.71	.19	1.71	.34	.31	*.16	3.52	27.4	*4.21	1.49
28	1.23	.90	.85	.16	*3.28	.36	.29	.14	8.64	61.8	2.22	1.49
29	.85	.71	.76	.14	1.23	1.47	.25	------	1.86	15.4	1.56	1.85
30	1.18	1.95	.59	.12	1.86	2.33	.21	------	1.00	2.83	1.63	5.77
31	12.2	2.23	------	.13	------	.90	4.52	------	.80	------	1.29	------
TOTAL	83.43	65.64	51.13	18.83	67.19	101.13	105.65	33.78	109.10	392.08	642.06	136.23
MEAN												
MGD	2.69	2.12	1.70	0.607	2.24	3.26	3.41	1.21	3.52	13.1	20.7	4.54
CFS	4.16	3.28	2.64	0.940	3.46	5.05	5.28	1.87	5.44	20.2	32.0	7.03
AC-FT	256	201	157	58	206	310	324	104	335	1,200	1,970	418

CALENDAR YEAR 1962: MAX - MIN - MEAN MGD - MEAN CFS - AC-FT -
FISCAL YEAR 1962-63: MAX 136 MIN 0.07 MEAN MGD 4.95 MEAN CFS 7.66 AC-FT 5,540

* Discharge measurement made on this day.

Peak discharge (base, 450 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	2100	5.70	480	743	5-14	2230	7.53	811	1,250

5270. Honomanu Stream near Keanae

Location.--Lat 20°50'05", long 156°11'20", on left bank at Spreckels ditch intake, 3.3 miles southwest of Keanae School, and 4.5 miles southeast of Kailua.

Drainage area.--3.17 sq mi.

Records available.--November 1913 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and combination orifice and broad-crested weir control. Datum of gage is 1,733 ft above mean sea level (by plane-table traverse). Prior to Apr. 14, 1950, at site 500 ft upstream at different datums.

Average discharge.--49 years (1914-63), 14.9 mgd (23.1 cfs).

Extremes.--Maximum discharge during year, 1,310 mgd (2,030 cfs) May 14 (gage height, 9.37 ft), from rating curve extended above 13 mgd as explained below; minimum, 0.06 mgd (0.09 cfs) Nov. 18-20.

1913-63: Maximum discharge, 2,310 mgd (3,570 cfs) Feb. 25, 1956 (gage height, 10.73 ft), from rating curve extended above 13 mgd by computation of flow through orifice and over dam; minimum, that of Nov. 18-20, 1962.

Remarks.--Records fair except those above 15 mgd, which are poor.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Apr. 20-30, May 3-5)

0.5	0	5.0	18.5
.6	.25	5.6	22.5
.7	.69	5.8	32.0
.8	1.25	6.0	50.0
1.0	2.68	6.5	120
1.5	7.40	7.0	238
2.0	10.3		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.60	15.9	3.69	1.84	0.29	2.60	1.51	15.5	1.80	2.91	4.45	4.52
2	1.44	*8.33	2.84	2.13	.29	1.45	1.45	1.38	1.91	2.06	3.69	2.93
3	3.69	4.64	1.77	2.45	.43	1.08	1.19	.91	.75	1.97	8.43	2.60
4	3.88	6.40	1.45	1.45	.34	1.45	1.08	.75	.51	1.77	13.2	2.21
5	4.93	3.50	1.87	1.08	.21	1.14	.97	.65	1.25	1.92	27.1	7.19
6	1.58	2.68	11.5	2.85	.21	.75	.91	.60	6.44	2.45	50	5.02
7	.91	2.13	2.29	2.68	.21	.65	9.26	.51	1.77	2.29	115	5.24
8	.69	1.77	1.51	1.84	.18	.56	15.9	.47	.97	3.67	19	16.8
9	2.22	1.64	1.19	3.69	.15	.47	4.17	.47	.65	2.60	28.2	9.12
10	3.01	1.64	1.08	2.21	.21	.47	1.98	.43	.51	1.71	37.0	9.02
11	4.04	1.71	1.08	1.38	.18	.47	1.98	.38	.47	1.71	73.9	10.7
12	17.8	2.47	5.16	1.14	.15	.51	1.45	.80	.47	1.58	41.5	3.98
13	2.68	5.73	13.6	.97	.18	*4.13	1.14	2.45	.51	2.88	17.9	*3.01
14	1.51	18.2	2.68	.86	.18	56.2	.91	1.58	.38	15.1	191	2.45
15	1.19	12.8	1.77	.80	.15	30.8	.86	.75	1.14	28.1	35.7	2.37
16	2.32	3.50	1.88	.69	.15	6.23	55.8	.51	1.49	59.4	44.1	2.60
17	2.60	2.13	13.6	.65	.12	13.4	17.0	.43	1.08	30	46.5	9.24
18	25.0	2.29	*2.68	.60	.09	15.3	1.90	23.0	5.65	8.5	19.4	18.3
19	5.12	3.69	1.71	.56	.09	3.88	1.45	4.82	*2.16	4.26	34.2	8.14
20	3.09	2.06	2.06	.51	.09	2.37	1.32	1.58	9.90	5.12	55.2	28.4
21	4.90	1.58	2.68	.47	.34	1.84	1.14	1.08	20	9.95	9.41	17.9
22	8.11	1.38	3.60	.47	5.12	1.58	1.48	.80	60	41.5	5.70	5.90
23	11.2	1.32	2.68	.83	37.9	1.32	1.84	.65	17.2	46.3	4.17	14.2
24	4.17	1.14	2.13	1.78	18.5	1.19	1.38	.56	4.74	73.4	3.50	7.94
25	3.25	1.08	1.90	.69	3.79	1.08	1.08	.51	3.25	42.0	3.01	5.12
26	2.45	4.51	1.51	.51	3.25	1.03	.91	.47	3.50	28.7	8.34	3.69
27	2.06	2.13	1.32	.47	2.60	1.03	.86	.47	5.12	48.8	6.06	3.09
28	2.29	1.71	1.64	.43	5.12	1.25	.69	.43	12	90.4	4.63	3.01
29	1.51	1.45	1.25	.38	2.21	4.45	*.60	------	3.5	29.6	3.69	3.93
30	2.24	2.38	1.08	*.38	4.64	6.72	.51	------	1.98	*6.10	3.50	10.9
31	22.1	4.74	------	.34	------	2.29	3.98	------	1.71	------	2.60	------
TOTAL	152.58	126.63	95.20	37.13	97.37	167.69	136.70	62.94	172.81	596.75	920.08	229.52
MEAN												
MGD	4.92	4.08	3.17	1.20	2.91	5.41	4.41	2.25	5.57	19.9	29.7	7.65
CFS	7.61	6.32	4.91	1.85	4.51	8.37	6.82	3.48	8.62	30.8	46.0	11.8
AC-FT	468	389	292	114	268	515	420	193	530	1,830	2,820	704

CALENDAR YEAR 1962: MAX 101 MIN 0.09 MEAN MGD 4.85 MEAN CFS 7.50 AC-FT 5,440
FISCAL YEAR 1962-63: MAX 191 MIN 0.09 MEAN MGD 7.63 MEAN CFS 11.8 AC-FT 8,540

Peak discharge (base, 600 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	2100	9.37	1,310	2,030

* Discharge measurement made on this day.

5310. Kula diversion from Haipuaena Stream near Olinda

Location.--Lat 20°48'24", long 156°13'27", on left bank 3.4 miles east of Olinda and 6.2 miles south of Kailua.

Records available.--July 1945 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 4,320 ft (from topographic map).

Average discharge.--17 years (1946-63) 0.436 mgd (0.675 cfs).

Extremes.--1945-63: Maximum daily discharge, 2.05 mgd (3.17 cfs) Mar. 20, 1948; minimum daily, 0.01 mgd (0.02 cfs) for several days in 1953-55, 1962, 1963.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Water is diverted from Haipuaena Stream at station for domestic use and irrigation of truck crops in the Olinda and Kula areas.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	a0.01	1.08	0.30	0.15	a0.01	0.28	0.03	0.42	0.03	0.18	0.48	0.24
2	a.01	.73	.27	.21	a.01	.18	.03	.34	.14	.15	.31	.24
3	.19	.43	.16	.24	a.01	.30	.03	.18	.09	.13	.40	.18
4	.23	.47	.10	.18	a.01	.49	.03	.11	.04	.10	1.30	.14
5	.48	.53	.09	.13	a.01	.27	a.03	.08	.03	.28	1.19	.38
6	.23	.26	*.91	.29	a.01	.15	a.02	.06	.10	.33	1.64	.30
7	.12	.20	.33	.31	a.01	.10	1.04	.04	.19	.21	.50	.23
8	.08	.14	.19	.23	a.01	.07	1.59	.03	.09	.54	.30	.64
9	.23	.11	.16	.40	a.01	.04	.71	.03	.05	.60	.31	.78
10	.41	.11	.13	.28	a.01	.04	.28	a.03	.03	.36	1.01	.85
11	.32	.18	.09	.18	a.01	.03	.38	a.03	a.03	.23	1.53	.98
12	1.06	.55	.61	.13	a.01	.03	.16	a.02	a.03	.16	1.28	.46
13	.50	1.06	.36	.09	a.01	.03	.09	a.02	a.03	.56	.97	.24
14	.27	1.17	.21	.07	a.02	1.24	.06	a.02	a.03	1.50	.89	.18
15	.21	1.02	.15	.05	a.01	1.58	.04	a.02	a.03	1.28	.14	.40
16	.14	.50	.48	.04	a.01	.79	.12	a.01	.06	.94	.14	.42
17	.23	.24	1.34	.03	a.01	.57	.46	a.01	.22	.66	1.20	1.10
18	1.30	.19	.62	a.03	a.01	1.18	.34	.32	.76	*.88	1.19	1.40
19	.76	.19	.28	a.03	a.01	.47	.20	.32	.93	.56	1.28	.91
20	*.30	.20	.39	a.03	a.01	.23	.16	.11	.86	.40	1.44	1.45
21	.20	.13	.52	a.03	a.01	.15	.16	.05	1.42	.64	.78	1.30
22	.63	.10	.46	a.03	.14	.12	.13	.03	1.63	1.01	.54	.62
23	1.11	.07	.48	a.02	.92	.08	.31	.03	.73	1.05	.38	.85
24	.68	.05	.36	a.02	.96	.07	.19	.02	.56	1.02	.27	1.18
25	.38	.04	.27	a.02	.66	.05	.14	.02	.40	.92	.20	1.13
26	.36	.38	.23	a.02	1.02	.04	.11	.02	.76	1.51	.36	.64
27	.26	.27	.18	a.02	*.64	.03	.08	.01	1.30	1.80	.64	.38
28	.21	.20	.18	a.02	1.07	.03	.06	.01	1.39	1.72	.41	.30
29	.14	.14	.20	a.02	.38	.04	.04	--------	.86	1.21	.26	.43
30	.13	.23	.15	a.01	.33	.07	.03	--------	.38	.78	.23	1.22
31	.68	.31	---------	a.01	--------	.07	.09	--------	.23	---------	.18	---------
Total	11.86	11.28	10.20	3.32	6.34	8.02	7.14	2.39	13.43	21.71	21.75	19.57
Mean												
Mgd	0.382	0.364	0.340	0.107	0.211	0.284	0.230	0.085	0.433	0.724	0.702	0.652
Cfs	0.591	0.563	0.526	0.166	0.326	0.439	0.356	0.132	0.670	1.12	1.09	1.01
Ac-ft	36	35	31	10	19	27	22	7.3	41	67	67	60

Calendar Year 1962:	Max	1.71	Min	0.01	Mean mgd	0.292	Mean cfs	0.452	Ac-ft	337
Fiscal Year 1962-63:	Max	1.80	Min	0.01	Mean mgd	0.378	Mean cfs	0.585	Ac-ft	422

* Discharge measurement made on this day.
a No gage-height record.

5311. Haipuaena Stream at Kula pipeline intake, near Olinda

Location.--Lat 20°48'24", long 156°13'27", on left bank at Kula pipeline intake, 3.4 miles east of Olinda, and 6.2 miles south of Kailua.

Drainage area.--0.27 sq mi (revised).

Records available.--January to April 1946 (fragmentary), May 1946 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 4,320 ft (from topographic map).

Average discharge.--17 years, 0.513 mgd (0.794 cfs).

Extremes.--Maximum discharge during year 57.0 mgd (88.2 cfs) May 14 (gage height, 3.20 ft), from rating curve extended above 1.3 mgd as explained below; no flow for many days.

1946-63: Maximum discharge, 87 mgd (135 cfs) Jan. 24, 1948 (gage height, 3.72 ft), from rating curve extended above 1.3 mgd by differential-curve method; no flow at times each year.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Kula pipeline diverts all water from Haipuaena Stream at low flow.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.85	0	1.3	1.60
.9	.03	1.5	3.50
1.0	.18	1.8	7.60
1.1	.52	2.1	13.2

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0.91	0		0	0	0	0.32	*0	0	0	0
2	0	0	0		0	0	0	0	0	0	0	0
3	0	0	0		0	0	0	0	0	0	.04	0
4	0	0	0		0	0	0	0	0	0	1.25	0
5	0	0	0		0	0	0	0	0	0	.76	0
6	0	0	.23		0	0	0	0	0	0	2.52	*0
7	0	0	0		0	0	1.0	0	0	0	8.27	0
8	0	0	0		0	0	2.0	0	0	.14	.98	.32
9	0	0	0		0	0	.1	0	0	.01	1.93	.28
10	0	0	0		0	0	0	0	0	0	1.47	.31
11	.04	0	0		0	0	0	0	0	0	3.55	.40
12	1.12	.14	0		0	0	0	0	0	0	2.38	0
13	0	.25	0		0	0	0	0	0	.25	.50	0
14	0	.98	0		0	1.88	0	0	0	2.32	11.5	0
15	0	.28	0		0	2.47	0	0	0	3.30	2.20	0
16	0	0	.40		0	.17	*2.79	0	0	6.09	2.69	0
17	0	0	1.78	(*)	0	1.23	1.36	0	0	3.40	2.10	.46
18	.84	0	0		0	1.22	0	.04	.81	.43	.21	.82
19	.04	0	0		0	0	0	0	.18	0	.81	.29
20	*0	0	0		0	0	0	0	.75	0	3.27	1.48
21	0	0	0		0	0	0	0	1.06	0	.09	.40
22	.61	0	0		.25	0	0	0	3.54	3.97	0	0.00
23	.81	0	0		4.20	0	0	0	1.93	4.89	0	.07
24	.06	0	0		1.87	0	0	0	.32	5.49	0	.78
25	0	0	0		.09	0	0	0	0	2.66	0	.18
26	0	0	0		.43	0	0	0	.41	2.43	0	.01
27	0	0	0		*.02	0	0	0	.53	2.83	0	0
28	0	0	0		.40	0	0	0	1.60	4.74	0	0
29	0	0	0		0	0	0	--------	.04	.98	0	0
30	0	0	0		0	0	0	--------	0	0	0	.25
31	.56	0	--------		--------	0	.06	--------	0	--------	0	--------
Total	4.08	2.56	2.41	0	7.26	6.97	7.31	0.36	11.17	43.93	46.52	6.05
Mean Mgd	0.132	0.082	0.080	0	0.242	0.225	0.234	0.013	0.360	1.46	1.50	0.202
Cfs	0.204	0.127	0.124	0	0.374	0.348	0.362	0.020	0.557	2.26	2.32	0.313
Ac-ft	12	7.8	7.4	0	22	21	22	1.1	34	135	143	18

Calendar Year 1962: Max 4.20 Min 0 Mean mgd 0.147 Mean cfs 0.227 Ac-ft 164
Fiscal Year 1962-63: Max 11.5 Min 0 Mean mgd 0.380 Mean cfs 0.588 Ac-ft 423

* Discharge measurement or observation of no flow made on this day.
Note.--No gage-height record Dec. 27 to Jan. 15.

Peak discharge (base, 44 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs
5-14	1900	3.20	57.0	88.2

5360. Haipuaena Stream above Spreckels ditch, near Huelo

Location.--Lat 20°51'04", long 156°11'28", 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.--1.16 sq mi (revised).

Records available.--October 1913 to June 1963. Monthly discharge only July 1915, published in WSP 1319. Prior to July 1954, published as "Haipuaena Stream near Huelo." Records for December 1910 to September 1913 at site 600 ft downstream 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. bench mark).

Average discharge.--49 years (1914-63), 9.75 mgd (15.1 cfs).

Extremes.--Maximum discharge during year, 770 mgd (1,190 cfs) May 14 (gage height, 5.90 ft), from rating curve extended above 150 mgd; minimum, 0.38 mgd (0.59 cfs) Nov. 19, 20.

1913-63: Maximum discharge, 1,750 mgd (2,710 cfs) Aug. 12, 1940 (gage height, 6.91 ft), from rating curve extended above 150 mgd; minimum, slightly less than 0.1 mgd (about 0.2 cfs) on several days during January, February, May, June 1945, October 1953.

Remarks.--Records good. Kula pipeline diverts water above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.4	0.18	2.0	5.60
1.5	.49	2.3	12.5
1.6	1.00	2.6	25.5
1.7	1.75	3.0	53.0
1.8	2.86	3.5	107
1.9	4.00	4.0	185

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.68	35.4	3.54	2.28	0.58	2.65	1.59	12.3	1.63	2.43	5.12	4.16
2	1.62	10.1	2.86	2.22	.63	1.75	1.51	1.35	1.95	2.43	4.00	2.86
3	3.48	5.20	2.02	2.43	.88	1.51	1.35	1.07	1.00	2.77	5.73	2.65
4	3.60	9.77	1.59	1.67	.63	1.51	1.21	.94	.88	3.42	9.09	2.32
5	4.66	4.32	2.03	1.43	.53	1.35	1.14	.88	2.30	2.32	13.6	5.54
6	1.59	3.43	10.1	2.82	.53	1.21	1.07	.83	8.19	2.12	67.0	4.32
7	1.07	2.86	2.32	3.09	.58	1.14	10.7	.78	2.56	2.02	71.4	4.16
8	.94	2.32	1.75	2.02	.53	1.07	14.3	.78	1.43	3.23	12.2	12.9
9	2.02	2.12	1.51	3.95	.49	1.00	4.42	.78	1.21	2.54	22.9	7.20
10	2.54	2.02	1.43	2.43	.58	.94	2.02	.73	1.00	1.75	37.3	7.51
11	3.26	1.84	1.51	1.75	.49	.88	2.02	.73	1.00	1.51	73.8	8.94
12	18.0	2.07	4.64	1.51	.49	.83	1.59	.88	1.07	1.59	36.0	3.77
13	3.09	5.03	11.4	1.35	.49	4.20	1.43	2.12	1.14	2.63	18.0	*3.20
14	1.93	17.1	2.97	1.28	.49	55.4	1.28	1.51	.88	13.4	171	2.86
15	1.51	11.3	2.12	1.59	.49	29.0	1.21	.94	2.21	23.9	27.0	2.54
16	2.18	3.54	2.10	1.14	.45	6.85	34.7	.78	2.08	58.7	40.8	2.43
17	3.44	2.43	14.3	1.07	.41	12.8	11.0	.78	1.51	21.6	51.8	7.58
18	25.3	2.54	*2.97	1.00	.41	16.4	2.22	31.3	4.45	14.2	22.6	16.3
19	5.77	4.55	2.02	.94	.38	4.32	1.75	5.88	*2.54	4.80	29.3	6.56
20	3.77	2.54	2.43	.88	.38	3.09	1.67	2.02	5.46	4.96	52.7	24.5
21	4.98	2.02	2.65	.83	.78	2.43	1.51	1.51	33.5	7.65	10.0	15.7
22	9.03	1.84	3.43	.78	3.75	2.02	1.59	1.28	60.5	21.0	6.55	6.17
23	13.0	1.67	2.86	1.10	28.5	1.84	1.93	1.14	19.7	23.5	4.80	11.6
24	5.30	1.59	2.54	1.71	15.1	1.67	1.35	1.07	5.60	44.1	4.00	9.02
25	3.77	1.43	2.12	.88	3.62	1.51	1.21	1.00	3.54	25.4	3.54	5.60
26	3.09	4.45	2.02	.78	3.16	1.43	1.14	.94	4.20	18.4	11.2	4.00
27	2.54	2.02	1.75	.73	2.32	1.35	1.07	.88	5.71	30.7	4.32	3.43
28	2.43	1.93	2.02	.68	4.97	1.51	.94	.83	10.4	63.4	4.33	3.32
29	1.93	1.59	1.59	.63	2.12	3.35	*.83	------	3.66	18.9	3.43	3.88
30	2.43	1.61	1.43	*.63	4.86	6.76	.78	------	2.43	7.73	3.20	8.84
31	17.3	4.05	------	.58	------	2.22	3.43	------	2.54	------	2.54	------
TOTAL	156.25	154.68	98.02	46.18	79.62	173.99	113.96	76.03	196.27	433.10	829.25	203.86
MEAN												
MGD	5.04	4.99	3.27	1.49	2.65	5.61	3.68	2.72	6.33	14.4	26.8	6.80
CFS	7.80	7.72	5.05	2.30	4.11	8.68	5.69	4.20	9.79	22.3	41.4	10.5
AC-FT	480	475	301	142	244	534	350	233	602	1,330	2,540	626

CALENDAR YEAR 1962:	MAX	100	MIN	0.38	MEAN MGD	4.60	MEAN CFS	7.12	AC-FT	5,160
FISCAL YEAR 1962-63:	MAX	171	MIN	0.38	MEAN MGD	7.02	MEAN CFS	10.9	AC-FT	7,860

* Discharge measurement made on this day.

Peak discharge (base, 350 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	2200	5.90	770	1,190

5380. Spreckels ditch at Haipuaena weir, near Huelo

Location.--lat 20°51'15", long 156°11'25", on right bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.7 miles west of Keanae, 3.3 miles southeast of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1963. Published as "at Haipuaena, near Huelo" 1930-35.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,470.96 ft above mean sea level (East Maui Irrigation Co. bench mark). 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.--40 years (1922-29, 1930-63), 13.5 mgd (20.9 cfs).

Extremes.--1922-63: Maximum daily discharge, 97 mgd (150 cfs) Feb. 10, 1955, Feb. 18, 1956; no flow at times.

Remarks.--Records fair. Spreckels ditch diverts 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 was diverted above station to East Maui Irrigation Co. powerplant at Kolea Gulch prior to June 30, 1961, when the plant was abandoned. Water used for domestic supply and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.52	42.2	16.4	9.49	2.06	10.2	6.00	18.7	7.45	9.96	19.8	19.4
2	6.22	* 34.8	10.7	9.35	2.28	6.42	6.20	4.72	8.94	11.2	14.7	12.3
3	13.8	19.4	7.32	9.89	3.20	4.90	4.90	3.76	3.90	9.17	17.7	12.3
4	16.2	33.8	6.00	6.88	2.28	5.30	4.38	3.34	3.20	12.7	26.9	10.2
5	20.1	14.7	7.39	5.52	1.95	4.38	4.05	3.06	7.39	8.00	28.7	25.5
6	6.42	10.7	31.0	11.6	2.06	3.76	3.90	2.78	23.7	7.55	67.0	20.2
7	4.21	8.27	8.00	13.1	2.06	3.48	25.2	2.65	9.63	7.32	60.7	14.5
8	3.62	6.88	6.20	8.00	1.85	3.20	32.7	2.52	5.30	11.3	32.4	27.8
9	7.62	6.20	5.30	17.4	1.65	2.92	15.4	2.40	4.21	8.80	45.8	27.0
10	11.0	6.20	4.90	9.89	2.06	2.78	6.88	2.28	3.62	5.75	59.1	27.2
11	12.4	5.75	5.52	6.88	1.75	2.65	6.65	2.28	3.48	5.10	61.4	13.4
12	41.7	6.47	18.8	5.75	1.65	2.52	5.10	4.11	3.62	5.95	52.4	0
13	11.0	16.9	26.0	4.90	1.75	* 9.79	4.55	12.2	3.62	9.41	38.3	0
14	6.88	38.2	11.0	4.72	1.75	57.1	4.38	7.51	3.06	40.2	42.3	.87
15	5.52	34.6	7.55	4.38	1.75	44.0	4.05	3.90	10.2	53.7	36.0	3.48
16	8.93	12.0	7.62	4.05	1.65	20.4	14.7	3.06	9.65	56.7	37.5	3.20
17	14.4	8.81	37.4	3.90	1.45	21.8	25.3	2.78	6.57	42.0	37.0	8.91
18	42.8	9.08	11.1	3.62	1.36	36.4	7.78	37.2	14.3	38.4	34.5	19.5
19	20.8	18.6	7.55	3.48	1.36	15.8	6.00	15.2	* 8.86	18.1	35.5	8.15
20	15.3	9.08	9.62	3.34	1.28	10.2	5.75	6.88	13.7	20.2	35.5	22.0
21	19.7	6.88	10.2	3.20	2.40	8.27	4.72	4.72	47.7	28.0	26.3	0
22	31.0	6.20	13.5	3.06	10.2	6.88	6.26	4.05	65.9	34.9	19.3	2.58
23	39.1	5.75	9.89	4.02	49.2	6.00	6.88	3.48	46.1	47.8	16.9	13.7
24	18.1	5.30	9.62	7.05	35.4	5.52	4.90	3.20	20.6	62.3	15.8	3.57
25	12.9	4.72	7.78	3.62	12.6	5.10	4.21	3.34	12.9	51.0	13.6	.98
26	10.2	18.1	7.32	3.06	10.2	4.72	3.90	3.34	14.8	44.6	18.9	3.34
27	8.81	8.00	6.42	2.78	8.62	4.38	3.62	3.20	19.0	55.9	15.0	3.90
28	8.81	6.88	7.55	2.52	18.0	5.04	3.34	2.92	21.4	61.9	17.0	3.90
29	6.88	6.00	6.20	2.40	7.55	11.3	3.06	--------	9.35	43.2	14.3	4.47
30	9.28	6.96	5.30	2.28	30.1	25.4	2.65	--------	7.55	27.6	12.6	10.8
31	42.7	16.9	--------	2.17	--------	8.50	4.59	--------	7.78	--------	9.35	--------
Total	478.92	434.33	329.15	182.30	221.47	359.11	242.00	169.58	427.48	838.71	962.25	323.15
Mean Mgd	15.4	14.0	11.0	5.88	7.38	11.6	7.81	6.06	13.8	28.0	31.0	10.8
Cfs	23.8	21.7	17.0	9.10	11.4	17.9	12.1	9.38	21.4	43.3	48.0	16.7
Ac-ft	1470	1330	1010	559	680	1100	743	520	1310	2570	2950	992

Calendar Year 1962:	Max	82.2	Min	1.28	Mean mgd	11.1	Mean cfs	17.2	Ac-ft	12420
Fiscal Year 1962-63:	Max	67.0	Min	0	Mean mgd	13.6	Mean cfs	21.0	Ac-ft	15230

* Discharge measurement made on this day.

5410. Koolau ditch at Haipuaena, near Huelo

Location.--Lat 20°51'17", long 156°11'19", on right bank at Haipuaena Stream, 1,000 ft upstream from intake at Puohokamoa Stream, 3.3 miles southeast of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1932 to June 1963.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 1,240 ft (from topographic map). Prior to Mar. 21, 1933, at datum 1.94 ft lower and Mar. 21, 1933, to Mar. 20, 1935, at datum 0.25 ft lower than present datum.

Average discharge.--31 years, 77.9 mgd (121 cfs).

Extremes.--1932-63: Maximum daily discharge, 193 mgd (299 cfs) Jan. 17, 1946; no flow at times.

Remarks.--Records good. Ditch is extension of Wailoa ditch east of Alo Stream; it receives water from Makapipi ditch at Hanawi Stream and diverts from nearly all streams from there west to the Alo. Water used for power, domestic supply, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.0	147	44.4	28.6	15.4	51.3	25.0	24.6	37.1	39.8	109	92.2
2	16.8	136	36.8	30.7	15.9	33.4	25.6	14.5	50.3	34.0	*82.8	65.4
3	25.0	69.5	29.2	39.8	17.6	29.5	22.9	13.8	19.7	34.0	88.1	72.0
4	30.0	119	26.2	34.0	15.2	28.6	21.0	*13.6	16.6	32.8	110	59.8
5	39.9	55.0	27.1	25.9	14.7	24.1	19.7	13.4	22.3	31.3	89.9	98.3
6	19.4	48.8	101	47.2	14.5	22.3	19.7	10.7	86.0	27.7	154	79.6
7	15.9	41.9	32.5	43.7	14.0	21.2	93.1	9.24	35.5	26.2	152	87.7
8	15.2	36.4	27.1	33.7	13.4	19.9	120	12.2	26.5	25.9	135	93.2
9	24.4	33.4	24.7	53.1	13.1	19.1	68.8	12.0	21.5	25.6	155	99.7
10	31.0	31.3	23.2	38.2	15.0	18.4	34.9	12.0	18.9	25.0	156	119
11	37.8	29.5	24.4	30.4	13.1	*18.4	31.9	12.0	19.1	27.9	159	151
12	141	27.7	44.8	26.8	12.9	17.6	26.5	48.0	32.7	29.2	159	85.0
13	40.0	38.4	78.3	25.0	14.3	36.1	23.8	51.5	34.2	30.6	86.3	72.0
14	27.4	119	34.0	25.6	12.7	190	22.6	27.1	31.5	116	90.5	67.0
15	21.5	121	27.4	23.5	12.9	177	22.0	17.1	85.4	160	105	62.2
16	21.2	50.0	30.8	22.3	12.9	86.2	34.4	14.5	78.0	181	141	54.7
17	35.2	38.6	107	21.2	13.4	75.9	79.2	13.8	78.9	59.8	154	122
18	129	38.6	36.1	20.7	12.9	125	26.8	94.2	98.0	86.4	153	*163
19	58.1	56.8	30.1	19.9	12.2	61.4	22.3	85.7	48.0	120	154	111
20	41.6	37.8	31.6	19.4	12.2	45.6	21.0	35.2	48.9	112	155	187
21	53.4	31.9	35.8	19.4	15.9	39.0	19.4	26.2	146	124	133	184
22	89.6	29.5	45.8	18.6	31.1	34.3	20.2	22.0	153	108	111	123
23	113	27.4	37.0	25.8	166	31.0	20.4	19.9	149	155	97.0	146
24	52.7	25.9	34.3	42.7	150	29.2	17.8	18.4	85.2	153	87.4	148
25	43.7	24.4	29.8	21.0	54.0	26.8	16.1	17.6	61.0	156	76.8	94.0
26	36.4	45.2	29.5	18.4	44.4	25.6	16.8	16.8	67.0	149	79.6	75.2
27	32.8	30.4	28.0	18.1	36.1	24.4	15.9	16.6	77.2	155	74.0	69.5
28	30.1	28.0	32.5	17.1	77.3	24.1	15.9	15.4	112	155	87.1	67.0
29	27.1	26.2	28.6	16.6	41.0	32.6	15.0	---------	85.7	152	94.8	68.7
30	31.9	24.4	24.7	16.1	101	78.8	14.5	---------	48.4	145	82.0	128
31	122	31.8	---------	15.9	---------	31.3	14.5	---------	41.9	---------	62.6	---------
Total	1417.1	1600.8	1142.7	839.4	995.1	1478.1	947.7	688.04	1915.5	2677.2	3573.9	3045.2
Mean												
Mgd	45.7	51.6	38.1	27.1	33.2	47.7	30.6	24.6	61.8	89.2	115	102
Cfs	70.7	79.8	58.9	41.9	51.4	73.8	47.3	38.1	95.6	138	178	158
Ac-ft	4350	4910	3510	2580	3050	4540	2910	2110	5880	8220	10970	9340

Calendar Year 1962:	Max	190	Min	12.2	Mean mgd	46.7	Mean cfs	72.3	Ac-ft	52290
Fiscal Year 1962-63:	Max	190	Min	9.24	Mean mgd	55.7	Mean cfs	86.2	Ac-ft	62370

* Discharge measurement made on this day.

5415. Manuel Luis ditch at Puohokamoa Gulch, near Huelo

Location.--Lat 20°51'48", long 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Stream, 2.2 miles west of Keanae, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Records available.--December 1917 to November 1924, January 1925 to June 1963.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (from topographic map).

Average discharge.--44 years (1918-24, 1925-63), 5.71 mgd (8.83 cfs).

Extremes.--1917-63: Maximum daily discharge, 92 mgd (142 cfs) Jan. 3, 1927; no flow at times.

Remarks.--Records good. Ditch is extension of Center ditch and picks up water from streams between Kolea and Waikamoi Streams for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.08	8.15	0.66	0.48	0.08	0.28	0.28	12.7	1.26	1.68	2.55	1.38
2	.08	2.66	.54	.42	.11	.11	.28	.28	.87	1.06	*1.80	.93
3	.23	1.38	.42	.42	.18	.08	.23	.23	.37	1.42	4.14	.93
4	.72	3.98	.32	.42	.14	.18	.23	.18	.32	1.13	10.2	.78
5	.78	1.38	.32	.37	.14	.11	.18	.18	2.00	.78	11.6	1.81
6	.32	1.15	1.58	.42	.14	.08	.18	.14	12.7	.54	51.6	1.00
7	.18	.93	.48	.66	.14	.05	1.95	.14	1.30	.48	49.2	1.22
8	.14	*.85	.37	.48	.14	.05	5.42	.11	.66	1.03	7.69	4.23
9	.23	.78	.32	.60	.14	.05	1.16	.11	.54	.60	27.1	1.28
10	.37	.72	.28	.48	.14	.05	.54	.11	.48	.42	43.1	1.48
11	.41	.66	.42	.37	.14	*.05	.48	.08	.42	.37	59.8	7.06
12	6.74	.60	.60	.32	.14	.05	.42	.23	.42	.48	44.0	5.40
13	.78	.93	3.30	.32	.11	1.61	.37	1.15	.37	.89	34.8	4.34
14	.54	2.19	.48	.32	.08	41.5	.32	.85	.37	17.3	49.5	3.47
15	.32	2.08	.32	.28	.11	21.9	.28	.32	.84	22.2	41.0	.66
16	.37	.93	.43	.28	.11	2.85	13.2	.28	.90	34.5	29.7	.54
17	.72	.66	4.10	.28	.08	4.61	13.6	.28	.72	33.3	54.7	1.59
18	13.1	.72	.72	.28	.08	15.8	.54	34.8	.85	17.9	47.7	*3.67
19	1.15	1.07	.54	.28	.08	2.27	.42	16.3	.54	3.21	48.9	1.02
20	.72	.66	.72	.28	.08	1.38	.54	2.46	*3.69	2.66	59.0	8.76
21	1.00	.54	.72	.23	.08	1.00	.42	1.53	20.0	7.27	20.7	21.1
22	3.88	.48	.66	.23	.11	.78	.37	1.07	48.1	11.3	7.84	6.32
23	5.68	.42	.60	.23	.37	.66	.42	.85	36.5	20.8	2.55	2.42
24	2.08	.37	.66	.23	.72	.54	.32	.66	3.79	44.3	1.53	7.46
25	1.38	.37	.54	.23	.23	.48	1.02	.54	2.08	33.7	1.23	7.15
26	1.07	1.44	.54	.18	.11	.42	.32	.48	1.70	30.4	11.2	2.83
27	.85	.60	.54	.18	.14	.37	.28	.42	1.45	29.8	2.86	.85
28	.72	.54	.48	.18	.37	.37	.23	.37	5.32	53.2	6.48	.78
29	.54	.42	.42	.18	.11	.37	.18	--------	1.38	30.4	1.96	.78
30	.60	.37	.37	.14	.42	.85	.18	--------	1.07	7.23	1.15	1.57
31	4.11	.37	--------	.11	--------	.37	*1.33	--------	1.15	--------	.93	--------
Total	49.89	38.40	22.45	9.88	5.02	99.27	45.69	76.85	152.16	410.35	736.51	102.80
Mean												
Mgd	1.61	1.24	0.748	0.319	0.167	3.20	1.47	2.74	4.91	13.7	23.8	3.43
Cfs	2.49	1.92	1.16	0.494	0.258	4.95	2.27	4.24	7.60	21.2	36.8	5.31
Ac-ft	153	118	69	30	15	305	140	236	467	1,260	2,260	315

Calendar Year 1962: Max 64.2 Min 0.03 Mean mgd 1.79 Mean cfs 2.77 Ac-ft 2,010
Fiscal Year 1962-63: Max 59.8 Min 0.05 Mean mgd 4.79 Mean cfs 7.41 Ac-ft 5,370

* Discharge measurement made on this day.

5430. Middle Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Location.--Lat 20°49'42", long 156°12'50", on left bank 200 ft downstream from Haiku-uka trail crossing, 4.0 miles east of Kailiili, and 4.5 miles south of Kailua.

Drainage area.--0.48 sq mi (revised).

Records available.--March 1919 to February 1927, July 1932 to June 1934, June 1962 to June 1963.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 2,900 ft (revised, from topographic map). Prior to June 12, 1962, at site 200 ft upstream at different datum.

Extremes.--1962: Maximum discharge during period in June, 0.13 mgd (0.20 cfs) June 18 (gage height, 0.64 ft); minimum, 0.06 mgd (0.09 cfs) June 24-27, 30.

1962-63: Maximum discharge during fiscal year, 174 mgd (269 cfs) May 14 (gage height, 4.02 ft), from rating curve extended above 3.6 mgd on basis of slope-conveyance study; minimum, 0.04 mgd (0.06 cfs) Nov. 12, 16-20 (gage height, 0.56 ft).

Remarks.--Records good except those above 8 mgd, which are poor. Kula pipeline diverts above station at altitudes 4,300 ft (since 1934) and 3,200 ft (since 1944) for domestic use.

Discharge, in million gallons a day, June 1962

Day	June	Day	June	Day	June	Day	June	Day	June	Day	June
1	-	6	-	11	-	16	0.08	21	0.07	26	0.06
2	-	7	-	12	0.10	17	.08	22	.07	27	.07
3	-	8	-	13	.09	18	.09	23	.07	28	.09
4	-	9	-	14	.08	19	.09	24	.06	29	.09
5	-	10	-	15	.08	20	.08	25	.06	30	.07

Peak discharge (base, 87 mgd).--No peak above base.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.07	4.35	0.49	0.15	0.06	0.44	0.15	2.93	0.10	0.25	1.48	1.28
2	.12	1.70	.39	.19	.06	.19	.13	.44	.10	.22	1.00	1.08
3	.49	.92	.19	.31	.07	.15	.13	.35	.08	.17	1.51	.92
4	.39	.85	*.13	.17	.06	.28	.12	.28	.07	.19	3.54	.85
5	1.08	.71	.19	.12	.05	.15	.12	.22	.09	.19	5.01	1.59
6	.22	.44	3.27	.31	.05	.12	.10	.08	.75	.39	15.3	1.48
7	.10	.31	.54	.44	.05	.10	3.16	.08	.28	.22	19.2	1.38
8	.09	.22	.19	.22	.05	.09	4.49	.08	.09	.31	4.36	5.56
9	.22	.22	.15	.54	.05	.09	1.08	.08	.07	.59	7.23	2.54
10	.54	.19	.13	.39	.05	.08	.28	.08	.06	.19	7.68	2.59
11	.68	.17	.12	.15	.05	.08	.31	.07	.06	*.15	15.7	2.60
12	5.31	.65	1.21	.12	.04	.07	.19	.08	.07	.13	9.14	1.38
13	.59	1.91	2.00	.10	.05	.32	.13	.12	.07	.59	4.61	1.08
14	.19	5.48	.54	.10	.05	11.2	*.12	.08	.05	3.71	32.5	.92
15	.13	3.89	.22	.10	.05	7.77	.10	.07	.06	6.78	9.50	.92
16	.19	.92	.47	.09	.04	2.02	8.12	.06	.07	13.6	11.4	1.00
17	.28	.44	4.86	.08	.04	3.09	2.36	.06	.06	5.71	10.4	2.67
18	*6.70	.39	.85	*.07	.04	3.70	.59	3.77	1.41	2.60	4.85	5.64
19	1.38	.49	.31	.07	.04	.85	.22	.78	.35	1.28	8.10	2.57
20	.44	.35	.39	.07	.04	.49	.19	.35	2.30	1.18	13.2	7.43
21	.54	.19	.54	.07	.06	.31	.17	.22	6.60	1.94	3.05	5.34
22	1.66	.15	.78	.07	1.26	.22	.19	.08	12.9	7.59	2.07	2.07
23	3.32	.15	.59	.09	11.2	.19	.28	.08	4.12	8.63	1.70	4.10
24	1.18	.13	.39	.13	5.74	.17	.17	.07	1.00	12.6	1.38	2.96
25	.59	.12	.28	.08	1.28	.15	.13	.07	.59	8.06	1.18	1.94
26	.44	.68	.17	.08	1.28	.13	.12	.07	.94	5.32	2.79	1.48
27	.31	.31	.15	.07	.65	.13	.12	*.06	1.82	7.28	*1.59	1.28
28	.28	.17	.17	.07	1.56	.13	.10	.06	3.08	17.3	1.38	1.08
29	.19	.13	.13	.06	*.44	.41	.09	------	1.00	6.38	1.18	1.18
30	.22	.30	.12	.06	.59	.71	.07	------	.39	2.33	1.08	2.60
31	5.26	.71	------	.06	------	.25	1.57	------	.31	------	1.00	------
TOTAL	33.20	27.64	19.96	4.63	25.05	34.08	25.10	10.77	30.94	115.80	204.11	69.51
MEAN												
MGD	1.07	0.892	0.665	0.149	0.835	1.10	0.810	0.385	1.26	3.86	6.58	2.32
CFS	1.66	1.38	1.03	0.231	1.29	1.70	1.25	0.595	1.94	5.98	10.2	3.58
AC-FT	102	85	61	14	77	105	77	33	120	356	626	213

CALENDAR YEAR 1962:	MAX	-	MIN	-	MEAN MGD	-	MEAN CFS	-	AC-FT	-
FISCAL YEAR 1962-63:	MAX	32.5	MIN	0.04	MEAN MGD	1.67	MEAN CFS	2.58	AC-FT	1,870

Peak discharge (base, 87 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	2200	4.02	174	269

*Discharge measurement made on this day.

5450. Puohokamoa Stream above Spreckels ditch, near Huelo

Location.--Lat 20°51'21", long 156°11'29", on right bank 150 ft upstream from Spreckels ditch inflow and trail crossing, 3.2 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Drainage area.--2.35 sq mi (revised).

Records available.--June 1913 to June 1963. Monthly discharge only for some periods, published in WSP 1319. Prior to July 1954, published as "Puohokamoa Stream near Huelo." Records for December 1910 to May 1913 at site 700 ft downstream not equivalent owing 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. bench mark). Prior to May 31, 1934, at site 130 ft downstream at different datum.

Average discharge.--50 years, 21.3 mgd (33.0 cfs).

Extremes.--Maximum discharge during year, 958 mgd (1,480 cfs) May 14 (gage height, 5.96 ft), from rating curve extended above 410 mgd as explained below; minimum, 0.45 mgd (0.70 cfs) Nov. 18-20 (gage height, 0.55 ft).

1913-63: Maximum discharge, 2,360 mgd (3,650 cfs) Apr. 16, 1960 (gage height, 9.31 ft), from rating curve extended above 410 mgd by logarithmic plotting; minimum, 0.4 mgd (0.6 cfs) Oct. 26, 1917.

Remarks.--Records good except those for period of no gage-height record, which are fair. Kula pipeline diverts small amount of water above station at altitudes 4,300 and 3,200 ft for domestic supply.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.57	0.58	1.0	8.60
.6	.81	1.2	17.0
.7	1.86	1.5	36.0
.8	3.44	2.0	86.0
.9	5.62	4.0	440

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.99	39.5	6.16	3.44	0.81	a4.5	2.42	21.9	2.13	3.99	13.3	9.50
2	2.44	21.4	4.85	3.44	.90	a2.9	2.58	2.90	3.06	3.99	9.36	6.43
3	6.74	9.74	3.24	3.79	1.28	a2.3	2.13	2.27	1.49	4.35	11.2	6.16
4	6.78	22.1	2.42	2.74	.99	a2.2	1.99	1.99	1.28	4.98	19.8	5.35
5	9.88	7.92	2.59	2.13	.81	a1.9	1.99	1.86	3.77	3.60	22.5	14.4
6	2.74	6.16	21.7	4.56	.73	a1.6	1.86	1.62	15.0	2.90	147	11.4
7	1.62	4.85	3.99	5.10	.81	a1.5	20.2	1.49	4.80	3.24	136	11.1
8	1.38	3.79	2.90	3.06	.73	a1.4	28.6	1.38	2.27	5.00	28.7	31.0
9	3.06	3.44	2.42	6.90	.65	a1.3	8.85	1.28	1.74	4.85	49.2	17.4
10	4.62	3.06	2.27	3.99	.81	a1.2	3.79	1.28	1.49	3.24	83.8	19.2
11	6.04	2.74	2.42	2.74	.65	*1.17	3.60	1.28	1.49	2.58	154	23.0
12	39.3	2.58	7.92	2.27	.65	1.08	2.90	1.49	1.49	3.06	79.4	9.36
13	5.60	7.32	25.6	2.13	.73	6.62	2.27	3.06	1.62	4.00	46.6	*7.00
14	2.90	34.5	5.10	1.86	.73	115	2.13	2.42	1.38	24.0	256	5.62
15	2.27	25.4	3.44	1.74	.73	59.5	1.86	1.49	3.33	48.5	65.4	4.85
16	2.87	6.43	3.56	1.62	.65	15.1	63.3	1.28	4.17	115	87.6	4.85
17	7.12	4.20	27.6	1.49	.58	28.4	20.8	1.17	2.42	41.7	123	15.6
18	54.6	4.20	5.62	1.49	.58	38.0	4.85	66.0	5.08	33.0	62.4	35.6
19	11.4	8.35	*3.60	1.49	.58	9.36	3.44	12.9	4.33	11.6	67.1	14.1
20	7.29	4.42	3.99	1.38	.58	5.62	3.24	3.79	*7.93	11.3	121	52.8
21	9.05	3.06	4.42	1.28	1.08	4.20	2.74	2.74	64.9	17.7	29.0	35.5
22	17.1	2.90	5.89	1.17	4.96	3.44	2.90	2.13	127	30.8	18.7	14.7
23	26.4	2.58	4.85	1.38	50.0	2.90	3.79	1.86	44.8	40.5	14.2	26.0
24	9.94	2.42	4.20	2.42	30.4	2.58	2.58	1.62	12.3	86.3	11.6	19.8
25	6.16	2.27	3.24	1.38	7.23	2.42	2.27	1.49	7.29	54.4	9.74	12.0
26	4.85	7.87	3.06	1.17	4.42	2.27	1.99	1.49	7.46	38.5	28.5	8.60
27	3.99	3.44	2.74	1.08	3.99	2.13	1.86	1.49	11.3	59.3	12.4	6.71
28	3.44	2.90	2.90	1.08	8.67	2.13	1.74	1.38	19.9	125	11.9	6.71
29	2.90	2.58	2.58	.99	3.06	5.09	*1.49	------	7.00	47.5	8.60	7.08
30	3.24	2.27	2.13	.90	a8.2	14.7	1.49	------	4.62	20.9	7.60	19.3
31	40.7	6.51	------	.90	------	3.97	3.13	------	4.62	------	6.43	------
TOTAL	307.41	260.90	177.40	71.11	136.99	346.48	208.78	147.05	381.46	855.78	1,742.03	461.12
MEAN												
MGD	9.92	8.42	5.91	2.29	4.57	11.2	6.73	5.25	12.3	28.5	56.2	15.4
CFS	15.3	13.0	9.15	3.55	7.07	17.3	10.4	8.12	19.0	44.1	86.9	23.8
AC-FT	943	801	544	218	420	1060	641	451	1,170	2,630	5,350	1,420

CALENDAR YEAR 1962:	MAX	217	MIN	0.58	MEAN MGD	9.00	MEAN CFS	13.9	AC-FT	10,080
FISCAL YEAR 1962-63:	MAX	256	MIN	0.58	MEAN MGD	14.0	MEAN CFS	21.7	AC-FT	15,650

Peak discharge (base, 750 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	2200	5.96	958	1,480

* Discharge measurement made on this day.
a No gage-height record.

5523. Waikamoi Stream above reservoir at Kula pipeline intake, near Olinda

Location.--Lat 20°48'25", long 156°14'00", on left bank 1,500 ft upstream from Kula pipeline at Waikamoi intake and 3.0 miles east of Olinda.

Drainage area.--2.50 sq mi (revised).

Records available.--July 1953 to June 1963. Prior to July 1956, published as Waikamoi Stream above reservoir at Kula pipeline intake, near Olinda.

Gage.--Water-stage recorder and concrete control. Datum of gage is 4,487 ft above mean sea level (levels by Maui County Waterworks).

Average discharge.--9 years (1954-63), 1.34 mgd (2.38 cfs).

Extremes.--Maximum discharge during year, 717 mgd (1,110 cfs) Jan. 16 (gage height, 5.62 ft), from rating curve extended above 6.4 mgd as explained below; no flow July 1-4, Nov. 6-8, 12-22, Mar. 11-15.

1953-63: Maximum discharge, 1,680 mgd (2,600 cfs) Dec. 10, 1954 (gage height, 8.16 ft), from rating curve extended above 6.4 mgd on basis of computation of flow over dam; no flow at times.

Remarks.--Records good except those for periods of no gage-height record and those above 10 mgd, which are fair.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Backwater from debris Jan. 24 to Mar. 1)

0.05	0	0.8	1.70
.1	.01	1.0	6.20
.2	.05	1.2	12.5
.3	.14	1.5	25.0
.4	.28	2.0	56.0
.6	.74	2.5	100

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	1.7	0.12	0.04	0.01	0.05	0.02	7.08	*0.01	0.04	0.26	0.07
2	0	.60	.10	.04	.01	.04	.02	.31	.03	.04	.11	.07
3	0	.25	.05	.05	.01	.05	.01	.10	.01	.03	.10	.05
4	0	.35	.03	.04	.01	.08	.01	.06	.01	.03	1.55	.04
5	.02	.30	.03	.03	.01	.04	.01	.05	.01	.04	.98	.12
6	.01	.14	*.30	.07	0	.02	.01	.04	.20	.05	1.71	*.09
7	.01	.05	.09	.09	0	.02	.48	.04	.10	.04	10.5	.07
8	.01	.04	.05	.05	0	.01	1.68	.04	.02	.18	.88	.23
9	.14	.04	.03	.10	.01	.01	.40	.03	.01	.15	1.16	.31
10	.25	.03	.03	.08	.01	.01	.08	.03	.01	.08	.40	.42
11	.20	.04	.03	.05	.01	.01	.12	.03	0	.04	3.93	.48
12	1.4	.20	.13	.04	0	.01	.06	.03	0	.04	3.01	.18
13	.12	1.1	.07	.04	0	.01	.04	.03	0	.09	.98	.08
14	.03	2.8	.04	.03	0	.97	.02	.04	0	2.58	21.9	.05
15	.02	1.3	.03	.03	0	2.20	.02	.03	0	3.75	7.58	.09
16	.02	.45	.15	.03	0	.41	64.8	.02	.01	7.98	3.20	.12
17	.12	.30	1.59	.02	0	1.44	10.5	.03	.01	9.02	4.04	.34
18	1.7	.25	.22	.01	0	1.83	.70	.11	.44	*.89	1.49	1.36
19	.50	.25	.08	.01	0	.16	.28	.08	.16	.31	.98	.44
20	*.08	.20	.10	.01	0	.05	.23	.03	.30	.14	4.94	1.82
21	.03	.15	.11	.01	0	.04	.22	.02	1.42	.14	.65	.97
22	1.1	.09	.12	.01	0	.03	.23	.01	3.96	4.22	.31	.35
23	1.3	.04	.12	.01	2.12	.02	.26	.01	2.08	5.82	.18	.25
24	.60	.02	.09	.01	1.63	.02	.22	.01	.49	7.40	.08	1.18
25	.10	.01	.07	.01	.19	.01	.18	.01	.12	2.50	.06	.80
26	.08	.35	.06	.01	.39	.01	.14	.01	.52	3.49	.10	.42
27	.04	.20	.04	.01	*.20	.01	.12	.01	1.11	3.87	.15	.16
28	.03	.14	.04	.01	.47	.01	.09	.01	2.24	5.77	.16	.10
29	.02	.10	.04	.01	.09	.02	.08	--------	.62	2.36	.08	.12
30	.03	.05	.04	.01	.08	.03	.06	--------	.16	.52	.07	.46
31	1.0	.14	--------	.01	--------	.02	.53	--------	.07	--------	.05	--------
Total	8.96	11.68	4.00	0.97	5.25	7.64	81.62	8.30	14.12	61.61	71.59	11.24
Mean												
Mgd	0.289	0.377	0.133	0.031	0.175	0.246	2.63	0.296	0.455	2.05	2.31	0.375
Cfs	0.447	0.583	0.206	0.048	0.271	0.381	4.07	0.458	0.704	3.17	3.57	0.580
Ac-ft	27	36	12	3.0	16	24	250	25	43	189	220	34

Calendar Year 1962: Max 4.83 Min 0 Mean mgd 0.226 Mean cfs 0.350 Ac-ft 252
Fiscal Year 1962-63: Max 64.8 Min 0 Mean mgd 0.786 Mean cfs 1.22 Ac-ft 879

Peak discharge (base, 130 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	2200	5.62	717	1,110	5-14	2130	3.11	176	272

* Discharge measurement made on this day.
Note.--No gage-height record July 1 to Sept. 10, Oct. 29 to Nov. 22, Jan. 18.

5650. Kaaiea Gulch near Huelo

Location.--Lat 20°52'02", long 156°12'17", 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.--0.64 sq mi (revised).

Records available.--December 1921 to September 1962 (discontinued). Prior to July 1958, published as Kaaiea Stream near Huelo.

Gage.--Water-stage recorder and concrete weir. Altitude of gage is 1,310 ft (from topographic map). Prior to Aug. 1, 1934, at site 40 ft downstream at datum 5.75 ft lower.

Average discharge.--40 years (1922-62), 4.37 mgd (6.76 cfs).

Extremes.--Maximum discharge during period July to September, 89.7 mgd (139 cfs) July 18 (gage height, 2.13 ft); minimum, 0.33 mgd (0.51 cfs) July 1, 2.

1921-62: 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. No diversion above station. All low flow diverted into Wailoa ditch (see p. 123 below station for domestic supply, power, and irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	0.6	4.05
.3	.63	1.0	15.3
.4	1.34		

Discharge, in million gallons a day, July to September 1962

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.33	7.94	1.84									
2	.58	7.09	1.34									
3	1.63	3.03	1.17									
4	2.78	10.6	.80									
5	2.90	2.45	.80									
6	.74	*1.84	4.44									
7	.50	1.43	1.01									
8	.46	1.17	.80									
9	.94	1.09	.74									
10	1.34	.94	.68									
11	2.70	.87	.80									
12	12.2	.80	2.00									
13	1.63	1.25	3.65									
14	1.09	5.99	1.17									
15	.80	4.53	.87									
16	1.17	1.53	1.14									
17	3.54	1.17	7.39									
18	14.5	1.25	1.34									
19	3.19	4.06	1.09									
20	2.19	1.53	1.25									
21	3.38	1.09	*1.43									
22	8.34	.94	-									
23	8.36	.80	-									
24	2.88	.74	-									
25	1.95	.68	-									
26	1.53	2.29	-									
27	1.25	1.01	-									
28	1.09	.87	-									
29	.94	.80	-									
30	1.01	.68	-									
31	11.2	1.78	----------									
Total	97.14	72.24	-									
Mean												
Mgd	3.13	2.33	-									
Cfs	4.84	3.61	-									
Ac-ft	298	222	-									

Calendar Year 1962:	Max	-	Min	-	Mean mgd	-	Mean cfs	-	Ac-ft	-
Fiscal Year 1962-63:	Max	-	Min	-	Mean mgd	-	Mean cfs	-	Ac-ft	-

Peak discharge (base, 250 mgd).--No peak above base.

* Discharge measurement made on this day.

5700. Nailiilihaele Stream near Huelo

Location.--Lat 20°52'28", long 156°13'06", on left bank 200 ft upstream from Wailoa ditch intake, 1,000 ft upstream from New Hamakua ditch trail, 1.5 miles south of Kailua, and 2.4 miles southeast of Huelo Church.

Drainage area.--3.58 sq mi (revised).

Records available.--December 1910 to December 1911, October 1913 to June 1918, August to October 1919, December 1919 to June 1924, January 1925 to June 1963. Gage-height records for July to December 1912 at site 700 ft downstream not equivalent owing to diversion. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,205 ft above mean sea level (by vertical angles). Dec. 9, 1910, to Dec. 31, 1911, staff gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 20, 1922, at present site at datum 0.50 ft higher.

Average discharge.--46 years (1914-18, 1920-24, 1925-63), 24.5 mgd (37.9 cfs).

Extremes.--Maximum discharge during year, 1,690 mgd (2,610 cfs) May 14 (gage height, 8.06 ft), from rating curve extended above 390 mgd as explained below; minimum, 1.47 mgd (2.27 cfs) Nov. 17-20.

1910-11, 1913-63: Maximum discharge, 4,140 mgd (6,410 cfs) Nov. 18, 1930 (gage height, 10.74 ft), from rating curve extended above 390 mgd by logarithmic plotting; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.

Remarks.--Records good except those above 800 mgd, which are fair. No diversion above station since 1922. All low flow diverted into Wailoa ditch (see p. 123) 200 ft below station for domestic supply, power, and irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.7	0.80	2.7	40.0
1.8	1.85	3.0	70.0
1.9	3.35	3.5	135
2.0	5.40	4.0	215
2.2	11.4	5.0	445
2.4	20.3		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.00	45.3	8.00	6.70	2.25	7.48	4.99	18.2	3.35	7.48	16.5	13.7
2	3.23	30.8	7.22	5.92	*2.25	4.99	5.40	4.58	3.97	6.44	13.0	9.36
3	7.48	14.7	5.92	6.18	2.70	4.17	4.58	3.76	2.85	5.40	16.4	9.70
4	11.4	43.0	4.58	4.99	2.25	3.97	4.17	*3.35	2.70	5.40	18.8	8.34
5	13.0	13.0	4.79	4.17	2.10	3.56	3.76	3.35	9.67	5.20	18.2	18.7
6	4.17	10.4	23.6	8.35	2.00	3.35	3.56	3.20	26.8	4.79	147	12.2
7	2.85	9.02	6.44	10.0	2.00	3.00	24.4	2.85	7.51	4.79	100	12.2
8	2.55	7.48	4.99	6.18	1.85	2.85	41.0	2.85	4.38	8.67	25.7	22.1
9	4.97	7.22	4.58	11.1	1.85	2.70	11.7	2.70	3.56	6.44	48.1	16.9
10	6.18	6.44	4.38	6.96	2.00	2.70	7.22	2.70	3.20	5.20	116	17.6
11	10.9	5.92	4.58	5.20	1.85	2.55	6.70	2.55	3.20	4.38	192	29.4
12	56.6	5.40	8.94	4.79	1.72	2.55	5.40	2.70	3.20	10.2	88.6	10.7
13	8.00	3.34	20.6	4.38	1.85	11.5	4.79	3.76	3.00	7.23	60.4	9.36
14	5.40	38.2	6.96	4.17	1.72	*158	4.38	5.60	2.85	24.1	364	8.68
15	4.38	29.8	5.20	3.97	1.72	88.8	4.17	3.00	7.44	64.5	71.7	7.74
16	6.02	9.02	5.50	3.76	1.72	19.4	75.7	2.55	7.42	137	93.2	6.96
17	14.3	7.22	37.9	3.56	1.58	47.5	16.7	2.55	4.79	45.1	190	*17.2
18	73.5	7.48	8.00	3.35	1.47	58.8	6.70	115	4.99	54.4	92.6	42.5
19	14.2	16.9	5.92	3.35	1.47	13.9	5.66	17.1	4.79	15.5	83.2	15.4
20	10.7	8.00	7.22	3.20	1.47	10.0	6.44	6.44	4.56	16.5	121	59.6
21	15.2	6.18	*7.74	3.00	2.00	8.00	5.20	4.79	65.1	21.6	39.4	36.9
22	33.6	5.66	8.34	2.85	4.08	7.22	6.34	4.17	*161	22.7	23.2	16.9
23	34.5	5.20	7.48	3.20	30.4	6.18	6.70	3.76	61.2	32.2	16.9	26.6
24	13.5	4.99	7.74	3.76	27.2	5.40	4.79	3.56	16.6	92.5	14.3	24.2
25	10.4	4.58	5.92	2.85	9.02	4.99	4.38	3.35	11.1	65.1	11.8	14.3
26	8.68	10.4	5.92	2.70	5.92	4.79	3.97	3.20	11.9	50.9	37.0	11.4
27	7.48	5.92	5.40	2.55	5.40	4.38	3.76	3.00	10.7	69.6	13.5	10.4
28	6.70	5.20	5.40	2.40	9.40	4.38	3.35	2.85	29.0	112	25.2	10.4
29	5.92	4.58	4.79	2.40	4.99	7.53	3.20	------	10.0	46.9	13.0	11.1
30	6.18	4.38	4.38	2.25	12.3	22.3	3.00	------	7.74	22.0	10.7	29.4
31	58.4	8.13	------	2.25	------	7.22	7.24	------	7.74	------	9.36	------
TOTAL	462.39	388.86	248.43	140.49	148.53	534.16	299.35	237.47	506.31	974.22	2,090.76	539.94
MEAN												
MGD	14.9	12.5	8.28	4.53	4.95	17.2	9.66	8.48	16.3	32.5	67.4	18.0
CFS	23.1	19.4	12.8	7.01	7.66	26.7	14.9	13.1	25.3	50.2	104	27.8
AC-FT	1,420	1,190	762	431	456	1,640	919	729	1,550	2,990	6,420	1,660

CALENDAR YEAR 1962:	MAX	365	MIN	1.47	MEAN MGD	12.9	MEAN CFS	20.0	AC-FT	14,410
FISCAL YEAR 1962-63:	MAX	364	MIN	1.47	MEAN MGD	18.0	MEAN CFS	27.9	AC-FT	20,170

* Discharge measurement made on this day.

Peak discharge (base, 750 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
2-18	1500	6.19	826	1,280	5-14	1930	8.06	1,690	2,610
5-10	2330	6.31	874	1,350	5-17	1730	6.30	870	1,350

5850. Hoolawanui Stream near Huelo

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

Drainage area.--1.34 sq mi.

Records available.--December 1910 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,219.42 ft above mean sea level (East Maui Irrigation Co. bench mark). 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.--52 years (1911-63), 7.80 mgd (12.1 cfs).

Extremes.--Maximum discharge during year, 1,450 mgd (2,240 cfs) May 14 (gage height, 4.47 ft), from rating curve extended above 92 mgd as explained below; minimum, 0.26 mgd (0.40 cfs) Nov. 18-20.

1910-63: Maximum discharge, 3,240 mgd (5,010 cfs) Apr. 27, 1950 (gage height, 5.94 ft), from rating curve extended above 92 mgd by logarithmic plotting; minimum, 0.15 mgd (0.23 cfs) Oct. 25, 1917.

Remarks.--Records good except those above 200 mgd, which are fair. No diversion above station. All low flow diverted into Wailoa ditch (see p. 123) 250 ft below station for domestic supply, power, and irrigation.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.1	0.20	0.7	8.75
.2	.55	.9	17.2
.3	1.15	1.2	36.7
.4	2.20	1.5	65.5
.5	3.76	2.0	140
.6	5.95	2.5	260

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.46	8.10	1.42	1.07	0.42	0.75	1.51	4.23	1.42	2.60	7.56	4.76
2	.55	4.76	1.24	.87	.46	.46	1.61	1.72	1.33	2.20	6.47	3.94
3	.69	2.90	1.24	.93	.55	.42	1.42	1.61	1.15	2.07	6.47	3.76
4	1.15	7.57	1.00	.81	.46	.38	1.42	1.42	1.15	1.95	6.47	3.22
5	1.07	3.06	1.07	.69	.42	.35	1.33	1.42	1.33	1.95	5.86	4.76
6	.60	2.60	2.33	1.00	.42	.32	1.24	1.33	5.12	1.83	27.1	3.76
7	.46	2.20	1.15	1.33	.38	.32	5.58	1.24	1.83	1.83	26.3	3.39
8	.46	2.07	1.00	1.00	.35	.29	9.09	1.15	*1.24	2.07	11.5	4.05
9	.69	1.95	.93	1.51	.35	.29	3.06	1.15	1.07	1.95	15.5	4.04
10	.69	1.72	.93	1.00	.35	.29	2.07	1.15	1.00	1.72	22.1	3.94
11	1.23	1.72	.93	.81	.35	.29	2.07	1.07	1.00	1.61	63.5	5.24
12	6.33	1.61	1.33	.75	.32	.29	1.83	1.07	1.00	4.09	27.1	3.06
13	1.15	1.95	1.61	.69	.35	1.06	1.72	1.42	.93	2.33	22.1	2.74
14	.75	5.00	1.07	.69	.32	21.9	1.61	1.83	.93	3.94	230	2.46
15	.60	5.14	.93	.64	.32	14.3	1.42	1.07	1.24	13.3	51.2	2.33
16	.69	2.20	1.00	.64	.32	3.76	15.0	1.00	1.33	33.3	34.2	2.20
17	1.33	1.83	5.25	.64	.29	12.5	5.71	1.00	1.07	12.1	74.4	3.22
18	8.83	1.95	1.33	.60	.29	14.6	2.33	23.6	1.00	14.4	38.6	7.41
19	1.95	2.60	1.07	.60	.26	3.94	1.95	3.68	.87	*6.47	28.3	3.22
20	1.61	1.83	*1.33	.55	.29	3.06	3.06	2.20	.87	5.95	44.7	12.4
21	2.07	1.61	1.33	.55	.38	2.60	2.07	1.95	6.81	6.21	19.1	7.41
22	4.67	1.51	1.24	.55	.38	2.33	2.83	1.72	22.0	5.69	12.7	4.76
23	4.54	1.42	1.15	.64	1.00	2.07	2.46	1.61	10.9	8.26	9.54	6.06
24	2.20	1.33	1.33	.69	2.98	1.95	*1.95	1.51	3.76	25.9	7.85	6.21
25	1.72	1.33	1.00	.51	1.07	1.83	1.83	1.42	2.74	19.7	6.73	4.33
26	1.61	1.61	1.00	.46	.64	1.72	1.72	1.42	3.22	14.6	11.8	3.58
27	1.51	1.33	.87	.46	.55	1.61	1.61	1.42	3.22	14.8	6.47	3.39
28	1.42	1.24	.93	.42	.81	1.51	1.51	1.33	8.64	27.1	7.28	3.39
29	1.24	1.15	.87	.42	.51	1.83	1.42	------	3.22	18.1	5.44	3.22
30	1.33	*1.15	.75	.42	.93	3.39	1.83	------	2.74	11.1	4.76	5.20
31	5.23	1.42	------	.42	------	1.83	2.82	------	2.46	------	4.33	------
TOTAL	58.83	77.86	38.63	22.36	16.52	102.24	87.08	66.74	96.59	269.12	845.43	131.45
MEAN												
MGD	1.90	2.51	1.29	0.721	0.551	3.30	2.81	2.38	3.12	8.97	27.3	4.38
CFS	2.94	3.89	1.99	1.12	0.852	5.10	4.35	3.69	4.82	13.9	42.2	6.78
AC-FT	181	239	119	69	51	314	267	205	296	826	2,590	403

CALENDAR YEAR 1962: MAX 130 MIN 0.26 MEAN MGD 3.04 MEAN CFS 4.70 AC-FT 3,410
FISCAL YEAR 1962-63: MAX 230 MIN 0.26 MEAN MGD 4.97 MEAN CFS 7.69 AC-FT 5,560

* Discharge measurement made on this day.

Peak discharge (base, 400 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
5-14	2030	4.47	1,450	2,240	5-17	2030	2.92	408	631

5870. Honopou Stream near Huelo

Location.--Lat 20°53'20", long 156°15'20", on left bank just upstream from Wailoa ditch intake, 2.2 miles southwest of Huelo, and 2.5 miles west of Kailua.

Drainage area.--0.54 sq mi.

Records available.--December 1910 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,208 ft above mean sea level (by vertical angles). Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--52 years (1911-63), 3.11 mgd (4.81 cfs).

Extremes.--Maximum discharge during year, 488 mgd (755 cfs) May 14 (gage height, 3.73 ft), from rating curve extended above 70 mgd as explained below; minimum, 0.11 mgd (0.17 cfs) Nov. 11-21, Dec. 7-13.

1910-63: Maximum discharge, 3,690 mgd (5,710 cfs) Nov. 18, 1930 (gage height, 7.28 ft), from rating curve extended above 70 mgd by model studies of station site; minimum, 0.01 mgd (0.02 cfs) for several days in 1933, 1934.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.93	0.7	2.29	1.7	23.1
.5	.48	.9	4.92	2.2	45.5
.6	1.26	1.2	9.90		

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.20	2.34	0.60	0.48	0.15	0.25	0.76	2.00	0.92	1.32	4.07	2.18
2	.25	1.76	.54	.42	.15	.15	.68	.92	.84	1.16	3.50	1.86
3	.30	a 1.20	.54	.42	.20	.15	.68	.84	.76	1.08	3.38	1.76
4	.48	a 2.20	.42	.36	.15	.15	.60	.84	.68	1.08	3.14	1.66
5	.48	a 1.25	.42	.36	.15	.15	.60	.76	.76	1.00	2.77	1.96
6	.25	a 1.20	.84	.42	.15	.15	.54	.68	1.47	.92	* 6.04	1.66
7	.20	* 1.16	.42	.54	.15	.11	2.62	.68	.84	.84	5.22	1.56
8	.20	1.16	.36	.42	.15	.11	2.81	.60	.60	1.16	3.50	1.46
9	.25	1.08	.36	.60	.15	.11	1.36	.60	.54	1.00	3.78	1.46
10	.30	1.08	.36	.42	.15	.11	.92	.54	.48	.84	6.24	1.46
11	.40	1.00	.36	.36	.11	.11	.92	.54	.48	.76	19.0	1.99
12	2.96	1.00	.48	.36	.11	* .11	.84	.54	.48	2.40	9.09	1.26
13	.48	1.08	.48	.30	.11	.61	.76	.76	.48	1.08	8.66	1.16
14	.30	1.66	.36	.30	.11	8.39	.68	1.12	.42	1.76	44.9	1.08
15	.25	1.66	.30	.30	.11	5.67	.68	.60	.54	4.83	20.5	1.00
16	.30	1.00	.42	.30	.11	1.46	3.88	.54	.54	9.50	11.3	1.00
17	.54	.92	1.77	.30	.11	5.16	1.94	.63	.48	4.64	16.6	1.26
18	5.14	.92	.48	.30	.11	4.95	1.08	11.6	.42	6.62	17.1	2.44
19	.84	1.16	.36	.30	.11	2.06	1.00	2.06	.36	3.78	12.2	1.16
20	.60	.84	.48	.30	.11	1.76	1.56	1.36	.36	3.50	16.1	* 2.82
21	.92	.76	.54	.30	.15	1.46	1.08	1.26	1.08	3.26	10.0	1.96
22	2.08	.68	.54	.30	.15	1.36	1.26	1.16	5.34	2.77	7.28	1.56
23	1.76	.60	.48	.36	.25	1.26	1.16	1.08	3.67	2.65	5.84	1.76
24	.92	.60	.60	.36	.30	1.16	1.00	1.08	1.46	6.65	4.78	1.96
25	.76	.54	.48	.30	.25	1.08	.92	1.00	1.26	5.18	4.21	1.56
26	.68	.68	.42	.25	.20	1.00	.84	.92	1.46	5.41	5.05	1.46
27	.60	.60	.36	.20	.15	.92	.84	.92	1.36	5.65	3.50	1.36
28	.60	.54	.36	.15	.30	.84	.76	.84	3.40	6.91	3.14	1.46
29	.54	.54	.36	.15	.15	* .92	.68	--------	1.36	5.68	2.77	1.36
30	.60	.48	.30	.15	.30	1.66	* .92	--------	1.26	4.92	2.53	1.66
31	1.79	.68	--------	.15	--------	.92	1.76	--------	1.26	--------	2.18	--------
Total	25.97	32.37	14.79	10.23	4.85	44.30	36.13	36.47	35.36	98.35	268.37	48.29
Mean												
Mgd	0.838	1.04	0.493	0.330	0.162	1.43	1.16	1.30	1.14	3.28	8.66	1.61
Cfs	1.30	1.61	0.763	0.511	0.251	2.21	1.79	2.01	1.76	5.07	13.4	2.49
Ac-ft	80	99	45	31	15	136	111	112	108	302	824	148

Calendar Year 1962: Max 28.5 Min 0.11 Mean mgd 1.18 Mean cfs 1.83 Ac-ft 1,320
Fiscal Year 1962-63: Max 44.9 Min 0.11 Mean mgd 1.80 Mean cfs 2.79 Ac-ft 2,010

Peak discharge (base, 130 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
5-14	2000	3.73	488	755

* Discharge measurement made on this day.
a No gage-height record.

5880. Wailoa ditch at Honopou, near Huelo

Location.--Lat 20°53'20", long 156°15'19", on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mile west of Lupi, 2.2 miles southwest of Huelo, and 2.5 miles west of Kailua.

Records available.--November 1922 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 1,208 ft above mean sea level (by vertical angles).

Average discharge.--40 years (1923-63), 112 mgd (173 cfs).

Extremes.--1922-63: Maximum daily discharge, 195 mgd (302 cfs) for several days in 1954, 1955, and 1956; no flow Jan. 24-27, 1923.

Remarks.--Records good. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from there west to Halehaku Gulch at altitude of about 1,200 ft. Water is used for domestic supply, power, and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.5	187	88.6	63.6	26.0	90.0	53.0	111	59.2	84.0	186	157
2	33.7	186	78.4	62.6	26.6	57.5	55.7	44.9	79.7	77.5	168	122
3	66.0	150	61.0	73.2	32.0	49.1	47.9	37.4	38.6	77.0	165	128
4	87.3	185	50.9	59.4	26.6	49.1	43.7	34.1	33.5	78.9	182	108
5	110	129	50.6	49.4	24.5	42.5	41.3	32.0	43.5	67.8	175	175
6	44.6	104	154	86.2	24.5	38.6	40.7	28.4	153	61.0	*188	155
7	32.0	*87.6	69.0	96.7	24.3	35.9	123	25.7	88.7	59.8	188	151
8	28.4	76.6	53.6	66.0	23.0	33.5	171	27.5	54.5	74.4	188	140
9	48.7	69.6	48.2	111	22.0	31.7	137	26.9	45.2	74.8	188	164
10	68.1	65.4	46.1	76.0	24.5	30.2	76.9	26.6	39.5	59.0	188	180
11	58.8	61.0	48.5	58.1	22.0	29.6	70.8	25.7	38.0	54.8	185	184
12	183	57.5	97.8	52.1	21.5	28.7	59.4	50.9	49.5	80.1	188	136
13	87.7	95.5	121	47.9	23.5	41.2	51.8	89.9	51.5	76.2	188	112
14	57.5	144	74.0	47.9	21.5	188	48.2	70.4	47.4	187	188	101
15	45.2	183	55.1	44.6	21.8	188	45.8	36.4	64.5	186	187	97.0
16	47.2	108	56.6	41.9	21.5	168	73.7	29.3	70.8	180	187	89.2
17	103	79.0	172	40.7	21.5	132	137	27.8	78.0	180	168	148
18	167	79.3	80.5	39.2	20.7	188	66.6	170	110	185	101	188
19	140	123	62.2	38.0	19.5	146	56.3	153	80.0	188	106	158
20	101	80.5	69.6	37.1	*19.5	102	62.4	76.3	70.8	187	138	188
21	123	65.4	79.0	35.9	26.0	82.4	52.1	57.8	*144	188	178	188
22	154	59.0	92.7	35.6	48.2	72.0	56.6	50	144	181	186	178
23	185	55.1	80.5	40.2	180	65.1	63.0	45.2	174	187	182	179
24	133	52.1	76.9	65.6	182	59.4	48.5	41.6	170	182	176	187
25	100	49.4	64.2	37.4	109	54.8	38.2	39.2	124	187	153	166
26	81.1	103	63.3	32.6	79.0	51.8	41.6	38.0	126	188	164	133
27	71.1	64.8	56.6	31.1	67.5	48.8	39.5	36.5	160	188	159	120
28	66.0	57.5	63.9	29.6	125	47.6	38.0	33.2	167	188	149	115
29	58.1	51.8	54.8	28.4	66.6	60.8	36.5	--------	150	188	166	117
30	65.1	48.2	47.9	27.5	142	170	32.6	--------	97.0	187	148	181
31	153	79.1	--------	*26.9	--------	73.5	43.5	--------	90.0	--------	117	--------
Total	2,722.1	2,936.4	2,217.5	1,582.4	1,492.3	2,455.8	1,952.3	1,465.7	2,841.9	4,082.3	5,230	4,445.2
Mean Mgd	87.8	94.7	73.9	51.0	49.7	79.2	63.0	52.3	91.7	136	169	148
Cfs	136	147	114	78.9	76.9	123	97.5	80.9	142	210	261	229
Ac-ft	8,350	9,010	6,800	4,860	4,580	7,540	5,990	4,500	8,720	12,530	16,050	13,640

Calendar Year 1962:	Max	188	Min	19.5	Mean mgd	77.6	Mean cfs	120	Ac-ft	86,930
Fiscal Year 1962-63:	Max	188	Min	19.5	Mean mgd	91.6	Mean cfs	142	Ac-ft	102,600

* Discharge measurement made on this day.

5890. New Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'28", long 156°15'22", on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, 2.1 miles southwest of Huelo, and 2.5 miles west of Kailua.

Records available.--January 1918 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 1,170 ft above mean sea level (by vertical angles). Prior to May 14, 1921, at site 300 ft upstream at different datum. May 15, 1921, to Mar. 18, 1962, at present site at datum 1.00 ft higher.

Average discharge.--45 years, 24.7 mgd (38.2 cfs).

Extremes.--1918-63: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; no flow at times.

Remarks.--Records good except those below 0.1 mgd, which are fair. Ditch diverts from streams between Waikamoi Stream and Halehaku Gulch above Center and Lowrie ditches for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.02	89.3	0.47	0.39	0.06	0.73	0.51	17.3	0.69	1.60	36.4	9.56
2	.04	84.2	.43	.32	.08	.13	.43	.79	3.53	1.29	66.8	2.85
3	.08	4.11	.32	.29	.11	.05	.39	.39	.59	1.15	5.26	2.27
4	.39	68.3	.26	.26	.10	.04	.35	.35	.51	1.60	39.9	2.36
5	.35	1.79	.23	.23	.06	.04	.29	.32	.51	1.08	16.7	12.6
6	.10	1.29	40.2	.26	.10	.02	.29	.29	44.0	.90	*97.2	8.01
7	.04	1.08	.51	.43	.10	.02	44.2	.29	5.19	.85	99.0	3.99
8	.02	.96	.29	.32	.10	.01	56.8	.26	.85	1.29	68.1	10.8
9	.03	.96	.26	.47	.08	0	24.6	.23	.69	1.45	93.8	8.66
10	.06	.79	.26	.35	.08	0	.79	.20	.64	1.15	100	19.9
11	.87	.74	.29	.26	.08	0	.64	.18	.59	.79	101	29.6
12	78.8	.64	.47	.23	.08	*0	.55	.86	.63	3.81	101	3.37
13	1.01	.85	24.4	.20	.10	.33	.47	.70	.51	1.42	70.4	1.45
14	.32	53.1	.98	.20	.10	95.7	.47	1.26	.51	47.0	60.1	1.56
15	.18	*73.9	.29	.20	.10	98.4	.39	.35	36.8	89.8	92.7	4.77
16	.13	1.40	.29	.18	.11	40.6	10.6	.23	47.2	90.4	87.3	.96
17	.94	.85	58.4	.18	.11	26.9	46.4	.23	25.0	62.4	101	20.7
18	79.9	.79	.75	.18	.10	85.5	7.39	63.5	28.4	64.8	100	55.1
19	14.7	10.4	.43	.15	.10	5.24	.69	33.1	.99	25.7	100	4.75
20	.69	.96	.39	.15	.08	1.84	1.02	2.21	1.70	24.5	101	*67.4
21	7.33	.59	.47	.15	.11	1.29	.69	1.02	*89.1	37.1	78.3	55.7
22	42.9	.51	.39	.15	.13	1.02	.69	.90	99.1	25.8	35.0	13.9
23	71.5	.47	.39	.15	71.4	.85	.59	1.02	89.3	75.8	18.8	30.6
24	7.55	.43	.47	.15	78.3	.74	.35	.90	11.7	98.0	9.89	29.4
25	1.45	.43	.32	.13	5.68	.64	.48	.85	2.36	97.4	3.74	2.65
26	1.02	1.21	.35	.11	.23	.59	.43	.79	3.14	97.8	27.2	.69
27	.85	.47	.29	.10	.11	.55	.43	.69	7.79	98.2	7.69	.59
28	.69	.39	.29	.10	9.19	.51	.39	.64	54.6	98.4	18.2	.55
29	.59	.35	.26	.08	.11	.47	.35	--------	11.2	97.4	12.8	.55
30	.64	.32	.23	.08	17.7	23.2	.32	--------	1.84	83.8	3.62	14.6
31	49.8	.32	--------	.08	--------	1.02	.56	--------	1.84	--------	2.46	--------
Total	362.99	401.90	133.38	6.53	184.79	386.43	202.55	129.85	571.50	1,232.68	1,755.36	419.89
Mean												
Mgd	11.7	13.0	4.45	0.211	6.16	12.5	6.53	4.64	18.4	41.1	56.6	14.0
Cfs	18.1	20.1	6.89	0.326	9.53	19.3	10.1	7.18	28.5	63.6	87.6	21.7
Ac-ft	1,110	1,230	409	20	567	1,190	622	398	1,750	3,780	5,390	1,290

Calendar Year 1962: Max 100 Min 0 Mean mgd 10.3 Mean cfs 15.9 Ac-ft 11,510
Fiscal Year 1962-63: Max 101 Min 0 Mean mgd 15.9 Mean cfs 24.6 Ac-ft 17,760

* Discharge measurement or observation of no flow made on this day.

5900. Old Haiku ditch at Honopou, near Huelo

Location.--Lat 20°53'31", long 156°15'16", on right bank 400 ft downstream from Honopou Stream and Mailoa ditch trail crossing in Honopou Gulch, 2.0 miles southwest of Huelo, 2.5 miles west of Kailua, and 5.0 miles east of Haiku.

Records available.--January 1918 to June 1922, November 1936 to June 1963.

Gage.--Water-stage recorder and modified Parshall flume. Datum of gage is 1,117 ft above mean sea level (by vertical angles).

Average discharge.--30 years (1918-22, 1937-63), 2.05 mgd (3.19 cfs).

Extremes.--1918-22, 1936-63: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow at times.

Remarks.--Records fair. Ditch intakes are at Koolauwanui and Honopou Streams, but Mailoa and New Haiku ditches divert most of flow. Water stored in reservoirs to be used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.01	4.20	0.03	0.02	0	0.03	0.04	0.14	0.02	0.02	0.01	0.04
2	.01	.63	.03	.01	0	.03	.03	.08	.02	.02	.01	.04
3	.01	.10	.02	.01	0	.02	.03	.06	.02	.01	.01	.04
4	.03	5.29	.02	.01	0	.01	.03	.05	.02	.01	.01	.04
5	.03	.09	.02	.01	0	.01	.02	.05	.02	.01	.01	.04
6	.02	.05	.09	.02	0	.01	.02	.04	.04	.01	.04	.04
7	.02	.04	.04	.02	0	0	2.06	.04	.06	.01	.04	.03
8	.02	.04	.04	.01	0	0	4.38	.04	.04	.01	.03	.03
9	.02	.04	.03	.02	0	0	.30	.04	.04	.02	.04	.03
10	.02	.04	.02	.01	0	0	.06	.04	.03	.01	.04	.03
11	.03	.03	.02	.01	0	0	.05	.04	.03	.01	.06	.02
12	6.96	.03	.02	.01	0	*0	.04	.04	.03	.01	.04	.02
13	.07	.03	.02	.01	0	.01	.04	.05	.02	.01	.04	.02
14	.04	.53	.05	.01	0	11.0	.03	.06	.02	.03	.07	.02
15	.04	*.79	.04	.01	0	10.4	.03	.05	.04	.05	.04	.02
16	.03	.06	.04	.01	0	.70	3.72	.05	.06	.08	.03	.02
17	.03	.04	2.34	.01	0	5.64	7.28	.04	.05	.04	.04	.03
18	4.80	.04	.05	.01	0	5.99	.09	.10	.04	.05	.04	.04
19	.12	.04	.04	0	0	.12	.06	.05	.04	.04	.04	.04
20	.05	.04	.03	0	0	.07	.08	.04	.03	.04	.04	.04
21	.04	.04	.02	.01	0	.05	.07	.04	.05	.04	.04	.04
22	2.74	.04	.02	0	0	.04	.06	.04	.06	.04	.04	.04
23	1.75	.04	.02	0	.04	.03	.05	.03	.05	.04	.03	.03
24	.13	.03	.02	0	.13	.03	.04	.03	.04	.05	.03	.03
25	.06	.03	.02	0	.06	.02	.04	.03	.03	.04	.03	.03
26	.05	.03	.02	0	.04	.02	.04	.02	.03	.04	.04	.03
27	.04	.03	.02	0	.02	.02	.03	.02	.03	.04	.04	.03
28	.04	.02	.02	0	.02	.03	.03	.02	.04	.04	.04	.02
29	.04	.02	.01	0	.01	.03	.03	--------	.03	.03	.04	.02
30	.04	.02	.01	0	.02	.05	.04	--------	.03	.02	.04	.02
31	2.35	.02	--------	*0	--------	.05	.07	--------	.02	--------	.04	--------
Total	19.64	12.47	3.17	0.23	0.34	34.41	18.89	1.33	1.08	0.87	1.09	0.92
Mean												
Mgd	0.634	0.402	0.106	0.007	0.011	1.11	0.609	0.048	0.035	0.029	0.035	0.031
Cfs	0.981	0.622	0.164	0.011	0.017	1.72	0.942	0.074	0.054	0.045	0.054	0.048
Ac-ft	60	38	9.7	0.7	1.0	106	58	4.1	3.3	2.7	3.3	2.8

Calendar Year 1962: Max 23.0 Min 0 Mean mgd 0.635 Mean cfs 0.982 Ac-ft 712
Fiscal Year 1962-63: Max 11.0 Min 0 Mean mgd 0.259 Mean cfs 0.401 Ac-ft 290

* Discharge measurement or observation of no flow made on this day.

5920. Lowrie ditch at Honopou Gulch, near Huelo

Location.--Lat 20°54'57", long 156°15'07", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.7 miles northwest of Kailua.

Records available.--January 1910 to March 1927, February 1930 to June 1963. Published as "at Opana weir, near Huelo" 1910-27.

Gage.--Water-stage recorder and concrete control. Datum of gage is 598.0 ft above mean sea level, datum of 1929. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 miles downstream at different datum.

Average discharge.--49 years (1910-26, 1930-63), 26.9 mgd (41.6 cfs).

Extremes.--1910-27, 1930-63: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Records good. Lowrie ditch receives water from Center ditch at Nailiilihaele Stream and diverts from additional streams westward to Maliko Gulch for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.92	47.7	5.86	4.60	1.82	3.55	5.50	23.2	18.5	13.2	41.9	3.82
2	1.92	47.8	5.14	4.00	1.82	2.25	4.96	6.79	14.8	12.4	28.2	4.15
3	2.48	49.3	4.30	4.00	2.73	1.82	4.96	2.78	7.24	11.2	*26.1	3.45
4	4.38	39.3	3.85	4.15	2.13	1.82	4.78	.35	6.40	16.2	40.6	7.57
5	6.07	15.3	3.70	3.55	1.82	1.70	4.45	.35	6.82	23.4	33.4	19.8
6	3.25	*17.4	23.5	3.85	1.70	1.42	4.15	.35	36.7	8.50	54.5	14.9
7	2.48	18.2	11.4	4.96	1.70	1.33	24.2	.10	20.9	8.08	53.6	14.6
8	2.35	13.7	5.51	4.60	1.60	1.24	26.2	0	13.0	14.6	38.4	17.5
9	2.85	11.4	3.55	4.78	1.52	1.24	25.3	.46	8.72	19.0	48.4	24.4
10	3.55	7.24	3.55	4.45	1.42	1.17	8.50	3.10	7.50	17.2	56.2	35.9
11	2.85	6.40	3.70	3.70	1.42	1.17	7.03	3.10	13.7	14.8	55.0	44.8
12	43.8	6.04	4.15	3.40	1.33	1.17	6.04	3.10	12.7	13.7	54.3	16.6
13	15.8	7.66	15.6	3.25	1.52	1.17	6.26	10.7	12.4	16.5	51.4	13.7
14	15.8	26.3	9.38	3.25	1.42	* 52.3	13.0	12.4	10.7	40.2	51.4	16.1
15	12.4	45.2	3.70	2.98	1.42	57.2	12.0	7.87	7.65	58.3	22.2	9.70
16	7.37	21.5	3.70	2.85	1.42	35.4	18.4	6.04	15.6	51.6	1.14	10.7
17	5.50	18.0	34.0	2.85	1.42	35.3	40.1	5.68	8.08	12.2	.30	25.7
18	42.8	12.9	14.1	2.73	1.33	42.6	9.16	44.8	7.87	9.08	1.24	52.1
19	25.0	8.72	11.3	2.60	1.24	29.0	7.66	47.0	6.82	10.0	.22	23.4
20	15.8	7.96	9.90	2.48	1.24	27.4	8.50	22.3	6.22	24.3	2.34	55.9
21	19.0	5.68	5.82	2.60	1.24	20.1	7.66	16.9	46.4	35.4	.66	53.3
22	23.7	5.14	4.78	2.48	1.24	11.2	7.87	14.0	*63.5	36.8	.66	41.3
23	48.3	4.96	5.14	2.48	27.9	7.87	5.82	10.7	61.7	52.4	.60	28.3
24	30.2	4.60	5.68	2.85	39.4	7.03	4.90	9.82	37.5	56.4	.30	53.3
25	20.7	4.30	4.60	2.35	24.7	6.40	10.5	9.38	19.3	33.1	.02	28.1
26	19.3	6.22	4.78	2.13	2.95	6.40	5.86	9.84	20.4	54.5	.01	17.2
27	14.5	5.50	4.60	2.13	2.13	7.24	5.48	10.6	18.0	55.0	.03	16.3
28	8.50	4.78	4.45	2.02	2.85	9.55	13.2	16.1	43.5	55.0	0	12.7
29	7.24	4.30	3.85	1.92	2.13	6.32	12.0	--------	14.4	54.5	0	10.0
30	7.45	4.15	3.40	1.92	3.39	9.89	9.76	--------	13.2	53.8	0	30.8
31	17.7	4.15	--------	1.82	--------	6.82	6.45	--------	14.0	---------	.58	---------
Total	434.96	481.80	226.99	97.73	139.95	399.07	330.65	297.81	594.22	881.36	663.70	706.09
Mean												
Mgd	14.0	15.5	7.57	3.15	4.66	12.9	10.7	10.6	19.2	29.4	21.4	23.5
Cfs	21.7	24.0	11.7	4.87	7.21	20.0	16.6	16.4	29.7	45.5	33.1	36.4
Ac-ft	1,330	1,480	697	300	429	1,220	1,020	914	1,820	2,700	2,040	2,170

Calendar Year 1962: Max 60.9 Min 1.17 Mean mgd 11.0 Mean cfs 17.0 Ac-ft 12360
Fiscal Year 1962-63: Max 63.5 Min 0 Mean mgd 14.4 Mean cfs 22.3 Ac-ft 16120

* Discharge measurement made on this day.

5940. Haiku ditch at Honopou Gulch, near Kailua

Location.--Lat 20°55'05", long 156°14'55", on right bank on 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 June 1912, January 1913 to December 1928, February 1930 to June 1963. Published as "at Peahi weir, near Huelo" January 1910 to June 1919, as "at Manawai Gulch, near Peahi" July 1919 to December 1928, and as "at Kapalalaea Gulch, near Huelo" February 1930 to January 1940. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and concrete control. Datum of gage is 421.54 ft above mean sea level, datum of 1929. Jan. 1, 1910, to Oct. 6, 1914, water-stage recorder at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, water-stage recorder at site 2.9 miles downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, water-stage recorder at site 0.9 mile downstream at different datum.

Average discharge.--49 years (1910-12, 1913-14, 1915-28, 1930-63), 18.6 mgd (28.8 cfs).

Extremes.--1910-28, 1930-63: 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. Ditch diverts water from all streams between Nailiilihaele Stream and Maliko Gulch for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.51	38.2	0.75	0.56	0.07	0.12	0.40	1.19	1.22	1.85	8.65	23.0
2	.51	11.7	.62	.26	.07	.10	.37	.28	1.15	1.64	3.94	15.7
3	.51	1.73	.54	.26	.09	.09	.34	.09	1.00	1.50	3.82	12.8
4	.62	22.1	.51	.30	.05	.09	.30	.16	.80	1.36	16.4	6.95
5	.80	1.57	.54	.26	.06	.08	.28	.18	.75	1.36	4.22	3.50
6	.58	1.15	1.54	.30	.05	.08	.26	.16	17.0	1.15	59.3	3.20
7	.54	.95	.54	.34	.05	.08	9.81	.16	*3.70	1.15	41.9	3.10
8	.51	.85	.51	.34	.08	.08	19.7	.18	1.43	1.73	17.2	6.22
9	.70	.80	.51	.34	.09	.09	9.16	2.64	1.22	2.88	49.1	7.25
10	.58	.80	.51	.22	.09	.09	.58	1.15	1.10	2.44	36.5	16.4
11	.58	.75	.48	.20	.08	.10	.54	.75	1.05	1.78	36.2	23.4
12	40.6	.70	.48	.18	.08	.10	.44	.62	1.05	1.85	34.7	3.00
13	1.36	.90	2.95	.16	.05	.12	.40	2.05	1.10	1.94	36.2	2.44
14	.90	20.6	.65	.14	.04	60.6	.40	1.63	1.10	7.90	45.4	2.28
15	.65	22.5	.48	.14	.05	46.2	.37	1.05	1.16	46.0	25.0	2.10
16	.65	1.22	.58	.12	.08	21.1	5.64	.95	7.71	45.4	28.3	2.02
17	.65	1.00	*23.0	.12	.08	6.71	21.5	.85	1.00	43.7	29.1	2.88
18	31.5	1.10	.75	.10	.07	3.82	1.36	34.4	.90	39.1	50.3	33.3
19	3.12	.90	.48	.10	.10	2.70	1.10	24.3	.85	18.4	62.7	3.30
20	.95	.80	.37	.09	.08	1.94	1.10	2.02	.80	10.5	64.0	54.4
21	.80	.70	.30	.12	.07	1.57	.90	1.57	18.2	7.42	60.8	61.5
22	4.67	.65	.30	.09	.07	1.22	1.15	1.64	54.6	9.45	56.1	9.80
23	31.6	.62	.30	.09	17.3	.95	2.82	1.57	49.2	42.0	47.2	16.7
24	3.49	.58	.40	.08	26.9	.85	1.86	1.29	*9.75	50.6	38.3	33.6
25	1.36	.54	.24	.07	.16	.75	.95	1.10	1.64	48.3	31.9	3.44
26	1.15	.58	.22	.07	.10	.65	.85	1.05	1.64	*41.8	33.6	1.71
27	1.10	.58	.20	.05	.06	.58	.75	1.00	1.43	40.2	29.0	1.50
28	1.00	.54	.22	.05	.06	.51	.65	1.00	1.23	38.3	28.4	1.36
29	.85	.58	.20	.06	.12	.48	.65	--------	6.35	36.5	33.7	1.36
30	.85	.54	.18	.05	.20	.48	.65	--------	2.10	38.6	20.2	2.15
31	9.49	.58	--------	.06	--------	.44	.94	--------	2.02	--------	17.5	--------
Total	143.18	136.81	39.35	5.32	46.45	152.77	86.22	85.03	194.25	586.80	1,049.63	360.36
Mean												
Mgd	4.62	4.41	1.31	0.172	1.55	4.93	2.78	3.04	6.27	19.6	33.8	12.0
Cfs	7.15	6.82	2.03	0.266	2.40	7.63	4.30	4.70	9.70	30.3	52.3	18.6
Ac-ft	439	420	121	16	142	469	265	261	596	1800	3220	1110

Calendar Year 1962: Max 60.6 Min 0.04 Mean mgd 4.03 Mean cfs 6.24 Ac-ft 4520
Fiscal Year 1962-63: Max 64.0 Min 0.04 Mean mgd 7.91 Mean cfs 12.2 Ac-ft 8860

* Discharge measurement made on this day.

6180. Kahakuloa Stream near Honokohau

Location.--Lat 20°58'54", long 156°33'26", on right bank 0.5 mile 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.--3.47 sq mi.

Records available.--July 1939 to August 1943, September 1947 to June 1963. Records for January 1913 to December 1914 (fragmentary), at site 1 mile upstream not equivalent owing to difference in drainage areas.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 330 ft (from topographic map).

Average discharge.--18 years (1940-43, 1948-63), 11.0 mgd (17.0 cfs).

Extremes.--Maximum discharge during year, 504 mgd (780 cfs) Apr. 14 (gage height, 6.32 ft), from rating curve extended above 110 mgd on basis of slope-area measurement at gage height 8.35 ft; minimum, 2.29 mgd (3.54 cfs) on many days.

1939-43, 1947-63: 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, 1.95 mgd (3.02 cfs) Feb. 9-11, 1954.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

2.6	1.57	3.4	18.5
2.7	2.47	3.6	29.0
2.9	4.93	3.8	44.5
3.0	6.55	4.0	64.0
3.2	11.0	4.5	125

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.03	13.5	3.72	6.16	2.38	2.69	2.91	6.86	29.6	4.53	5.25	4.66
2	3.14	9.42	3.99	3.85	2.47	2.38	2.80	3.25	8.86	4.53	4.26	4.53
3	3.99	6.49	3.25	3.25	8.32	2.38	2.91	2.91	4.26	3.58	4.12	4.39
4	4.12	18.6	3.03	3.25	3.36	2.29	2.80	2.80	3.58	4.30	53.1	4.53
5	5.30	5.42	3.03	3.14	2.58	2.29	2.69	2.69	3.36	4.12	15.3	4.53
6	3.99	4.53	7.32	3.03	2.58	2.29	2.69	2.69	11.4	3.85	20.2	4.93
7	3.36	4.12	3.36	3.03	3.72	*2.29	40.8	2.58	5.49	3.72	39.7	5.09
8	3.14	3.72	3.03	3.14	2.91	2.29	14.3	2.58	3.72	13.1	8.36	5.84
9	4.26	3.47	2.91	3.36	2.58	2.29	5.83	2.47	3.36	13.5	12.0	6.03
10	4.12	3.36	3.03	3.25	2.47	2.29	3.85	2.69	3.14	29.2	23.9	5.42
11	3.85	3.36	3.03	3.03	2.47	2.29	3.99	2.47	*3.03	12.1	27.9	9.53
12	19.6	3.25	3.03	2.91	2.38	2.29	3.36	6.54	3.03	4.93	11.3	4.66
13	4.97	6.73	3.36	2.91	2.38	2.73	3.14	25.3	9.32	17.4	20.2	4.26
14	5.87	4.80	3.25	2.80	2.38	110	2.91	27.5	8.73	57.4	41.1	3.99
15	3.58	4.53	2.91	2.80	2.29	52.8	2.80	4.93	3.99	20.9	26.8	3.85
16	3.36	4.26	15.3	2.80	2.29	11.8	52.2	3.72	3.36	15.5	13.1	3.85
17	9.91	3.99	26.1	2.80	2.29	9.65	14.1	3.25	3.36	9.04	53.2	17.4
18	8.11	10.1	4.66	2.80	2.29	28.6	4.80	66.8	4.26	6.06	40.7	12.3
19	4.53	5.25	3.72	2.80	2.29	5.58	3.85	21.8	3.72	5.25	12.0	*5.76
20	3.99	4.12	3.36	2.69	2.29	4.26	8.93	5.90	3.14	4.66	49.9	7.27
21	3.72	3.58	3.58	2.69	2.29	3.99	4.66	4.53	3.99	4.53	13.3	11.0
22	44.5	3.36	3.47	2.69	2.58	4.93	4.37	3.99	13.8	4.39	8.15	4.93
23	23.3	3.25	3.25	3.03	2.91	3.36	4.99	3.58	50.6	4.53	6.55	4.66
24	6.82	3.14	3.85	3.03	2.69	3.14	6.26	3.47	6.53	8.32	5.74	14.5
25	4.53	3.03	3.58	*2.69	2.58	3.03	5.01	3.36	4.66	6.14	5.42	6.95
26	4.12	2.91	3.85	2.47	4.86	2.91	3.47	3.25	13.9	6.06	26.7	4.93
27	6.51	2.91	3.47	2.47	3.36	2.91	3.36	3.58	8.07	7.15	7.58	5.40
28	7.59	2.91	3.25	2.47	2.58	2.91	3.14	3.14	17.2	45.2	6.43	4.53
29	3.99	3.03	3.25	2.47	2.47	2.91	2.91	------	4.93	*10.9	5.90	6.93
30	7.37	3.03	3.03	2.47	2.47	4.40	2.80	------	4.12	6.06	5.09	9.66
31	4.53	3.03	------	2.38	------	3.25	3.68	------	5.09	------	4.80	------
TOTAL	223.20	157.20	139.97	92.66	85.51	291.22	226.31	228.63	255.60	340.95	578.05	196.31
MEAN												
MGD	7.20	5.07	4.67	2.99	2.85	9.39	7.30	8.17	8.25	11.4	18.6	6.54
CFS	11.1	7.84	7.22	4.62	4.41	14.5	11.3	12.6	12.8	17.6	28.8	10.1
AC-FT	685	482	430	284	262	894	695	702	784	1,050	1,770	602

CALENDAR YEAR 1962:	MAX	110	MIN	2.29	MEAN MGD	7.02	MEAN CFS	10.9	AC-FT	7,870
FISCAL YEAR 1962-63:	MAX	110	MIN	2.29	MEAN MGD	7.71	MEAN CFS	11.9	AC-FT	8,640

* Discharge measurement made on this day.

Peak discharge (base, 400 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-14	1400	6.32	504	780

6200. Honokohau Stream near Honokohau

Location.--Lat 20°57'48", long 156°35'22", on right bank 1,000 ft upstream from intake of Honokohau ditch and 5 miles southeast of Honokohau.

Drainage area.--4.09 sq mi.

Records available.--September, November and December 1911 (combined flow of stream and ditch below point of diversion), March 1913 to September 1920, May 1922 to June 1963. Monthly discharge only for some periods, published in WSP 1319.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 950 ft (by barometer). Prior to Mar. 7, 1913, staff gage at site just below Honokohau ditch intake at different datum.

Average discharge.--48 years (1913-20, 1922-63), 26.1 mgd (40.4 cfs).

Extremes.--Maximum discharge during year, 720 mgd (1,110 cfs) Jan. 16 (gage height, 5.40 ft), from rating curve extended above 120 mgd as explained below; minimum, 5.70 mgd (8.82 cfs) on many days.

1911, 1913-20, 1922-63: Maximum discharge, 2,420 mgd (3,740 cfs) Dec. 14, 1942, Aug. 30, 1957 (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. No diversion above station. All medium and low flow, together with the inflow from 2 development tunnels below station, is diverted into Honokohau ditch.

Rating table (gage height, in feet and discharge, in million gallons a day)

1.8	4.70
2.0	9.20
2.3	20.3
2.6	38.0
3.0	75.0
3.5	147

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	8.20	65.0	9.18	12.3	6.30	7.45	6.50	11.7	20.2	6.70	11.7	56.1
2	19.3	39.4	10.2	7.95	6.50	6.30	6.30	6.95	10.3	6.50	8.95	17.7
3	16.3	16.5	7.95	8.20	16.1	6.10	6.10	6.30	6.30	6.50	11.2	22.5
4	16.0	41.8	7.70	8.10	6.95	5.90	6.10	5.90	5.90	7.45	48.9	15.3
5	14.2	11.1	8.79	7.95	6.50	5.90	6.10	5.90	6.10	7.70	30.0	18.5
6	8.95	9.82	28.6	7.70	6.50	5.70	5.90	5.90	21.4	7.20	89.5	14.5
7	7.95	9.51	8.20	7.95	7.45	5.70	64.5	6.30	7.95	6.70	97.3	14.9
8	7.95	8.70	7.70	7.45	6.50	5.70	15.7	5.90	6.30	17.5	14.5	17.6
9	19.7	8.45	7.45	9.75	6.30	5.90	7.95	5.70	5.90	10.7	43.1	24.7
10	12.7	8.20	7.45	7.45	6.10	*9.38	6.70	6.95	5.70	24.7	75.8	21.1
11	15.0	7.95	7.95	6.95	6.10	7.91	10.8	5.90	5.70	9.87	112	21.8
12	63.7	9.04	10.2	6.95	6.10	6.10	6.70	5.90	5.90	6.95	71.7	13.0
13	13.1	27.1	14.2	6.70	6.10	9.19	6.30	10.9	*7.39	75.2	51.8	12.3
14	13.1	29.4	*8.20	6.70	6.10	98.2	6.10	31.5	13.2	86.4	98.0	12.3
15	8.45	15.4	8.81	6.50	6.10	115	5.90	7.20	24.4	46.8	56.1	12.3
16	8.45	10.4	20.8	6.50	5.90	13.9	102	6.10	12.5	48.5	49.3	12.7
17	19.4	10.1	19.2	6.70	5.90	17.0	15.4	5.90	12.6	29.3	136	28.7
18	58.3	19.5	8.95	6.70	5.90	22.0	7.45	35.8	6.95	17.2	111	38.1
19	12.7	11.7	7.70	6.50	5.90	8.20	6.70	13.5	6.30	13.4	32.6	14.9
20	8.95	8.95	9.51	7.20	5.90	7.20	16.1	6.95	8.12	10.7	80.6	33.6
21	14.0	8.20	10.4	6.70	5.90	7.20	7.45	6.30	45.4	9.20	38.7	*28.8
22	67.6	7.95	11.4	6.50	10.0	7.45	24.7	6.10	130	11.1	22.4	13.4
23	41.5	7.70	8.70	6.70	14.8	6.70	9.40	5.90	70.5	12.2	15.3	20.7
24	12.3	7.45	11.4	6.95	10.5	6.50	12.0	5.90	11.1	42.7	14.5	31.9
25	9.51	7.45	7.95	6.50	9.15	6.30	8.20	5.70	7.95	26.0	13.8	25.6
26	9.68	7.95	9.51	*6.30	12.2	6.30	6.70	5.70	29.0	44.7	30.3	14.5
27	13.6	7.95	7.70	6.30	7.45	6.10	8.69	5.70	15.9	21.7	15.3	16.8
28	13.0	8.45	8.95	6.30	6.70	6.10	*6.30	5.70	27.2	93.3	13.8	23.0
29	8.95	7.95	7.70	6.30	6.30	8.25	6.10	------	8.20	27.8	13.4	22.7
30	*21.4	7.70	6.95	6.30	11.8	32.6	6.70	------	7.45	*28.9	13.0	29.9
31	25.1	8.45	------	6.30	------	7.70	14.3	------	7.45	------	13.0	------
TOTAL	589.04	455.22	309.40	223.35	230.00	469.93	425.84	244.15	559.26	763.57	1,433.55	649.9
MEAN												
MGD	19.0	14.7	10.3	7.20	7.67	15.2	13.7	8.72	18.0	25.5	46.2	21.7
CFS	29.4	22.7	16.0	11.1	11.9	23.5	21.3	13.5	27.9	39.4	71.5	33.5
AC-FT	1,810	1,400	950	685	706	1,440	1,310	749	1,720	2,340	4,400	1,990

CALENDAR YEAR 1962: MAX 115 MIN 5.70 MEAN MGD 14.9 MEAN CFS 23.1 AC-FT 16,690
FISCAL YEAR 1962-63: MAX 136 MIN 5.70 MEAN MGD 17.4 MEAN CFS 26.9 AC-FT 19,500

* Discharge measurement made on this day.

Peak discharge (base, 700 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-16	1930	5.40	720	1,110

6290. Honokowai ditch near Lahaina

Location.--Lat 20°55'57", long 156°37'31", on left bank just downstream from intake on Kapaloa Stream and 5.4 miles northeast of Lahaina lighthouse.

Records available.--July 1912 to December 1917, November 1918 to January 1958, June 1958 to June 1963. Monthly discharge only January 1916, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 1,600 ft (from topographic map). Prior to Jan. 1, 1918, 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.--47 years (1912-16, 1919-57, 1958-63), 5.81 mgd (8.99 cfs).

Extremes.--1912-63: Maximum daily discharge, 43 mgd (66 cfs) June 30, 1930; no flow at times.

Remarks.--Records good. Ditch diverts for irrigation and domestic use from Amalu and Kapaloa Streams just above station.

Cooperation.--Records of daily discharge since July 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.15	17.0	2.55	2.80	2.05	3.23	2.65	5.26	4.76	2.26	4.49	15.2
2	5.64	9.93	2.55	3.04	2.05	2.86	2.55	3.25	3.62	2.35	3.11	4.36
3	5.34	5.33	2.55	2.89	2.88	2.55	2.55	2.60	2.41	2.35	4.09	5.75
4	5.07	9.22	2.55	3.20	2.33	2.55	2.55	2.16	2.23	2.48	7.71	3.71
5	4.92	3.83	2.55	3.29	2.45	2.55	2.55	1.95	2.15	2.68	6.55	4.66
6	3.21	3.20	7.71	2.72	2.45	2.55	2.55	1.95	4.47	2.65	18.4	2.97
7	2.97	3.15	2.92	2.55	2.45	2.55	12.3	2.05	2.88	2.35	18.1	3.05
8	2.92	3.15	2.68	2.48	2.45	2.55	5.61	2.05	2.37	3.62	3.86	2.65
9	6.55	3.15	2.55	2.85	2.45	2.55	3.28	2.05	2.25	2.94	14.5	5.57
10	4.70	3.04	2.55	2.55	2.45	4.06	2.95	2.05	2.25	4.78	18.2	4.24
11	6.49	3.04	2.55	2.35	2.45	3.59	4.76	2.05	2.13	2.52	22.0	3.72
12	15.6	3.04	2.55	2.35	2.35	2.59	2.99	2.05	2.05	2.26	17.3	2.31
13	4.75	7.52	3.46	2.35	2.35	4.37	2.80	1.55	2.05	11.0	10.7	2.08
14	3.61	11.3	3.39	2.35	2.35	13.0	2.64	3.27	2.05	12.0	18.9	1.95
15	3.15	6.01	3.39	2.29	2.35	15.4	2.55	2.16	9.08	12.2	15.8	1.95
16	*2.92	3.75	5.50	2.25	2.35	3.55	5.56	1.75	4.74	12.9	8.53	1.95
17	4.39	3.11	4.22	2.25	2.35	3.52	4.98	1.75	4.80	6.76	20.9	3.94
18	11.8	2.92	2.94	2.35	2.35	5.27	2.98	4.27	2.61	5.39	22.5	9.43
19	4.52	2.92	2.58	2.35	2.41	3.08	2.92	3.49	2.55	3.48	7.06	2.52
20	3.29	2.83	2.79	2.35	2.45	2.80	4.84	2.45	2.71	3.88	15.0	8.79
21	3.94	2.80	3.33	2.45	2.45	2.80	2.66	2.35	14.0	2.97	6.86	6.38
22	9.64	2.80	4.42	2.45	2.55	2.80	11.0	2.35	26.5	3.80	4.69	2.71
23	7.84	2.92	3.32	2.45	4.79	2.80	4.20	2.35	13.0	4.65	3.41	4.47
24	3.90	2.92	4.33	2.45	4.12	2.55	5.19	2.35	3.55	16.2	3.10	6.18
25	3.17	2.82	3.03	2.45	3.33	2.55	3.62	2.16	2.66	9.02	2.86	4.70
26	3.15	2.80	2.92	2.45	2.71	2.55	2.92	2.05	8.44	14.7	2.62	2.78
27	3.97	2.60	2.80	2.45	2.55	2.55	2.92	2.05	5.70	8.20	2.55	2.81
28	3.67	2.55	2.80	2.45	2.55	2.55	2.85	2.05	8.89	22.6	2.55	6.33
29	3.15	2.55	2.80	2.23	2.68	2.55	2.15	--------	3.03	9.14	2.48	5.49
30	3.12	2.55	2.80	2.05	4.68	9.60	2.37	--------	2.55	10.6	2.25	7.81
31	6.98	2.55	--------	2.05	--------	3.37	6.47	--------	2.44	--------	2.25	--------
Total	157.52	137.30	97.08	77.54	80.18	121.84	122.91	67.87	154.92	202.73	293.32	140.46
Mean												
Mgd	5.08	4.43	3.24	2.50	2.67	3.93	3.96	2.42	5.00	6.76	9.46	4.68
Cfs	7.86	6.85	5.01	3.87	4.13	6.08	6.13	3.74	7.74	10.5	14.6	7.24
Ac-ft	483	421	298	238	246	374	377	208	475	622	900	431

Calendar Year 1962: Max 19.7 Min 2.05 Mean mgd 4.19 Mean cfs 6.48 Ac-ft 4,700
Fiscal Year 1962-63: Max 26.5 Min 1.55 Mean mgd 4.53 Mean cfs 7.01 Ac-ft 5,070

* Discharge measurement made on this day.

6385. Kahoma Stream at Lahaina

Location.--Lat 20°53'10", long 156°40'36", on right bank 0.2 mile west of Kelavea, 0.6 mile northeast of Lahaina, 0.6 mile downstream from Kanaha Stream, and 0.9 mile upstream from mouth.

Drainage area.--5.22 sq mi.

Records available.--October 1962 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 90 ft (from topographic map).

Extremes.--Maximum discharge during period October to June, 342 mgd (529 cfs) Jan. 16 (gage height, 6.01 ft), from rating curve extended above 45 mgd on basis of slope-area measurement of peak flow; no flow for many days.

Maximum discharge known, 5,010 mgd (7,750 cfs) May 13, 1960, by slope-area measurement of peak flow at site 0.5 mile upstream.

Remarks.--Records good except those below 10 mgd, which are fair. Diversion above station by Pioneer Mill Co. for irrigation of suger cane. Diversion from Kanaha Stream above station by Maui County Board of Water Supply for domestic use.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

Oct. 23 to Apr. 13

1.25	0	1.8	1.58
1.3	.01	1.9	2.60
1.4	.02	2.1	5.55
1.5	.10	2.3	9.90
1.6	.36	2.6	19.2
1.7	.84	3.0	38.0

Apr. 14 to June 30

1.49	0	2.1	1.18
1.5	.01	2.2	1.96
1.6	.02	2.3	3.10
1.7	.06	2.4	4.60
1.8	.15	2.6	9.20
1.9	.34	2.9	20.8
2.0	.67	3.3	45.0

Discharge, in million gallons a day, October 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				-			0	0.14	0	0	0	7.69
2				-			0	0	0	0	0	.59
3				-			0	0	0	0	0	.07
4				-			0	0	0	0	0	.15
5				-			0	0	0	0	.02	.20
6				-			0	0	0	0	.13	.28
7				-			*8.22	0	0	0	.04	.03
8				-			*1.28	0	0	0	0	.01
9				-			.18	0	0	0	0	0
10				-		(*)	.49	0	0	0	0	0
11				-			1.40	0	0	0	10.5	0
12				-			.02	.01	0	0	3.32	0
13				-			.01	0	0	25.7	0	0
14				-			0	0	0	18.4	8.76	0
15				-			0	0	0	7.26	.62	0
16				-			*36.2	0	0	32.7	7.02	0
17				-			4.78	0	0	5.50	38.3	0
18				-			0	0	*0	4.87	8.98	0
19				-			0	0	0	.02	1.20	0
20				-			0	0	0	.01	1.04	0
21				-			0	0	11.6	0	.51	.02
22				-			11.7	0	25.0	.19	0	0
23				*0			.62	0	2.46	0	0	0
24				0			.03	0	0	2.23	0	0
25				0			.04	0	0	.12	0	0
26				0			.02	0	.21	0	0	0
27				0			.01	0	0	0	0	0
28				0			0	0	8.03	2.41	0	0
29				0			0	--------	0	3.97	0	0
30				0	(*)		0	--------	0	0	0	0
31				0	--------		.13	--------	0	--------	0	--------
Total				-	0	0	65.13	0.15	47.30	103.38	80.44	9.04
Mean												
Mgd				-	0	0	2.10	0.005	1.53	3.45	2.59	0.301
Cfs				-	0	0	3.25	0.008	2.37	5.34	4.01	0.467
Ac-ft				-	0	0	200	0.5	145	317	247	28

Calendar Year 1962: Max - Min - Mean mgd - Mean cfs - Ac-ft -
Fiscal Year 1962-63: Max - Min - Mean mgd - Mean cfs - Ac-ft -

* Discharge measurement or observation of no flow made on this day.

Peak discharge (base, 250 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	2000	6.01	342	529	5-16	2400	5.85	318	492
4-13	1830	5.78	307	475					

6450 (formerly 6460). Olowalu ditch near Olowalu

Location.--Lat 20°49'33", long 156°36'47", on left bank 1.2 miles northeast of Olowalu and 5.5 miles southeast of Lahaina.

Records available.--August 1911 to January 1916, April 1916 to September 1920, November 1920 to January 1958, June 1958 to June 1963. Prior to July 1913, published as Olowalu ditch 1 near Olowalu. Monthly discharge only for June 1932, published in WSP 1319.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 480 ft (from topographic map). 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 30, 1932, water-stage recorder, at site 300 ft upstream at different datum. July 1, 1932, to Oct. 7, 1933, records obtained by combining flows at three stations about 1,000 ft downstream.

Average discharge.--47 years (1912-15, 1917-20, 1921-57, 1958-63), 4.83 mgd (7.47 cfs).

Extremes.--1911-63: Maximum daily discharge, 13.7 mgd (21.2 cfs) Apr. 17, 1935; no flow at times.

Remarks.--Records good. Ditch diverts from Olowalu Stream at altitude of 520 ft (corrected) for irrigation and domestic use.

Cooperation.--Records of daily discharge since July 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.38	6.04	2.39	2.47	1.97	1.85	2.65	9.56	5.53	6.19	9.06	8.66
2	2.64	6.15	2.41	2.18	1.99	1.82	2.50	7.78	4.14	7.92	7.90	8.61
3	2.71	6.00	4.73	2.09	1.99	1.85	2.41	6.35	3.13	6.63	7.26	7.87
4	2.69	6.19	5.83	2.11	1.99	1.84	2.34	5.57	2.87	6.38	7.89	6.57
5	2.60	5.88	5.89	2.11	1.98	1.83	2.32	5.12	2.78	5.54	8.35	5.39
6	2.41	4.89	7.21	2.03	2.00	1.86	2.26	5.13	2.90	4.83	9.70	5.25
7	2.32	4.01	6.06	1.97	2.08	1.86	6.40	5.00	2.78	4.38	9.90	5.25
8	2.29	3.48	5.84	1.95	1.93	1.87	8.21	4.46	2.66	5.23	9.25	5.25
9	3.69	3.19	5.76	1.98	1.90	2.61	5.90	4.29	2.59	5.11	9.00	5.15
10	2.91	2.98	4.18	1.94	1.86	5.04	4.71	5.72	2.53	6.05	9.27	5.24
11	2.62	2.86	3.37	1.93	1.82	4.14	7.66	4.46	2.53	8.57	9.39	5.21
12	5.42	2.79	3.38	1.90	1.83	2.62	6.17	4.09	2.48	7.01	9.16	5.12
13	3.67	4.29	3.37	1.88	1.84	5.86	4.74	3.90	2.45	7.15	9.48	5.03
14	2.78	5.01	2.71	1.88	1.84	6.48	3.99	4.59	2.43	10.7	9.62	4.97
15	2.48	5.32	2.42	1.89	1.84	8.01	3.57	3.82	2.63	9.86	9.63	4.87
16	*2.36	4.15	2.82	1.89	1.83	7.49	4.51	3.60	2.77	7.15	9.46	4.69
17	2.54	3.67	2.51	4.47	1.84	6.16	7.26	3.43	2.61	8.42	9.80	4.91
18	3.60	4.56	1.78	2.96	1.85	5.76	8.65	3.45	2.61	9.40	9.80	5.10
19	3.52	3.99	1.67	2.80	1.88	4.42	6.50	3.50	2.55	9.40	9.93	5.42
20	2.84	3.47	1.74	5.42	1.83	3.75	7.95	3.22	2.42	9.15	10.0	6.76
21	2.70	3.13	1.77	3.94	1.81	3.88	5.37	3.10	3.50	8.28	9.69	7.03
22	2.70	2.93	1.77	2.97	2.03	3.60	9.25	2.97	5.16	7.71	9.47	6.42
23	4.22	2.81	1.76	2.58	2.63	2.99	11.0	2.91	5.36	7.73	9.23	6.04
24	2.96	2.66	1.90	2.35	2.32	2.81	10.6	2.85	5.08	8.61	9.1	6.75
25	2.28	2.57	1.70	2.25	2.35	2.73	8.66	2.81	5.03	7.65	8.98	6.62
26	2.02	2.60	1.82	2.18	2.14	2.63	7.62	2.82	5.25	8.15	8.91	6.06
27	2.51	2.62	1.69	2.11	1.97	2.54	9.09	2.77	7.33	8.33	9.28	5.79
28	2.83	2.56	1.97	2.09	1.86	2.45	7.07	2.72	8.33	9.50	8.77	5.63
29	2.61	2.51	2.10	2.07	1.82	2.59	6.36	--------	5.33	10.0	8.37	5.96
30	3.52	2.42	2.03	2.04	1.85	3.83	6.80	--------	5.33	9.57	7.89	7.09
31	3.99	2.41	--------	2.01	--------	2.91	8.92	--------	5.33	--------	7.36	--------
Total	90.81	118.14	94.58	74.44	58.87	110.08	191.44	119.99	118.42	230.60	280.90	178.81
Mean												
Mgd	2.93	3.81	3.15	2.40	1.96	3.55	6.18	4.29	3.82	7.69	9.06	5.96
Cfs	4.53	5.89	4.87	3.71	3.03	5.49	9.56	6.64	5.91	11.9	14.0	9.22
Ac-ft	279	363	290	228	181	338	588	368	363	708	862	549

Calendar Year 1962: Max 9.01 Min 1.67 Mean mgd 3.83 Mean cfs 5.93 Ac-ft 4300
Fiscal Year 1962-63: Max 11.0 Min 1.67 Mean mgd 4.57 Mean cfs 7.07 Ac-ft 5120

* Discharge measurement made on this day.

6600. Kulanihakoi Gulch near Kihei

Location.--Lat 20°46'06", long 156°27'03", on right bank 0.5 mile northeast of Lihue Cemetery, 0.8 mile upstream from mouth and 1.3 miles southeast of Kihei.

Drainage area.--14.4 sq mi.

Records available.--October 1962 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 35 ft (from topographic map).

Extremes.--Maximum discharge during period October to June, 290 mgd (449 cfs) Jan. 16 (gage height, 4.02 ft), from rating curve extended above 52 mgd on basis of slope-area measurement of peak flow; no flow for many days.

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

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.92	0	1.5	2.32
1.0	.04	1.7	4.90
1.1	.20	1.9	9.30
1.2	.50	2.1	16.2
1.3	.91	2.4	32.5
1.4	1.50		

Discharge, in million gallons a day, October 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				-			0	0.46	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				-			0	0	0		0	
11				-			0	0	0		0	
12				-			0	0	0		0	
13				-			0	0	0		0	
14				-			0	0	0		0	
15				-			0	0	0		0	
16				-			*28.5	0	0		.23	
17				-			7.16	0	0		0	
18				-			0	0	0		0	
19				-			0	0	0	(*)	0	
20				-			0	0	0		0	
21				-			0	0	0		0	
22				-			*3.52	0	0		0	
23				-			0	0	0		0	
24				-			0	0	0		0	(*)
25				-			0	0	0		0	
26				-			0	0	.05		0	
27				-			0	0	.31		0	
28				-			0	0	.61		0	
29				-			0	--------	.01		0	
30				*0	(*)		.15	--------	0		0	
31				0	--------		.06	--------	0	--------	0	--------
Total				-	0	0	39.39	0.46	0.98	0	0.23	0
Mean												
Mgd				-	0	0	1.27	0.016	0.032	0	0.007	0
Cfs				-	0	0	1.96	0.025	0.050	0	0.011	0
Ac-ft				-	0	0	121	1.4	3.0	0	0.7	0

Calendar Year 1962: Max - Min - Mean mgd - Mean cfs - Ac-ft -
Fiscal Year 1962-63: Max - Min - Mean mgd - Mean cfs - Ac-ft -

* Discharge measurement or observation of no flow made this day.

Peak discharge (base, 40 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
1-16	2230	4.02	290	449	1-22	1430	2.81	70.2	109

7000. Waiakea Stream near Mountain View
(Formerly published as Waiakea Stream at middle flume house, near Mountain View)

Location (revised).--Lat 19°38'30", long 155°10'30", on left bank 450 ft upstream from Olaa Flume Road and 7.5 miles northwest of Mountain View.

Drainage area.--Not determined.

Records available.--September 1930 to June 1963. Prior to July 1962, published as "at middle flume house, near Mountain View."

Gage.--Water-stage recorder and combined Parshall flume and concrete-weir control. Datum of gage is 1,934 ft above mean sea level (by stadia survey).

Average discharge.--32 years (1931-63), 7.47 mgd (11.6 cfs).

Extremes.--Maximum discharge during year, 99.6 mgd (154 cfs) Apr. 17 (gage height, 3.68 ft); minimum, 0.11 mgd (0.17 cfs) Feb. 14-17, 25, 26.

1930-63: 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 formulas; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Large part of flow comes from 3 tunnels.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0	0	0.9	4.20
.1	.12	1.8	12.0
.2	.38	2.3	20.0
.3	.73	3.3	53.0
.5	1.65	3.5	71.0

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	3.64	1.45	3.92	0.86	4.20	3.29	0.52	0.12	10.2	25.1	10.2
2	2.5	3.99	1.45	3.92	.77	4.13	3.08	.45	.12	9.64	22.1	10.3
3	3.0	4.34	1.35	3.64	.73	4.06	2.94	.38	.12	8.92	19.0	11.0
4	4.0	4.27	1.25	3.50	.66	3.78	2.74	.35	.12	8.02	18.4	11.4
5	4.5	4.41	1.20	3.36	*.59	3.50	2.62	.30	.12	7.22	17.0	11.9
6	4.0	4.06	1.11	3.36	.56	3.36	2.56	.28	.22	6.66	16.2	11.4
7	3.5	3.92	1.07	3.15	.52	*3.22	*2.44	*.22	2.47	6.18	19.1	11.4
8	2.5	3.85	.98	3.08	.45	3.08	2.50	.22	*2.54	5.78	16.8	10.8
9	2.0	3.64	.98	*2.94	.42	2.94	2.32	.20	2.10	5.30	16.6	11.4
10	2.0	3.36	1.02	2.68	.35	2.80	2.20	.17	1.20	4.83	24.7	11.0
11	2.5	3.15	1.40	2.62	.33	2.68	2.09	.15	.86	4.48	29.9	10.1
12	3.0	3.08	2.53	2.50	.30	2.62	1.98	.15	2.03	*4.41	31.4	9.64
13	3.5	3.01	3.15	2.44	.28	2.56	1.87	.12	3.50	4.34	33.8	9.10
14	3.0	2.87	2.44	2.44	.25	2.80	1.76	.12	3.68	9.70	31.4	8.38
15	2.5	3.29	2.14	2.38	.25	8.62	1.65	.12	9.83	28.5	27.2	7.66
16	2.0	2.80	6.17	2.20	.25	8.94	1.55	.12	10.5	43.4	22.7	7.06
17	*1.87	2.68	9.28	2.09	.30	7.75	1.50	.12	11.5	*60.2	19.2	7.14
18	2.68	2.62	8.20	1.98	.33	6.98	1.40	.12	11.1	66.1	18.4	7.22
19	3.15	3.15	*7.06	1.87	.30	6.58	1.30	1.84	10.4	55.1	16.0	7.06
20	2.80	2.74	6.26	1.76	.38	6.10	1.15	.38	10.1	50.6	14.4	7.93
21	3.08	2.56	5.62	1.70	.59	5.70	1.11	.17	10.8	44.6	12.6	7.75
22	3.71	2.44	5.54	1.60	.86	5.54	1.02	.15	12.3	36.8	11.9	7.48
23	3.78	*2.38	5.62	1.55	2.36	5.22	.98	.12	17.3	33.2	11.1	8.38
24	3.92	2.32	5.38	1.45	2.50	4.98	.94	.12	16.8	33.2	*11.4	8.20
25	3.85	2.14	5.06	1.35	1.70	4.69	.86	.12	16.4	31.1	10.2	8.65
26	3.64	2.04	4.76	1.25	1.87	4.48	.77	.12	16.6	32.4	9.64	8.74
27	3.36	1.87	4.62	1.15	1.65	4.20	.73	.12	16.4	35.2	8.92	8.92
28	3.22	1.82	4.55	1.11	1.76	3.92	.70	.12	15.2	32.3	8.38	8.83
29	3.01	1.70	4.34	1.02	1.82	3.71	.62	--------	13.3	30.2	8.56	8.65
30	3.01	1.60	4.06	.94	3.48	3.78	.59	--------	12.0	28.1	8.65	9.73
31	3.22	1.50	--------	.90	--------	3.50	.56	--------	10.9	--------	7.93	--------
Total	95.30	91.24	110.04	69.85	27.47	140.42	51.82	7.37	240.63	736.68	548.68	277.42
Mean												
Mgd	3.07	2.94	3.67	2.25	0.916	4.53	1.67	0.263	7.76	24.6	17.7	9.25
Cfs	4.75	4.55	5.68	3.48	1.42	7.01	2.58	0.407	12.0	38.1	27.4	14.3
Ac-ft	292	280	338	214	84	431	159	23	738	2260	1680	851

Calendar Year 1962: Max 153 Min 0.09 Mean mgd 3.52 Mean cfs 5.45 Ac-ft 3,940
Fiscal Year 1962-63: Max 66.1 Min 0.12 Mean mgd 6.57 Mean cfs 10.1 Ac-ft 7,350

* Discharge measurement made on this day.
Note.--No gage-height record July 1-16.

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-17	1300	3.68	99.6	154

7012. Waiakea Stream near Hilo

Location.--Lat 19°41'35", long 155°05'55", on right bank 2.5 miles south of Hilo Post Office and 3.0 miles southeast of Piihonua.

Drainage area.--97 sq mi, approximately, of which 79 sq mi is probably noncontributing.

Records available.--May 1957 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 369 ft above mean sea level (by stadia survey).

Average discharge.--6 years, 3.65 mgd (5.65 cfs).

Extremes.--Maximum discharge during year, 181 mgd (280 cfs) Apr. 16 (gage height, 4.30 ft); no flow for many days.

1957-63: Maximum discharge, 790 mgd (1,220 cfs) Aug. 30, 1957 (gage height, 5.88 ft), from rating curve extended above 150 mgd by logarithmic plotting; no flow at times each year.

Remarks.--Records good. Board of Water Supply, County of Hawaii, diverts about 25,000,000 gal per year above station at 1,500-ft elevation.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.46	0	1.0	0.25	2.2	9.80
.5	.01	1.1	.38	2.5	18.0
.6	.02	1.3	.80	3.0	39.0
.7	.05	1.5	1.50	3.5	76.0
.8	.09	1.7	2.70	4.0	136
.9	.16	1.9	4.70		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1			0							0	8.92	
2			0							0	2.43	
3			0							0	.26	
4			0							0	0	
5			0							0	0	
6			0							0	2.19	
7			0							0	11.7	
8			0							0	2.47	
9			0	(*)						0	2.06	
10			0							0	20.9	
11			0							0	31.5	
12			0							0	20.3	
13			0					(*)		0	21.4	
14			0							0	15.6	
15			0							*29.1	8.60	
16			0							*76.2	4.14	
17	(*)		*.13							*126	.58	
18			0							125	0	
19			0							85.0	0	
20			0						(*)	74.2	0	
21			0							62.2	0	
22			0							44.4	0	
23		(*)	0		(*)					38.3	0	
24			0							39.5	*0	
25			0							22.6	0	(*)
26			0			(*)				*29.7	0	
27			0							48.8	0	
28			0							21.4	0	
29			0					---------		*18.3	0	
30			0					---------		12.6	0	
31			------		----------			---------		------	0	--------
TOTAL	0	0	0.13	0	0	0	0	0	0	853.3	153.05	0
MEAN												
MGD	0	0	0.004	0	0	0	0	0	0	28.4	4.94	0
CFS	0	0	0.007	0	0	0	0	0	0	44.0	7.64	0
AC-FT	0	0	0.4	0	0	0	0	0	0	2,620	470	0

CALENDAR YEAR	1962:	MAX	0.13	MIN	0	MEAN MGD	0.0006	MEAN CFS	0.0009	AC-FT	0.7
FISCAL YEAR	1962-63:	MAX	126	MIN	0	MEAN MGD	2.76	MEAN CFS	4.27	AC-FT	3,090

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
4-16	2100	4.30	181	280	4-27	0300	3.85	116	179

* Discharge measurement or observation of no flow made on this day.

7040. 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 July 1940, October 1940 to December 1947, April 1948 to June 1963. Monthly discharge only July 1928, published in WSP 1319.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--33 years (1928-40, 1941-47, 1948-63), 178 mgd (275 cfs).

Extremes.--Maximum discharge during year, 10,600 mgd (16,400 cfs) Apr. 18 (gage height, 18.50 ft), from rating curve extended above 6,600 mgd; minimum observed, 0.19 mgd (0.29 cfs) Feb. 8.

1928-63: Maximum discharge, 41,000 mgd (63,400 cfs) Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 6,600 mgd; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Board of Water Supply, County of Hawaii, diverts about 1 mgd above station for domestic supply. Since March 1938, Kapehu ditch has diverted water from Kapehu Stream into Wailuku River above Pukamaui Falls. Water passing station is used for power by Hilo Electric Light Co.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	0.15	1.2	2.20	3.0	70.0	8.0	900
.6	.23	1.4	4.40	4.0	155	10.0	1,590
.7	.34	1.6	8.00	5.0	282	12.0	2,700
.8	.54	2.0	19.0	6.0	446	14.0	4,300
1.0	1.10	2.5	40.0	7.0	650	16.0	6,680

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	17.1	42.5	5.68	*22.5	2.20	177	20.4	0.6	0.2	49.8	758	664
2	17.1	42.5	8.00	3.5	*1.78	117	16.8	.7	.7	41.3	395	522
3	83.2	57.6	9.51	23.3	1.50	122	15.2	.5	.6	33.7	282	333
4	64.8	40.5	8.46	19.0	1.25	81.9	13.5	.4	.7	29.7	301	264
5	58.4	54.0	6.00	17.1	*1.04	55.8	12.4	.4	.8	41.5	340	357
6	22.0	32.2	5.20	25.3	.75	44.0	22.2	.3	23.7	38.0	358	220
7	26.9	26.9	4.04	28.5	*.6	*34.6	*14.9	.3	34.9	53.4	535	156
8	21.5	29.3	3.00	22.5	.5	29.7	22.5	*.2	14.7	33.2	358	140
9	18.7	25.3	2.30	21.8	.4	25.7	17.7	.2	13.2	39.0	423	231
10	20.8	20.8	6.40	22.9	.3	22.2	12.9	.2	5.84	31.4	1,420	410
11	27.3	18.7	10.6	18.4	.6	19.7	10.8	.2	3.56	26.1	2,860	196
12	44.1	21.5	25.8	15.2	.5	18.0	9.15	.2	16.1	*30.1	913	142
13	31.4	18.7	102	13.2	.4	15.5	7.60	.6	34.6	29.7	705	106
14	21.8	17.1	49.2	13.2	.3	18.7	6.40	*.3	43.8	706	615	85.6
15	19.4	68.0	27.7	19.4	.3	729	5.36	.3	476	4,460	468	74.9
16	*23.5	28.1	274	12.9	.6	514	4.40	.2	513	*5,910	312	67.9
17	54.6	19.0	690	10.6	3.23	186	3.44	.2	914	5,350	261	84.8
18	145	16.4	249	9.15	15.8	111	3.68	1.0	696	5,540	229	96.8
19	128	21.8	117	8.00	13.8	77.0	3.56	1.59	393	2,210	196	142
20	63.7	*25.3	83.3	7.60	12.6	55.8	3.56	.80	213	1,150	166	232
21	92.0	17.4	70.0	14.4	29.3	48.0	3.44	*.6	516	888	131	163
22	86.0	14.4	70.7	11.9	40.0	38.5	2.80	.5	408	610	135	119
23	105	12.6	79.1	13.2	133	31.9	2.50	.4	1,150	810	119	180
24	81.9	11.3	49.8	10.6	172	27.7	2.14	.4	516	1,430	175	150
25	64.4	10.1	39.0	9.61	57.6	25.3	1.78	.3	283	1,020	121	283
26	48.6	3.92	32.3	8.69	83.0	23.3	1.45	.3	172	931	93.6	318
27	39.5	8.00	30.5	6.80	57.6	26.5	1.15	.3	117	1,300	98.4	250
28	34.6	7.60	31.0	5.68	70.7	20.8	.98	.2	85.6	713	154	161
29	28.9	6.80	32.3	*4.56	52.8	18.4	.89	--------	84.7	786	173	127
30	28.5	6.40	24.5	3.80	162	20.5	.70	--------	115	1,140	299	193
31	32.8	5.36	------	*3.10	------	44.9	.5	--------	63.7	------	193	------
TOTAL	1,551.5	736.38	2,147.49	453.39	916.45	2,780.4	244.78	12.19	6,909.40	35,430.9	13,587.0	6,469.0
MEAN												
MGD	50.0	23.8	71.6	14.6	30.5	89.7	7.90	0.435	223	1,180	438	216
CFS	77.4	36.7	111	22.6	47.2	139	12.2	0.673	345	1,830	678	334
AC-FT	4,760	2,260	6,590	1,390	2,810	8,530	751	37	21,200	108,700	41,700	19,850

CALENDAR YEAR	1962:	MAX	729	MIN	0.30	MEAN MGD	65.2	MEAN CFS	101	AC-FT	72,990
FISCAL YEAR	1962-63:	MAX	5,910	MIN	0.20	MEAN MGD	195	MEAN CFS	302	AC-FT	218,600

Peak discharge (base, 5600 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
4-18	0330	18.50	10,600	16,400

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 7-16, Jan. 31 to Feb. 18, Feb. 21 to Mar. 5.

7176. Alia Stream near Hilo

Location.--Lat 19°50'40", long 155°06'15", on left bank 10 ft downstream from culvert on Mamalahoa Highway at Pepeekeo, 2.2 miles southeast of Honomu, and 8 miles north of Hilo.

Drainage area.--0.58 sq mi.

Records available.--April 1962 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 480 ft (from topographic map).

Extremes.--1962: Maximum discharge during period April to June, 94.0 mgd (145 cfs) May 4 (gage height, 3.09 ft), from rating curve extended above 27 mgd as explained below; minimum, 3.24 mgd (5.09 cfs) June 27.
1962-63: Maximum discharge during fiscal year, 148 mgd (229 cfs) May 11 (gage height, 3.54 ft), from rating curve extended above 27 mgd by logarithmic plotting; minimum, 0.70 mgd (1.08 cfs) sometime during period Jan. 24 to Feb. 12.

Remarks.--Records good except those for periods of backwater from debris, which are fair, and those for periods of no gage-height record, which are poor. No diversion above station. Spring water not used by sugar mills enters stream above station.

Discharge in million gallons a day, April to June, 1962

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	-	6.18	6.46	7	-	8.42	6.32	13	5.18	7.94	5.66	19	*4.89	8.26	7.30	25	3.93	9.44	3.60
2	-	14.2	5.66	8	-	7.62	8.10	14	4.37	7.62	5.30	20	8.10	7.62	5.54	26	3.60	9.62	3.33
3	-	10.5	5.90	9	-	6.60	9.44	15	4.23	13.4	5.42	21	7.30	8.26	4.59	27	3.82	9.44	3.42
4	-	12.0	4.82	10	8.58	7.16	9.80	16	7.30	11.2	8.05	22	6.04	8.10	4.26	28	6.60	8.90	3.51
5	-	8.90	4.26	11	5.66	6.46	9.08	17	4.70	9.66	6.82	23	6.88	8.32	3.93	29	6.18	8.58	4.59
6	-	8.58	5.50	12	5.42	8.10	*6.74	18	3.71	8.90	9.08	24	4.82	8.74	3.82	30	5.90	7.94	5.06
																31	-	7.46	-
Total																	-	274.12	175.36
Mean, in million gallons a day																	-	8.84	5.85
Mean, in cubic feet per second																	-	13.4	9.05
Runoff in acre-feet																	-	841	538

Peak discharge (base, 80 mgd).--May 4 (1330) 94.0 mgd (145 cfs), 3.09 ft.
* Discharge measurement made on this day.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.60	5.66	3.82	4.37	2.62	3.33	3.42	1.4	1.34	6.46	10.9	7.16
2	3.93	6.18	4.37	*4.70	2.54	2.97	3.33	1.5	4.34	6.18	10.2	6.66
3	7.02	*6.04	*4.37	4.26	2.54	2.88	3.42	1.5	2.46	5.90	9.44	6.60
4	7.02	6.32	4.15	3.82	2.46	2.79	3.33	1.3	1.98	5.66	9.08	6.60
5	7.16	6.32	3.93	3.71	*2.38	2.54	3.15	1.1	2.22	6.04	9.26	7.16
6	5.78	5.54	4.26	4.94	2.22	2.22	5.26	1.0	3.09	5.66	19.1	6.60
7	3.24	4.94	3.60	5.42	*1.74	2.06	3.82	.9	5.78	9.57	17.5	6.32
8	2.46	5.18	3.24	5.18	1.34	1.82	3.60	.8	4.94	6.95	11.2	6.16
9	2.14	4.70	3.15	5.06	1.26	1.66	*4.15	.8	3.60	7.81	11.1	6.46
10	2.88	4.26	3.71	5.54	1.18	1.74	3.42	.9	2.62	*9.12	15	8.04
11	3.93	4.26	4.37	5.30	1.18	2.22	3.15	1.2	2.22	7.46	*40	6.88
12	6.74	4.59	4.94	4.70	1.18	2.22	2.97	*1.5	1.98	6.09	25	6.32
13	5.30	4.15	6.06	4.37	1.18	2.06	2.79	1.98	5.90	7.94	15	6.04
14	3.33	3.93	4.59	4.26	1.00	2.14	2.62	1.98	*4.27	12.0	*12	5.54
15	2.97	5.54	4.37	4.94	1.05	9.87	2.54	1.74	11.9	39.4	10.4	5.42
16	3.31	4.94	6.71	4.37	2.06	9.77	2.38	1.58	11.9	31.1	12.5	4.94
17	6.32	4.26	9.43	3.82	2.70	6.74	2.30	1.58	13.0	*42.0	9.85	5.90
18	6.60	3.93	5.78	3.60	4.15	5.18	2.22	4.11	11.9	24.6	8.90	6.32
19	6.04	5.76	4.59	3.60	2.88	4.48	2.22	4.71	10.9	16.3	8.42	*6.18
20	4.94	5.18	4.48	3.60	2.62	3.71	2.38	2.38	9.80	15.9	8.42	7.38
21	5.66	4.59	4.59	5.06	3.42	3.33	2.22	1.90	11.1	13.3	7.46	6.32
22	5.78	4.04	4.82	4.82	3.33	3.06	2.06	1.66	12.6	11.4	7.46	6.18
23	5.90	3.82	4.82	4.59	3.24	2.88	1.98	1.50	*32.6	13.0	6.88	6.04
24	5.90	3.42	4.48	3.93	2.79	2.70	1.90	1.42	13.0	20.9	7.94	6.04
25	5.66	3.33	4.37	3.51	2.30	2.97	1.8	1.26	10.9	16.0	6.88	6.18
26	4.70	3.24	4.70	3.15	2.22	*3.33	1.7	1.10	11.9	18.7	6.46	6.04
27	3.82	3.06	5.06	2.88	*2.06	3.42	1.6	1.18	11.6	27.5	6.04	6.04
28	3.60	2.97	5.18	2.62	2.30	3.24	2.0	1.34	9.80	16.0	6.60	5.90
29	3.15	3.24	5.06	2.88	2.38	3.06	2.0	--------	8.90	13.0	6.32	5.78
30	4.04	3.82	4.37	*2.88	3.33	4.24	1.8	--------	7.54	14.5	6.60	6.39
31	5.18	3.71	------	2.79	------	5.60	1.6	--------	6.60	------	6.32	------
TOTAL	148.10	140.92	141.37	128.67	67.65	110.23	83.13	45.32	252.68	436.44	348.23	189.83
MEAN												
MGD	4.78	4.55	4.71	4.15	2.26	3.56	2.68	1.62	8.15	14.5	11.2	6.33
CFS	7.39	7.03	7.29	6.42	3.49	5.50	4.15	2.51	12.6	22.5	17.3	9.79
AC-FT	455	432	434	395	208	338	255	139	775	1,340	1,070	583

CALENDAR YEAR 1962:	MAX	-	MIN	-	MEAN MGD	-	MEAN CFS	-	AC-FT	-
FISCAL YEAR 1962-63:	MAX	42.0	MIN	0.8	MEAN MGD	5.73	MEAN CFS	8.87	AC-FT	6,420

Peak discharge (base, 80 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-23	0130	3.48	137	212	5-6	1630	3.15	95.0	147
4-15	1300	3.37	121	187	5-11	-	3.54	148	229
4-17	0930	3.00	80.0	124					

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 25 to Feb. 12, May 10-14; backwater from debris July 1 to Aug. 2, Oct. 3-12.

7178. Pohakupuka Stream near Papaaloa

Location.--Lat 19°57'20", long 155°11'20", on right bank 200 ft downstream from Mamalahoa Highway, 2.8 miles northwest of Honohina, and 3.0 miles southwest of Papaaloa.

Drainage area.--2.94 sq mi.

Records available.--April 1962 to June 1963.

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

Extremes.--1962: Maximum discharge during period April to June, 159 mgd (246 cfs) sometime during period Apr. 26 to June 11 (gage height, 3.93 ft), from rating curve extended above 67 mgd as explained below; minimum, 1.08 mgd (1.67 cfs) June 26-28.
1962-63: Maximum discharge during fiscal year, 1,340 mgd (2,070 cfs) May 11 (gage height, 8.29 ft), from rating curve extended above 67 mgd by logarithmic plotting; minimum, 0.18 mgd (0.28 cfs) Nov. 9.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station. Irrigation ditches in basin occasionally overflow, but amount reaching stream is small.

Discharge in million gallons a day, April to June, 1962

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	-		3.0	7	-		2.0	13	-		1.32	19	*23.4		2.28	25	1.40		1.16
2	-		2.5	8	-		2.5	14	-		1.32	20	17.0		1.56	26	1.4		1.16
3	-	5.0	2.0	9	-	5.0	3.5	15	1.64	5.0	1.24	21	2.88	5.0	1.40	27	1.7	5.0	1.16
4	-		1.7	10	-		5.0	16	3.16		1.80	22	2.04		1.32	28	2.0		1.16
5	-		1.5	11	-		2.0	17	2.04		1.92	23	1.72		1.24	29	2.5		1.24
6	-		1.4	12	-		*1.40	18	1.64		3.80	24	1.48		1.24	30	3.0		1.16
																31	-		-
Total																	-	155.0	55.98
Mean, in million gallons a day																	-	5.0	1.87
Mean, in cubic feet per second																	-	7.7	2.89
Runoff in acre-feet																	-	476	172

Peak discharge (base, 500 mgd).--No peak above base.
* Discharge measurement made on this day.
Note.--No gage-height record Apr. 26 to June 11.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.16	4.58	0.37	1.24	0.31	12.0	1.24	0.46	0.80	2.39	22.3	24.4
2	1.24	5.90	.37	*3.65	.29	5.35	1.00	.50	1.95	2.50	10.9	11.2
3	1.48	*7.87	*.49	1.64	.29	4.15	.76	.50	1.16	2.65	9.25	8.00
4	3.06	4.12	.56	1.24	.26	2.39	.60	.46	1.16	12.1	8.50	6.90
5	5.21	4.35	.50	1.08	*.26	1.73	.57	.46	1.62	5.41	8.00	24.1
6	3.34	1.80	.37	1.40	.26	1.32	.57	.46	1.16	2.50	54.9	9.00
7	1.56	1.40	.37	2.40	.26	1.08	.76	.46	37.0	3.40	117	6.50
8	1.24	1.32	.31	1.56	.23	.92	1.77	.46	10.0	2.28	28.3	6.30
9	1.16	1.24	.29	1.32	.21	.84	*6.25	.46	7.32	1.95	74.2	11.4
10	1.16	1.00	.29	1.40	.23	.68	1.32	.46	2.65	*1.95	203	17.9
11	1.16	.87	a.5	1.56	.21	.68	2.03	.50	1.84	1.84	335	9.75
12	2.25	.81	a5.0	1.08	.21	.76	1.51	*.53	1.51	2.39	100	6.30
13	1.64	.81	a20	.94	.21	.57	.92	.68	2.17	3.70	36.3	5.05
14	1.24	.87	a6.0	.81	.21	17.7	.97	.60	*1.62	3.70	*22.8	4.75
15	1.00	4.89	2.16	.75	.25	113	.68	.57	37.8	295	21.3	4.75
16	1.16	1.95	2.40	.75	.25	32.5	.76	.53	28.6	394	18.4	4.45
17	2.99	1.16	22.8	.69	.29	4.90	.60	.53	27.4	243	14.2	4.60
18	8.63	.87	5.17	.62	.25	3.85	.53	15.6	13.9	*207	12.1	15.1
19	8.80	5.71	2.28	.56	.29	3.10	.60	5.08	6.45	*66.1	11.8	19.7
20	2.64	2.67	1.92	.92	.32	2.17	.84	1.24	7.40	42.8	11.8	30.1
21	3.36	1.24	3.26	2.07	.39	1.84	.68	.84	47.3	26.6	9.75	*13.3
22	2.64	.87	6.36	1.16	1.51	1.51	.53	.60	38.4	25.7	9.00	6.70
23	2.52	.69	8.35	4.88	26.9	1.24	.50	.57	141	68.7	9.25	21.0
24	4.18	.62	2.64	3.39	23.1	1.16	.46	.53	17.7	168	14.2	8.25
25	2.52	.50	1.64	1.48	3.70	1.00	.46	.50	8.50	55.8	10.3	10.1
26	1.92	.43	1.40	.87	6.20	*1.00	.46	.46	6.10	59.5	7.75	9.25
27	1.40	.37	1.40	.69	*3.14	1.16	.46	.53	4.60	72.4	7.30	6.90
28	1.16	.34	1.72	.56	11.1	1.00	.50	.50	4.15	38.6	13.1	5.70
29	.94	.34	1.64	.43	3.85	.84	.57	------	3.55	31.4	13.3	5.35
30	1.32	.34	1.56	*.35	13.2	1.01	.50	------	3.10	24.2	9.25	15.7
31	3.64	.31	------	.34	------	3.13	.46	------	2.80	------	7.10	------
TOTAL	77.72	60.24	102.12	41.73	98.18	224.58	29.86	35.07	470.71	1,867.56	1,230.35	332.50
MEAN												
MGD	2.51	1.94	3.40	1.35	3.27	7.24	0.963	1.25	15.2	62.3	39.7	11.1
CFS	3.88	3.01	5.26	2.08	5.06	11.2	1.49	1.94	23.5	96.3	61.4	17.1
AC-FT	239	185	313	128	301	689	92	108	1,440	5,730	3,780	1,020

CALENDAR YEAR	1962:	MAX	-	MIN	-	MEAN MGD	-	MEAN CFS	-	AC-FT	-
FISCAL YEAR	1962-63:	MAX	394	MIN	0.21	MEAN MGD	12.5	MEAN CFS	19.3	AC-FT	14,020

Peak discharge (base, 500 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
3-7	1530	6.25	635	982	4-16	0430	8.13	1,270	1,960
3-23	1030	5.88	527	815	5-11	0330	8.29	1,340	2,070

* Discharge measurement made on this day.
a No gage-height record.

7420. Kukui Stream near Waimanu

Location.--Lat 20°09'14", long 155°40'15", on left bank 300 ft upstream from Waimanu trail crossing, 0.4 mile east of head of Awini ditch, and 2.2 miles west of Waimanu.

Drainage area.--0.21 sq mi.

Records available.--February 1939 to July 1952, September 1959 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 1,940 ft (by barometer).

Average discharge.--16 years (1939-52, 1960-63), 1.23 mgd (1.90 cfs).

Extremes.--Maximum discharge during year, 64.6 mgd (100 cfs) Apr. 16 (gage height, 3.36 ft), from rating curve extended above 2.4 mgd as explained below; minimum, 0.17 mgd (0.26 cfs) Nov. 15-22, Dec. 6-10.

1939-52, 1959-63: Maximum discharge, 195 mgd (302 cfs) Feb. 25, 1962 (gage height, 4.45 ft), from rating curve extended above 2.4 mgd by test on model of station site; minimum, 0.11 mgd (0.17 cfs) Sept. 6-8, 1961.

Remarks.--Records good except those above 3 mgd, which are poor.

Rating table (gage height, in feet, and discharge, in million gallons a day)

July 1 to Sept. 16

0.1	0.11	0.4	1.04
.2	.33	.6	2.06
.3	.64	.9	4.38

Sept. 17 to June 30

0.1	0.12	1.0	5.00
.2	.35	1.5	10.5
.3	.68	2.0	18.2
.6	2.10		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.26	1.22	0.64	1.03	0.24	0.48	0.33	0.70	0.33	0.42	0.65	1.17
2	.28	1.91	.75	.65	.26	.38	.30	.28	.30	.35	*.58	.72
3	.26	1.70	.33	.38	.24	.28	.28	.26	.30	.33	.55	.68
4	.23	1.13	.31	.33	.24	.21	.28	.24	1.27	.33	1.22	.58
5	.28	1.08	*.33	.33	.24	*.19	.26	.24	1.36	.30	1.79	.58
6	.23	.52	.49	.33	.26	.17	.26	.24	*1.72	.85	3.50	.55
7	.21	.45	.31	.30	.33	.17	4.16	.24	.92	.58	7.90	.55
8	.21	.39	.28	.30	.24	.17	2.13	.24	.38	.33	1.72	.55
9	.23	.39	.28	.30	.21	.17	.72	.24	.33	.33	2.59	1.29
10	.36	.36	.31	.28	.21	.17	.45	.24	.28	.35	7.97	1.24
11	.26	.33	1.38	.28	.21	.19	.38	.38	.62	.38	4.70	1.68
12	.59	.33	.58	.28	.19	.19	.35	.30	.42	.38	8.70	.58
13	1.06	1.10	.48	.28	.19	.19	.33	1.31	.28	2.94	3.96	*.52
14	.52	.76	.31	.26	.19	11.1	.30	.38	.26	1.56	2.40	.48
15	.26	1.15	.28	.26	.17	10.0	.30	.28	.26	1.72	5.32	.45
16	.94	.42	3.23	.26	.17	3.37	3.68	.38	.26	9.78	2.52	.49
17	.42	.36	1.55	.26	.17	.89	1.71	.30	.26	1.37	1.76	1.44
18	2.24	.86	.69	.26	.17	1.28	.48	4.62	.28	.89	1.42	.94
19	.52	3.51	.45	.26	.17	.65	.42	1.00	.45	.68	1.88	.81
20	.33	1.02	.52	.28	.17	.52	.42	.48	.30	.58	2.10	.65
21	.52	.64	.65	.33	.17	.45	.38	.38	.74	.81	1.15	.52
22	.72	.52	1.86	.26	.19	.42	.35	.33	2.20	.61	.97	.48
23	.80	.48	1.10	.26	1.36	.38	*.33	.33	6.26	1.80	.89	1.17
24	*.45	.45	.99	*.41	.45	.35	.33	.30	1.27	4.28	1.10	1.02
25	.31	.39	.55	.28	.24	.33	.30	.30	.65	.97	.81	1.62
26	.28	.36	.52	.26	.45	.33	.30	.30	.52	1.02	.76	.68
27	.38	.33	.48	.24	.24	.33	.28	.30	.45	.89	.93	.58
28	.33	.33	.45	.24	.24	.30	.28	.30	3.75	4.37	1.06	.55
29	.28	.33	.42	.24	.21	.30	.28	------	.68	1.43	1.12	.58
30	1.00	.33	.35	.24	1.55	.96	.30	------	.52	.76	.85	1.30
31	2.94	.33	------	.24	------	.58	.38	------	.45	------	.72	------
TOTAL	17.70	23.48	20.87	9.91	9.37	35.50	21.05	14.89	28.07	41.39	73.59	24.45
MEAN												
MGD	0.571	0.757	0.696	0.320	0.312	1.15	0.679	0.532	0.905	1.38	2.37	0.815
CFS	0.883	1.17	1.08	0.495	0.483	1.77	1.05	0.823	1.40	2.13	3.67	1.26
AC-FT	54	72	64	30	29	109	65	46	86	127	226	75

CALENDAR YEAR	1962:	MAX	11.1	MIN	0.17	MEAN MGD	0.712	MEAN CFS	1.10	AC-FT	797
FISCAL YEAR 1962-63:		MAX	11.1	MIN	0.17	MEAN MGD	0.877	MEAN CFS	1.36	AC-FT	983

* Discharge measurement made on this day.

Peak discharge (base, 30 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
12-14	1930	2.72	35.6	55.1	4-13	1600	2.56	31.0	48.0
1-16	2130	2.64	33.2	51.4	4-16	0400	3.36	64.6	100
2-18	1830	3.28	60.0	92.8	5-15	2000	3.12	52.0	80.5

7430. Avini ditch at East Honokane Iki Gulch, near Niulii

Location.--Lat 20°09'55", long 155°43'10", at upper end of fluze across East Honokane Iki Gulch and 4.5 miles southeast of Niulii.

Records available.--October 1927 to June 1938, September 1938 to June 1949, July 1950 to June 1963.

Gage.--Water-stage recorder. Altitude of gage ie 2,000 ft (from topographic map).

Average discharge.--33 years (1928-38, 1939-49, 1950-63), 11.7 mgd (18.1 cfs).

Extremes.--1927-63: Maximum daily discharge, 33 mgd (51 cfs) Jan. 8, 1935, Aug. 10, 1938; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Ditch diverts at altitude 2,000 ft from all streams between the Waikaloa and the Honokane for irrigation in vicinity of Kohala.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	7.50	20.7	5.86	9.63	0.67	17.1	7.20	5.60	2.49	4.91	*11.2	16.1
2	8.71	21.7	16.0	16.2	.70	16.3	5.70	2.28	3.82	4.28	9.66	14.9
3	11.8	20.3	8.50	8.72	.79	13.1	4.64	1.15	2.91	4.03	9.11	17.0
4	7.60	19.1	*5.83	5.80	.58	*6.50	3.61	.82	11.2	3.75	13.4	13.7
5	10.6	19.1	5.10	5.10	.49	4.10	3.05	.67	*21.3	3.47	16.8	9.77
6	8.91	12.5	11.4	5.60	.52	2.91	2.70	.61	20.7	4.10	24.8	8.70
7	4.46	8.30	6.40	5.70	1.62	2.14	10.1	.55	18.6	7.18	26.6	7.50
8	3.12	6.50	4.28	4.64	.82	1.70	20.2	.94	9.33	3.89	22.7	6.80
9	3.53	5.30	3.26	4.37	.61	1.40	12.8	1.55	5.50	3.33	20.0	9.45
10	9.11	4.73	3.05	4.28	.52	1.15	6.50	1.45	3.75	5.85	28.0	18.9
11	5.60	4.28	11.0	4.10	.46	1.00	4.46	2.96	6.20	11.5	24.2	17.0
12	15.9	4.19	13.1	3.54	.39	.94	3.47	2.63	11.0	6.90	24.6	*11.5
13	12.5	12.6	13.0	2.98	.34	1.05	2.91	a5.5	5.10	10.3	22.0	8.10
14	15.0	11.1	7.20	2.63	.30	21.3	2.56	a4.5	3.47	17.4	16.4	6.40
15	7.60	21.0	4.73	2.28	.25	23.9	2.21	3.33	3.54	18.8	16.9	5.60
16	12.8	12.6	10.3	2.00	.25	20.6	4.03	2.35	9.88	21.3	20.3	5.00
17	14.1	8.80	20.3	1.85	.24	13.0	8.17	2.21	9.11	12.7	16.3	11.3
18	18.1	9.72	16.3	1.95	.19	16.0	2.91	13.0	6.40	10.8	17.1	17.9
19	15.3	24.9	8.30	1.75	.16	13.1	2.00	13.5	13.6	9.22	17.9	17.1
20	9.55	20.6	10.1	1.70	.15	8.60	2.28	6.70	8.20	8.50	20.3	17.1
21	16.8	15.9	15.5	1.80	.13	7.10	2.70	4.91	15.1	13.9	13.0	14.2
22	13.7	10.5	23.0	1.65	.26	9.96	*1.92	3.54	14.5	13.6	11.1	10.8
23	*14.5	8.20	19.8	*1.45	15.1	7.00	1.45	2.91	22.7	23.8	9.77	20.1
24	13.5	6.80	17.4	2.86	14.4	5.20	1.25	2.42	9.99	26.2	11.4	17.7
25	7.60	5.30	11.9	1.90	6.23	4.28	1.25	2.07	4.91	20.7	9.33	17.6
26	5.20	4.46	10.6	1.40	15.0	3.68	1.05	1.90	5.10	17.6	7.60	14.9
27	5.53	3.89	10.1	1.15	8.60	3.68	.94	1.85	7.90	19.8	7.30	13.2
28	9.23	3.54	9.22	.97	9.99	3.19	.82	1.75	15.9	20.4	8.50	10.2
29	11.3	3.26	9.88	.88	5.70	3.05	.79	------	12.0	19.5	9.39	14.4
30	18.5	3.05	7.10	.79	15.8	6.65	.67	------	7.80	13.5	10.5	13.8
31	22.4	2.91	------	.73	------	14.6	.64	------	6.00	------	9.44	--------
TOTAL	340.05	335.83	318.51	110.40	101.26	254.28	124.98	93.65	298.00	361.21	485.60	387.32
MEAN												
MGD	11.0	10.8	10.6	3.56	3.38	8.20	4.03	3.34	9.61	12.0	15.7	12.9
CFS	17.0	16.8	16.4	5.51	5.22	12.7	6.24	5.17	14.9	18.6	24.2	20.0
AC-FT	1,040	1,030	977	339	311	780	384	287	915	1,110	1,490	1,190

CALENDAR YEAR 1962:	MAX	24.9	MIN	0.13	MEAN MGD	8.20	MEAN CFS	12.7	AC-FT	9,190
FISCAL YEAR 1962-63	MAX	28.0	MIN	0.13	MEAN MGD	8.80	MEAN CFS	13.6	AC-FT	9,850

* Discharge measurement made on this day.
a No gage-height record.

7440. East Honokane Iki intake to Awini ditch near Niulii
(Formerly published as East Honokane Iki intake to Awini ditch at East Honokane Iki Gulch, near Niulii)

Location.--Lat 20°09'55", long 155°43'15", on intake tunnel delivering water from East Honokane Iki Gulch to Awini ditch, on west side of gulch, and 4.5 miles southeast of Niulii.

Records available.--October 1927 to May 1928, July 1928 to December 1936, July 1937 to June 1938, July 1939 to July 1940, September 1940 to June 1949, July 1951 to June 1963. Prior to July 1962, published as "at East Honokane Iki Gulch, near Niulii."

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--30 years (1928-36, 1937-38, 1939-40, 1941-49, 1951-63), 1.16 mgd (1.79 cfs).

Extremes.--1927-49, 1951-63: Maximum daily discharge, 8.4 mgd (13.0 cfs) Aug. 6, 1957; no flow at times.

Remarks.--Records fair.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.29	3.13	0.23	0.71	0	2.13	0.26	0.95	0.18	0.32	*0.75	1.16
2	.58	3.83	1.43	1.34	0	2.20	.17	.32	.23	.26	.52	1.16
3	.87	3.07	.32	.35	0	1.25	.12	.12	.10	.23	.44	1.88
4	.35	1.94	*.17	.20	0	*.35	.06	.06	1.13	.17	2.16	.92
5	.81	2.01	.17	.14	0	.17	.04	.04	*2.82	.14	2.45	.52
6	.44	.68	.64	.14	0	.10	.03	.03	2.52	.14	4.59	.41
7	.17	.41	.26	.17	.01	.04	1.15	.03	1.31	.29	6.44	.38
8	.10	.29	.14	.12	.01	.03	1.35	.03	.35	.14	3.09	.32
9	.06	.26	.10	.06	.01	a.02	.87	.02	.17	.12	3.46	.70
10	.50	.20	.08	.06	0	a.02	.38	.02	.10	.66	7.63	2.64
11	.26	.17	.29	.12	0	a.01	.20	.04	1.06	1.58	1.66	2.32
12	2.42	.14	.56	.06	0	a.01	.12	.04	1.04	.56	1.56	*.68
13	1.09	.91	.64	.04	0	a.01	.08	.79	.26	1.73	2.54	.35
14	1.66	1.06	.26	.03	0	4.30	.06	.38	.14	2.48	2.89	.29
15	.35	3.45	.14	.02	0	1.83	.04	.12	.12	3.20	3.44	.23
16	2.19	.71	1.66	.01	0	1.16	.41	.04	.46	1.38	3.84	.20
17	1.51	.38	2.69	.01	0	1.01	.60	.03	.44	.10	2.00	.41
18	2.00	.68	1.27	.01	0	2.06	.32	1.15	.35	.86	2.13	2.01
19	1.30	7.91	.29	a.01	0	1.67	.29	.79	1.18	.92	2.62	1.48
20	.56	2.90	.44	a.01	0	.68	.29	.38	.35	.75	3.62	1.62
21	2.26	1.11	1.58	a.01	0	.41	.38	.17	3.65	3.17	1.40	.83
22	1.01	.56	5.82	a.01	0	1.25	*.26	.08	2.96	1.51	.97	.64
23	*.87	.41	2.97	*a.01	3.34	.41	.17	.06	5.04	5.14	.79	2.79
24	.71	.32	1.67	.02	1.97	.29	.14	.04	1.77	3.50	.97	.68
25	.26	.26	.60	.03	.35	.20	.14	.04	.68	1.11	.75	1.80
26	.14	.20	.41	.02	1.87	.17	.12	.03	.41	2.89	.60	.87
27	.20	.17	.41	.01	.56	.14	.10	.03	.44	2.95	.52	.56
28	.52	.14	.41	.01	.64	.10	.08	.02	.55	4.63	.52	.38
29	.95	.12	.41	.01	.26	.06	.06	------	.69	2.76	.64	1.09
30	3.74	.12	.26	.01	3.80	.34	.03	------	.60	1.06	.75	1.34
31	4.83	.12	------	0	------	.95	.02	------	.41	------	.56	------
TOTAL	33.00	37.66	26.32	3.75	12.82	23.37	8.34	5.85	31.51	44.75	66.30	30.66
MEAN												
MGD	1.06	1.21	0.877	0.121	0.427	0.754	0.269	0.209	1.02	1.49	2.14	1.02
CFS	1.65	1.88	1.36	0.187	0.661	1.17	0.416	0.323	1.57	2.31	3.31	1.58
AC-FT	101	116	81	12	39	72	26	18	97	137	203	94

CALENDAR YEAR 1962:	MAX	7.91	MIN	0	MEAN MGD	0.795	MEAN CFS	1.23	AC-FT	894
FISCAL YEAR 1962-63:	MAX	7.91	MIN	0	MEAN MGD	0.889	MEAN CFS	1.38	AC-FT	996

* Discharge measurement made on this day.
a No gage-height record.

7510. Kohala ditch at Pololu, near Niulii

Location (revised).--Lat 20°10'19", long 155°44'20", on right bank of open section of ditch, on land of Pololu, 0.5 mile upstream from Pololu Stream, and 3.7 miles south of Niulii.

Records available.--August 1927 to June 1938, September 1938 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 960 ft (revised, from topographic map).

Average discharge.--34 years (1928-38, 1939-63), 26.9 mgd (41.6 cfs).

Extremes.--1927-63: Maximum daily discharge, 65 mgd (101 cfs) July 16, 1958; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 ft from Honokane Stream and all streams west. Water is used for irrigation in vicinity of Kohala.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	19.4	47.3	17.7	19.1	9.82	40.8	17.2	20	13	16.6	23.4	31.2
2	20.1	49.1	28.7	28.9	9.96	33.8	16.0	20	15	15.9	21.1	32.6
3	26.8	45.3	20.0	19.7	9.96	30.3	15.7	15	13	15.3	20.6	38.3
4	20.6	34.9	17.2	16.8	9.82	18.1	14.7	13	20	14.6	24.4	31.3
5	27.0	34.4	16.9	15.9	9.82	14.7	14.1	12	35	14.4	29.3	22.7
6	22.7	25.6	*22.7	16.3	9.96	*13.0	13.8	11	35	14.5	40.8	20.6
7	17.1	20.4	17.5	16.8	10.7	12.2	26.4	11	40	18.0	49.9	19.1
8	15.1	18.6	15.3	15.6	10.1	12.2	44.6	11	25	14.8	42.1	18.4
9	15.1	17.2	14.2	15.3	9.96	12.1	29.2	12	17	14.1	*36.1	19.7
10	20.2	16.3	13.8	15.1	9.96	11.6	19.2	12	15	15.6	58.4	37.2
11	17.7	16.0	19.3	14.8	9.82	11.2	16.5	13	20	23.1	53.4	*32.6
12	34.5	15.7	22.5	14.2	9.68	10.7	15.3	15	25	17.8	55.1	24.8
13	26.3	22.6	23.6	13.6	9.68	15.4	14.5	20	*15	24.3	47.0	19.4
14	30.1	24.4	17.8	13.2	9.68	52.0	14.1	20	14.7	33.1	35.1	17.7
15	20.0	47.2	15.7	12.8	9.68	56.7	13.5	15	15.0	34.7	34.3	16.6
16	24.7	26.6	18.9	12.6	9.68	46.1	22.6	14	20.6	43.3	41.9	16.0
17	32.1	21.6	34.4	12.8	9.68	28.1	21.4	13	21.4	32.1	35.4	21.1
18	30.7	21.6	29.3	12.9	9.68	30.6	19.7	25	17.8	28.5	34.7	36.1
19	31.1	53.5	19.5	12.5	9.68	33.8	16.3	30	36.6	21.8	33.0	37.7
20	21.8	41.3	20.2	12.3	9.68	23.0	18.6	20	19.9	23.5	39.9	38.0
21	36.4	30.6	28.3	12.5	9.96	19.4	17.7	17	38.6	36.0	27.0	31.3
22	27.6	23.0	42.0	12.2	10.2	31.5	15.7	15	31.9	30.9	23.6	23.6
23	26.6	20.2	40.8	11.9	30.5	19.8	14.5	13	47.0	42.1	22.3	42.3
24	26.6	18.4	32.2	13.0	35.5	16.2	*15.3	13	30.9	57.0	23.8	36.2
25	*19.2	16.9	24.4	*12.5	18.4	14.7	19.9	12	18.6	38.8	21.6	31.9
26	16.9	16.2	21.8	11.9	33.9	14.4	14.7	*12	17.4	36.0	19.4	31.7
27	16.3	15.6	21.1	11.6	21.2	14.8	13.6	12	19.5	41.0	19.1	26.8
28	20.4	15.0	20.6	11.4	22.3	14.5	12.9	12	34.5	39.7	20.2	22.1
29	21.9	14.8	20.9	10.7	17.2	14.2	12.3	--------	25.2	41.4	22.0	29.0
30	37.8	14.7	17.8	9.82	31.3	15.6	*11.4	--------	19.7	27.2	23.2	27.0
31	50.0	14.4	------	9.82	------	25.1	11	--------	17.2	------	21.4	------
TOTAL	772.8	799.4	675.1	438.54	427.46	706.6	542.4	428	734.5	826.1	999.5	833.0
MEAN												
MGD	24.9	25.8	22.5	14.1	14.2	22.8	17.5	15.3	23.7	27.5	32.2	27.8
CFS	38.6	39.9	34.8	21.9	22.0	35.3	27.1	23.7	36.7	42.5	49.9	43.0
AC-FT	2,370	2,450	2,070	1,350	1,310	2,170	1,660	1,310	2,250	2,540	3,070	2,560

Calendar Year 1962:	Max	56.7	Min	9.68	Mean mgd	21.9	Mean cfs	33.9	Ac-ft	24,570
Fiscal Year 1962-63:	Max	58.4	Min	9.68	Mean mgd	22.4	Mean cfs	34.7	Ac-ft	25,110

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 30 to Mar. 13.

7550. 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 Honokane Nui Stream, and 8.5 miles southeast of Kohala.

Records available.--December 1917 to November 1919, April 1928 to June 1963.

Gage.--Water-stage recorder and weir control. Altitude of gage is 3,850 ft (from topographic map). Prior to Apr. 26, 1928, at same site at different datum.

Average discharge.--36 years (1918-19, 1928-63), 7.53 mgd (11.7 cfs).

Extremes.--1917-19, 1928-63: 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. Ditch diverts from Honokane Nui Stream 2 miles above station for irrigation near Hawi. Small diversion upstream for watering stock.

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.0	17.7	1.45	1.79	0	17.7	0.98	17.8	0.54	1.32	3.45	15
2	2.0	16.8	7.41	6.56	0	13.9	.84	2.28	.84	.84	2.28	15
3	5.0	13.4	3.68	2.06	0	9.98	.44	.84	.08	.70	1.87	20
4	1.9	9.23	2.50	.98	0	3.95	.33	.44	*.46	.44	3.20	15
5	5.0	7.11	2.39	.44	0	1.87	.23	.23	6.57	.33	2.72	5.0
6	2.1	2.95	5.91	1.15	0	.98	.14	.14	8.82	.23	8.85	3.5
7	.6	1.50	2.06	1.15	0	.70	5.66	.70	11.4	.56	22.1	2.5
8	.3	.84	.98	1.32	0	.44	16.8	.84	3.45	.70	13.9	1.0
9	.2	.56	.44	2.28	0	.33	4.45	.44	1.50	.44	10.1	2.0
10	1.0	.33	.23	1.50	0	.08	1.50	.23	.84	.44	34	*15
11	.5	.33	.56	.98	0	0	1.32	.14	5.25	.56	32	10
12	5.5	.23	3.15	.44	0	0	.84	.14	5.29	.33	34	7.0
13	4.5	2.51	4.45	.23	0	14.0	.44	.14	1.68	12.9	24	3.0
14	5.0	6.92	1.87	.08	0	27.2	.23	.14	.98	11.1	15	2.0
15	2.0	17.6	.84	.04	0	33.3	.08	.08	.98	16.4	15	1.0
16	4.0	7.06	.86	.04	0	12.2	8.14	.04	5.55	40.1	20	.5
17	6.0	4.0	5.97	0	0	4.45	18.0	0	5.92	15.2	15	3.0
18	5.0	3.0	4.56	.13	0	2.72	1.87	0	6.53	13.9	15	15
19	6.0	20	1.32	*.04	0	16.6	.84	1.06	20.3	6.24	15	20
20	3.0	10	3.00	.04	0	4.45	8.31	.56	3.68	11.1	20	20
21	10	*5.00	*7.55	0	*0	1.87	2.72	.23	12.9	19.6	10	5.0
22	*7.0	2.50	14.0	.04	2.41	16.9	1.15	.08	12.8	11.7	5.0	3.0
23	5.59	1.50	12.0	.03	18.6	3.45	.70	.04	20.0	*24.0	3.5	24
24	4.20	.98	7.87	0	15.1	1.68	5.08	0	9.98	41.6	4.5	20
25	2.28	.56	3.95	0	26.5	.84	5.67	0	5.59	16.8	3.0	15
26	1.32	.44	3.20	0	17.1	.44	1.32	0	2.94	14.7	2.0	10
27	1.32	.33	2.50	0	9.23	.33	.84	0	*4.20	14.7	1.0	7.0
28	1.15	.33	2.72	0	10.7	*.19	*.60	0	24.5	16.5	3.0	3.0
29	2.50	.33	4.40	0	4.72	.14	.33	------	9.15	14.8	4.0	6.0
30	11.6	.23	1.50	0	15.8	.23	.14	------	3.20	5.59	5.0	4.0
31	21.7	.12	------	0	------	1.68	.14	------	1.87	------	4.0	--------
TOTAL	129.26	154.39	113.32	21.32	120.16	192.60	90.13	26.59	197.79	313.82	352.47	272.5
MEAN												
MGD	4.17	4.98	3.78	0.688	4.01	6.21	2.91	0.950	6.38	10.5	11.4	9.08
CFS	6.46	7.71	5.84	1.06	6.20	9.61	4.50	1.47	9.87	16.2	17.6	14.1
AC-FT	397	474	348	65	369	591	277	82	607	963	1,080	836

CALENDAR YEAR	1962:	MAX	33.3	MIN	0	MEAN MGD	3.76	MEAN CFS	5.82	AC-FT	4,220
FISCAL YEAR	1962-63:	MAX	41.6	MIN	0	MEAN MGD	5.44	MEAN CFS	8.42	AC-FT	6,090

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record July 1-22, Aug. 17-20, May 10 to June 30.

7560. Kohakohau Stream near Kamuela

Location.--Lat 20°03'02", long 155°40'58", on left bank 0.2 mile downstream from Kohala Forest Reserve Boundary and 2 miles northwest of Kamuela.

Drainage area.--2.34 sq mi.

Records available.--March 1956 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from topographic map). Prior to Oct. 23, 1957, at datum 0.35 ft lower.

Average discharge.--7 years, 6.35 mgd (9.82 cfs).

Extremes.--Maximum discharge during year 2,090 mgd (3,230 cfs) Jan. 16 (gage height, 10.05 ft, from floodmarks), from rating curve extended above 21 mgd as explained below; minimum, 0.04 mgd (0.06 cfs) Nov. 22.

1956-63: Maximum discharge, 2,510 mgd (3,880 cfs) Aug. 7, 1958 (gage height, 10.76 ft), from rating curve extended above 21 mgd by test on model of station site; minimum, that of Nov. 22, 1962.

Remarks.--Records fair except those above 20 mgd and those for period of no gage-height record, which are poor. Parker Ranch pipeline diverts above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)
(Shifting-control method used Jan. 29-31, Feb. 2-21)

0.4	0.04	0.9	3.60
.5	.15	1.1	9.00
.6	.40	1.4	23.0
.7	1.00	1.8	51.0
.8	1.90		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.64	9.53	1.10	1.77	0.10	3.31	0.5	26.3	0.11	0.52	0.94	5.93
2	1.91	10.3	2.81	2.71	.12	2.95	.4	2.28	.18	.38	.70	4.07
3	2.07	8.92	1.18	.88	.13	1.76	.3	1.09	.11	.28	.58	7.07
4	1.36	6.79	.58	.46	*.11	.70	.2	.76	1.39	.23	.70	2.75
5	2.77	3.66	.40	.35	.10	.35	.2	.52	4.11	.18	.52	*1.45
6	1.59	1.18	1.14	.35	.10	.28	.2	.40	3.33	.18	2.51	.94
7	.58	.58	.52	.33	.12	.23	.7	.38	*16.7	.64	17.2	.76
8	.35	.40	.33	.28	.11	.18	2.0	.28	1.56	.38	*6.90	.70
9	.30	.35	.28	.28	.10	.18	1.3	.23	.82	.38	10.0	2.64
10	.35	.33	.25	.28	.08	.14	.9	.20	.46	.52	46.8	4.46
11	.46	.30	1.26	.25	.08	.14	.6	.18	.33	.40	27.7	2.24
12	2.89	.30	1.72	.23	.07	.12	.4	.15	.25	.23	35.4	1.36
13	2.14	1.22	1.90	.23	.07	1.50	.3	.15	.15	.57	15.2	.88
14	2.35	1.96	.82	.23	.06	16.3	.2	.14	.14	3.09	2.75	.70
15	1.18	10.3	.38	.20	.06	38.7	.2	.13	.15	4.61	2.07	.58
16	3.38	1.81	2.86	.18	.06	8.01	40	.12	.15	25.6	3.06	.46
17	2.95	1.36	3.99	.20	.06	1.54	9.0	.12	.25	5.55	2.92	.98
18	5.65	2.55	3.55	*.25	.07	.88	2.0	.31	.25	2.75	8.37	6.98
19	3.52	32.1	.88	.18	.06	5.18	.5	.74	1.75	1.18	5.28	4.18
20	1.86	6.00	*.74	.18	*.05	1.54	1.5	.28	.82	1.54	5.76	5.42
21	2.97	1.54	2.61	.18	.05	.88	.9	.18	8.73	7.59	1.90	2.91
22	*1.92	*.80	14.4	.18	.04	8.69	.5	.13	10.4	3.98	1.45	1.18
23	3.79	.52	6.22	.18	1.04	1.27	.3	.12	36.1	15.0	1.09	6.79
24	2.23	.40	1.72	.15	1.00	.64	.4	.11	8.25	40.2	1.18	2.75
25	.94	.33	1.00	.14	.33	.40	.6	.10	4.05	6.98	.94	1.72
26	.52	.30	.88	.14	1.98	.35	.5	.08	*1.45	7.96	.76	3.26
27	.40	.28	.82	.13	.52	*.3	.5	.08	1.36	6.61	.82	1.54
28	.38	.25	.82	.13	.52	.3	.4	*.08	21.0	9.29	1.72	1.26
29	.46	.25	1.00	.12	.35	.3	*.40	------	3.11	6.66	1.00	3.43
30	8.53	.23	.52	.11	9.80	.4	.33	------	1.09	1.36	.88	4.18
31	15.2	.20	------	.11	------	.6	.28	------	.76	------	.70	------
TOTAL	75.64	105.04	56.68	11.39	17.34	98.12	66.51	35.64	129.31	154.84	207.80	83.57
MEAN												
MGD	2.44	3.39	1.89	0.367	0.578	3.17	2.15	1.27	4.17	5.16	6.70	2.79
CFS	3.77	5.24	2.93	0.568	0.894	4.91	3.33	1.97	6.45	7.98	10.4	4.31
AC-FT	232	322	174	35	53	301	204	109	397	475	638	256

CALENDAR YEAR 1962:	MAX	38.7	MIN	0.04	MEAN MGD	1.79	MEAN CFS	2.77	AC-FT	2,000
FISCAL YEAR 1962-63:	MAX	46.8	MIN	0.04	MEAN MGD	2.85	MEAN CFS	4.41	AC-FT	3,200

Peak discharge (base, 200 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-16	2130	10.05	2,090	3,230

* Discharge measurement made on this day.
Note.--No gage-height record Dec. 27 to Jan. 28.

7570. Waikoloa Stream near Kamuela

Location.--Lat 20°03'17", long 155°40'02", on left bank 350 ft downstream from Parker Ranch boundary and 2.1 miles north of Kamuela.

Drainage area.--0.78 sq mi.

Records available.--May 1947 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,580 ft (from topographic map).

Average discharge.--16 years, 4.69 mgd (7.25 cfs).

Extremes.--Maximum discharge during year, 313 mgd (484 cfs) Jan. 16 (gage height, 4.76 ft), from rating curve extended above 19 mgd as explained below; minimum, 0.58 mgd (0.90 cfs) Nov. 13-22.

1947-63: Maximum discharge, 860 mgd (1,330 cfs) Oct. 23, 1957 (gage height, 6.55 ft), from rating curve extended above 19 mgd by logarithmic plotting; minimum, that of Nov. 13-22, 1962.

Remarks.--Records good except those above 20 mgd, which are poor. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.2	0.58	1.8	7.80
1.3	1.24	2.1	16.2
1.4	2.13	2.3	25.0
1.6	4.58		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.13	5.78	2.46	3.54	0.76	3.12	1.16	10.1	0.82	1.48	2.13	7.99
2	3.35	7.07	4.64	3.61	.82	3.28	1.02	1.85	.76	1.32	1.85	5.03
3	2.35	6.69	2.24	1.75	.76	2.21	.95	1.24	.70	1.16	1.85	6.44
4	1.75	6.44	1.56	1.40	*.70	1.40	.88	1.02	3.65	1.09	1.94	3.77
5	2.46	4.16	1.48	1.32	.70	1.09	.88	.88	5.87	1.09	1.94	*2.61
6	2.04	2.13	2.13	1.32	.76	.88	.82	.88	4.25	1.16	5.06	2.24
7	1.32	1.65	1.40	1.32	.76	.82	.95	.82	8.34	2.06	14.0	2.04
8	1.09	1.40	1.24	1.24	.70	.76	1.94	.82	2.04	1.85	6.82	2.04
9	1.02	1.32	1.16	1.24	.70	.76	1.24	.76	1.48	1.65	8.40	5.16
10	1.09	1.32	1.16	1.24	.70	.70	1.02	.76	1.16	2.24	22.0	5.63
11	1.32	1.32	3.11	1.24	.70	.70	1.02	.76	1.02	1.94	12.8	4.18
12	3.64	1.40	3.13	1.16	.64	.70	.95	.76	.95	1.40	20.8	2.79
13	2.90	3.48	2.57	1.09	.58	1.24	.82	.76	.88	2.00	9.37	2.13
14	3.85	3.14	1.75	1.09	.58	14.4	.76	.76	.88	10.2	4.18	1.94
15	2.35	6.02	1.40	1.02	.58	22.1	.76	.76	.95	6.63	3.64	1.85
16	4.62	2.57	4.91	1.02	.58	6.94	22.9	.76	1.02	9.18	3.13	1.85
17	3.50	2.04	5.43	1.09	.58	2.35	16.2	.76	1.16	4.45	4.96	2.79
18	6.58	3.50	4.50	*1.05	.58	1.94	1.94	2.69	1.16	3.13	7.11	5.85
19	4.19	14.2	1.75	.95	.58	5.95	1.32	3.18	1.24	2.46	6.27	4.45
20	*2.33	4.29	*1.61	.95	*.58	2.46	2.24	1.40	2.01	2.46	6.44	4.45
21	2.79	2.57	2.94	.95	.58	1.94	1.94	1.02	7.05	4.43	3.38	4.32
22	2.57	*1.92	8.62	.88	.64	4.83	1.32	.88	6.91	4.18	3.02	2.79
23	5.03	1.56	4.62	.88	1.09	1.94	1.02	.82	20.1	7.49	2.57	5.18
24	3.07	1.40	2.35	.88	1.16	1.48	1.09	.76	6.12	*14.1	3.02	4.18
25	1.65	1.32	2.13	.88	.88	1.24	1.32	.76	3.51	4.32	2.68	3.77
26	1.40	1.24	1.94	.82	1.75	1.16	1.02	.70	2.24	6.21	2.35	4.32
27	1.40	1.24	1.75	.76	1.09	*1.09	1.02	.70	1.94	4.88	3.08	3.25
28	1.40	1.24	1.75	.76	.95	1.09	.95	*.70	7.34	6.97	4.88	2.90
29	1.56	1.16	1.85	.76	.82	1.02	*.87	------	3.02	4.59	2.79	5.03
30	8.01	1.09	1.40	.76	6.32	1.16	.82	------	1.94	2.57	2.68	6.43
31	8.19	1.09	------	.76	------	1.40	.76	------	1.56	------	2.57	------
TOTAL	90.95	95.75	78.98	37.73	28.62	92.15	71.90	38.06	102.07	118.69	177.71	117.40
MEAN												
MGD	2.93	3.09	2.63	1.22	0.954	2.97	2.32	1.36	3.29	3.96	5.73	3.91
CFS	4.54	4.78	4.07	1.88	1.48	4.60	3.59	2.10	5.09	6.12	8.87	6.05
AC-FT	279	294	242	116	88	283	221	117	313	364	545	360

CALENDAR YEAR	1962:	MAX	22.1	MIN	0.58	MEAN MGD	2.16	MEAN CFS	3.34	AC-FT	2,420
FISCAL YEAR	1962-63	MAX	22.9	MIN	0.58	MEAN MGD	2.88	MEAN CFS	4.46	AC-FT	3,220

* Discharge measurement made on this day.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-16	2300	4.76	313	484

7580. Waikoloa Stream at Marine Dam, near Kamuela

Location.--Lat 20°02'48", long 155°39'58", on right bank 160 ft upstream from Marine Dam and 1.5 miles north of Kamuela.

Drainage area.--1.18 sq mi.

Records available.--May 1947 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,450 ft (from topographic map).

Average discharge.--16 years, 5.92 mgd (9.16 cfs).

Extremes.--Maximum discharge during year, 372 mgd (576 cfs) Jan. 16 (gage height, 4.79 ft), from rating curve extended above 17 mgd as explained below; minimum, 0.52 mgd (0.80 cfs) Nov. 21.

1947-63: Maximum discharge, 1,180 mgd (1,830 cfs) Oct. 23, 1957 (gage height, 6.99 ft), from rating curve extended above 17 mgd by logarithmic plotting; minimum, that of Nov. 21, 1952.

Remarks.--Records good except those above 20 mgd, which are poor. Diversion above station for livestock and domestic use.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.3	0.28	1.8	4.50
1.4	.64	2.0	8.60
1.5	1.20	2.2	14.5
1.6	2.00	2.4	23.0
1.7	3.05	2.7	39.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	2.00	7.74	2.37	3.57	0.60	3.54	1.20	13.5	0.79	1.60	2.10	9.50
2	3.36	8.54	5.53	4.05	.69	3.36	1.08	2.30	.74	1.35	1.84	5.78
3	2.48	8.29	2.40	1.76	.64	2.35	.96	1.44	.69	1.27	1.76	7.72
4	1.68	7.86	1.60	1.44	*.64	1.44	.90	1.14	3.20	1.14	1.84	3.86
5	2.48	4.85	1.52	1.27	.64	1.02	.90	1.02	7.02	1.08	1.84	*2.61
6	1.92	2.20	2.00	1.35	.74	.90	.84	.96	4.93	1.20	5.30	2.00
7	1.27	1.68	1.44	1.27	.69	.79	.96	.96	11.1	2.22	17.3	1.84
8	1.02	1.44	1.14	1.20	.64	.74	2.07	.84	2.30	2.00	8.88	1.84
9	.90	1.27	1.08	1.20	.64	.74	1.27	.79	1.60	2.16	9.75	5.17
10	.96	1.20	1.14	1.20	.64	.69	1.02	.79	1.20	2.50	30.5	6.87
11	1.22	1.20	2.98	1.14	.64	.74	1.14	.79	1.08	2.10	17.1	4.02
12	3.44	1.35	3.05	1.14	.64	.69	1.02	.79	1.02	1.44	27.7	2.61
13	2.94	3.24	2.61	1.08	.60	1.29	.84	.79	.90	2.04	13.3	2.00
14	4.12	2.88	1.76	1.02	.56	12.6	.79	.74	.90	16.7	4.69	1.76
15	2.30	6.89	1.35	.96	.56	34.4	.74	.74	.96	8.79	3.86	1.68
16	5.44	2.61	5.46	.96	.56	12.1	22.7	.69	1.02	12.7	3.18	1.68
17	4.10	1.92	6.92	.96	.56	3.05	25.4	.64	1.14	5.64	5.77	2.40
18	8.16	3.03	5.60	*.96	.56	2.40	2.72	2.59	1.08	3.57	8.44	6.33
19	5.23	18.2	1.92	.90	.56	7.68	1.68	3.49	1.20	2.40	7.28	4.69
20	*2.43	5.37	*1.68	.84	*.56	3.35	2.68	1.35	1.14	2.30	8.53	4.96
21	3.05	2.50	3.03	.84	.56	2.10	2.30	.96	9.23	4.80	3.70	4.34
22	2.62	*1.79	10.7	.79	.60	6.12	1.52	.74	6.80	4.77	2.94	2.50
23	5.58	1.52	6.28	.79	.96	2.30	1.14	.74	28.5	10.1	2.50	5.26
24	3.35	1.35	2.50	.84	1.02	1.68	1.14	.69	9.75	*20.0	2.83	3.86
25	1.76	1.20	2.10	.79	.79	1.35	1.52	.64	5.07	5.71	2.61	3.44
26	1.35	1.14	1.92	.79	1.44	1.14	1.14	.64	*2.50	7.62	2.20	4.18
27	1.27	1.14	1.68	.79	1.02	*1.14	1.14	.64	2.10	6.21	2.89	3.05
28	1.20	1.08	1.68	.74	.84	1.08	1.02	*.64	10.4	8.18	5.62	2.72
29	1.35	1.08	1.76	.64	.74	1.02	*.93	------	3.70	5.63	2.94	5.45
30	9.43	1.08	1.35	.64	7.05	1.08	.84	------	2.10	2.61	2.72	7.49
31	10.5	1.08	------	.60	------	1.44	.79	------	1.76	------	2.50	------
TOTAL	98.91	106.72	86.55	36.52	27.38	114.32	84.39	42.04	125.92	149.83	214.41	121.61
MEAN												
MGD	3.19	3.44	2.89	1.18	0.913	3.69	2.72	1.50	4.06	4.99	6.92	4.05
CFS	4.94	5.33	4.46	1.82	1.41	5.70	4.21	2.32	6.28	7.73	10.7	6.27
AC-FT	304	328	266	112	84	351	259	129	386	460	658	373

CALENDAR YEAR 1962: MAX 34.4 MIN 0.56 MEAN MGD 2.50 MEAN CFS 3.87 AC-FT 2,800
FISCAL YEAR 1962-63: MAX 34.4 MIN 0.56 MEAN MGD 3.31 MEAN CFS 5.12 AC-FT 3,710

* Discharge measurement made on this day.

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-16	2330	4.79	372	576

7590. Hauani Stream near Kamuela

Location.--Lat 20°02'28", long 155°39'05", on left bank 1,350 ft downstream from Hawaii County pipeline intake and 1.8 miles northeast of Kamuela.

Drainage area.--0.47 sq mi.

Records available.--March 1956 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3,117.42 ft above mean sea level (Hawaii County Board of Water Supply bench mark).

Average discharge.--7 years, 1.10 mgd (1.70 cfs).

Extremes.--Maximum discharge during year, 111 mgd (172 cfs) Jan. 16 (gage height, 2.89 ft), from rating curve extended above 24 mgd as explained below; no flow for many days.

1956-63: Maximum discharge, 325 mgd (503 cfs) Oct. 23, 1957 (gage height, 4.65 ft), from rating curve extended above 24 mgd by slope-conveyance study; no flow at times.

Remarks.--Records good. Diversion above station for livestock and domestic use.

Rating tables (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 26

0.69	0	1.2	1.86
.7	.01	1.3	2.76
.8	.12	1.4	4.04
.9	.38	1.6	8.40
1.0	.74	1.8	15.3
1.1	1.23		

Feb. 27 to June 30

0.77	0	1.2	1.40
.8	.01	1.3	2.50
.9	.07	1.4	4.00
1.0	.27	1.6	8.40
1.1	.67	1.8	15.3

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0	1.66	0.33	0.23		0	0	1.64	0	0.06	0.13	1.11
2	.10	1.39	.46	.26		0	0	.16	0	.03	.08	.57
3	.03	1.40	.10	.08		0	0	.04	0	.01	.07	.67
4	0	1.00	.02	.04		0	0	.01	.09	.01	.07	.36
5	.13	.59	.08	.01		0	0	.01	.66	0	.06	.19
6	.01	.23	.26	.01		0	0	0	.29	.02	.70	*.13
7	0	.12	.03	.02		0	0	.01	1.08	.20	4.67	.09
8	0	.08	0	.01		0	.08	0	.08	.09	*1.84	.08
9	0	.04	0	.01		0	0	0	.02	.31	2.09	1.32
10	0	.03	0	0		0	0	0	0	.24	12.0	1.02
11	0	.02	.17	.01		0	0	0	0	.07	5.15	.44
12	.10	.02	.26	0		0	0	0	0	.02	11.7	.21
13	.14	.04	.16	0		0	0	0	0	.27	4.09	.11
14	.24	.14	.04	0		3.23	0	0	0	2.38	.85	.07
15	.08	.54	.01	0		9.33	0	0	0	1.58	.57	.07
16	.56	.16	.85	0		1.59	6.27	0	0	2.24	1.37	.06
17	.32	.08	.73	0		.21	7.55	0	0	.94	1.18	.09
18	1.03	.26	.56	0		.18	.29	.17	0	.36	1.18	1.28
19	.58	2.68	.14	*0		.80	.14	.30	0	.17	.85	.62
20	*.22	.56	.12	0		.21	.23	.04	.56	.11	1.00	.40
21	.23	*.21	*.48	0		.10	.21	0	1.22	.73	.40	.40
22	.23	.08	1.86	0		.51	.08	0	2.57	.73	.24	.17
23	.85	.04	.76	0		.12	.04	0	11.3	3.37	.21	.48
24	.34	.02	.23	0		.02	.04	0	1.35	7.48	.17	.40
25	.10	.01	.16	0		0	.04	0	.48	1.07	.13	.17
26	.02	0	.14	0		0	.01	0	*.17	2.03	.35	.24
27	.04	0	.12	0	(*)	0	.01	*0	.11	1.26	1.13	.21
28	.08	0	.14	0		*0	*.01	0	2.00	2.05	1.02	.34
29	.04	0	.14	0		0	0	--------	.35	.95	.27	.85
30	1.19	0	.06	0		0	0	--------	.09	.24	.21	1.96
31	2.37	0	------	0		0	0	--------	.07	--------	.17	------
TOTAL	9.03	11.40	8.41	0.68	0	16.30	15.00	2.38	22.49	29.02	53.95	14.11
MEAN												
MGD	0.291	0.368	0.280	0.022	0	0.526	0.484	0.085	0.725	0.967	1.74	0.470
CFS	0.451	0.569	0.434	0.034	0	0.814	0.749	0.132	1.12	1.50	2.69	0.728
AC-FT	28	35	26	2.1	0	50	46	7.3	69	89	166	43

CALENDAR YEAR 1962: MAX 9.33 MIN 0 MEAN MGD 0.231 MEAN CFS 0.358 AC-FT 259
FISCAL YEAR 1962-63: MAX 12.0 MIN 0 MEAN MGD 0.501 MEAN CFS 0.776 AC-FT 561

Peak discharge (base, 50 mgd)

Date	Time	Gage height	Discharge	
			Mgd	Cfs
1-16	2330	2.89	111	172

* Discharge measurement or observation of no flow made on this day.

7592. Right Branch Waiaha Stream near Holualoa

Location.--Lat 19°38'42", long 155°54'53", on right bank, 1,000 ft above Huehue Ranch water tanks, 2.6 miles east of Holualoa cemetery, and 4.6 miles southeast from Honokohau School.

Drainage area.--2.50 sq mi.

Records available.--April 1960 to June 1963. See also Note below.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,300 ft (from topographic map).

Extremes.--Maximum discharge during year, 170 mgd (263 cfs) May 16 (gage height, 4.50 ft), from rating curve extended above 0.87 mgd on basis of slope-area measurement at gage height 4.07 ft; no flow for many days.

1960-63: Maximum discharge, that of May 16, 1963; no flow at times each year.

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

Note.--Published records for a high-water period in the fiscal year 1960-61 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.06	0	1.6	1.14
1.1	.01	1.7	1.70
1.2	.07	1.9	3.40
1.3	.20	2.1	6.00
1.4	.40	2.4	11.8
1.5	.70	2.7	21.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.05	*0.09	0.02	0.13	0.01	0.01	0	2.06	0.02	0.02	0.10	0.29
2	.04	.18	.01	.15	.01	.01	0	.10	.01	.01	.05	.15
3	.93	.81	.01	.11	.01	.01	0	.04	.01	.01	.04	.15
4	.25	6.66	.01	.06	.01	0	0	.02	0	0	.06	.33
5	.49	.45	.01	.05	.01	0	0	.01	.05	.62	.10	.66
6	.27	.15	.01	.05	.01	0	0	.01	2.16	.27	.41	.23
7	.15	*.20	.01	.07	.01	0	0	.01	.36	.23	2.80	.15
8	.58	.16	.04	.08	.01	0	.04	0	.16	.15	1.07	.15
9	.49	.13	.09	.06	.01	0	.02	0	.05	.07	.33	.34
10	.27	.16	.02	.06	.01	0	.01	0	.02	.10	.11	.42
11	.15	.11	.11	*.11	.01	0	.01	0	.01	.07	.05	2.18
12	.12	.07	.10	.12	.01	0	.01	0	.01	2.29	*.07	1.67
13	.11	.06	*.03	.32	.01	0	.01	0	.01	1.18	.08	.29
14	.11	.04	.02	.39	.01	0	0	0	.03	1.37	1.54	.16
15	.07	.03	.04	.18	*.01	0	0	0	.04	.47	.16	.16
16	.05	.02	.05	.08	.02	0	*10.3	0	.02	.29	17.9	.12
17	.04	.02	.08	.08	.01	0	3.67	0	.02	.53	4.07	.07
18	.60	.01	.16	.13	.02	0	.12	0	.89	.61	1.32	.14
19	.29	.01	.12	.05	.02	*0	.05	0	*.40	*.74	.35	*.24
20	.18	.03	.82	.08	.01	0	.03	*0	.33	1.57	.29	.26
21	.88	.03	.33	.37	.01	0	.02	0	1.23	.47	.21	.25
22	.33	.02	.47	.15	.08	0	.03	0	1.29	.80	.13	.10
23	.43	.01	.25	.07	.05	0	.02	0	9.63	1.02	.11	.09
24	.56	.01	.21	.05	.04	0	.06	0	3.46	.45	.11	.18
25	.48	.01	.23	.03	.03	0	.07	0	.37	.21	.09	.09
26	.27	.02	.41	.03	.01	0	.03	0	.33	.20	.07	.06
27	.15	.02	.47	.02	.01	0	.01	0	.31	1.08	.04	.22
28	.10	.03	.29	.02	.01	0	.01	0	.20	.21	.33	.15
29	.09	.03	.27	.01	.01	0	.01	------	.10	2.26	.13	.16
30	.06	.03	.26	.01	.01	0	.01	------	.04	.28	.08	.11
31	.05	.03	------	.01	------	0	.01	------	.03	------	1.72	------
TOTAL	8.64	9.63	4.95	3.13	0.49	0.03	14.55	2.25	21.59	17.58	33.92	9.57
MEAN												
MGD	0.279	0.311	0.165	0.101	0.016	0.001	0.469	0.080	0.696	0.586	1.09	0.319
CFS	0.431	0.481	0.255	0.156	0.025	0.002	0.726	0.124	1.08	0.907	1.69	0.493
AC-FT	27	30	15	9.6	1.5	0.09	45	6.9	66	54	104	29

CALENDAR YEAR	1962:	MAX	6.66	MIN	0	MEAN MGD	0.166	MEAN CFS	0.257	AC-FT	186
FISCAL YEAR 1962-63:		MAX	17.9	MIN	0	MEAN MGD	0.346	MEAN CFS	0.535	AC-FT	388

* Discharge measurement or observation of no flow made on this day.

Peak discharge (base, 25 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8- 4	1830	3.65	76.0	118	4-29	1830	3.05	34.8	53.8
1-16	2330	3.97	105	162	5- 7	1430	2.85	25.3	39.1
3- 6	1730	2.86	26.9	41.6	5-16	1600	4.50	170	263
3-23	1530	3.46	60.5	93.6	6-11	1530	2.98	32.1	49.7

7593. Waiaha Stream at Luawai, near Holualoa

Location.--Lat 19°38'12", long 155°55'45", on right bank at Luawai, 1.8 miles northeast of Holualoa Post Office, and 4.2 miles southeast of Honokohau School.

Drainage area.--7.30 sq mi.

Records available.--April 1960 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 2,580 ft (from topographic map).

Extremes.--Maximum discharge during year, 288 mgd (446 cfs) Mar. 23 (gage height, 4.51 ft), from rating curve extended above 20 mgd on basis of slope-area measurements at gage heights 4.34 and 4.51 ft; no flow for many days.

1960-63: Maximum discharge, that of Mar. 23, 1963; maximum gage height, 4.61 ft Mar. 29, 1961; no flow at times each year.

Remarks.--Records good. Huehue Ranch diverts entire low flow of a tributary above station for domestic use.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.04	0	1.6	1.50
1.1	.02	1.7	2.30
1.2	.10	1.9	4.50
1.3	.25	2.2	10.0
1.4	.50	2.6	23.0
1.5	.90	2.9	40.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.05	*0.18	0	0.18	0		0	2.44	0	0.02	0.10	0.35
2	.03	.30	.01	.56	0		0	.06	0	.01	.05	.24
3	4.27	1.89	.01	.22	0		0	.02	0	0	.03	.24
4	.45	*26.3	.01	.12	0		0	.01	0	0	.02	.55
5	.92	1.27	.01	.12	0		0	0	.01	3.58	.40	1.69
6	.33	.22	.02	.07	0		0	0	.67	.54	.68	.35
7	.15	*.66	.02	.05	0		0	0	.42	.35	3.14	.26
8	.81	.33	.06	.04	0		0	0	.10	.24	2.37	.19
9	.70	.19	.08	.06	0		.01	0	0	.15	.61	.09
10	.38	.21	.02	.04	0		.01	0	0	.23	.18	.09
11	.22	.13	.82	*.03	0		0	0	0	.15	.07	5.18
12	.18	.07	.22	.64	0		0	0	0	2.99	*.11	3.68
13	.15	.08	*.10	.40	0		0	0	0	3.30	.12	.46
14	.12	.06	.06	1.72	0		0	0	.08	2.60	.32	.16
15	.06	.05	.17	.35	*.01		0	0	.07	1.25	.13	.48
16	.03	.02	.10	.13	0		*18.1	0	0	.68	27.3	.18
17	.02	.02	.29	.22	0		10.7	0	0	.48	6.63	.09
18	.99	.01	.74	.22	.10		.12	0	.98	1.60	3.27	.55
19	.51	.01	.25	.08	.03	(*)	.03	0	*.45	*2.87	.94	*.46
20	.22	.01	1.84	.07	.01		.02	*0	.24	2.87	.35	.28
21	1.41	.03	.43	.58	.01		.01	0	.36	1.06	.25	.35
22	.38	.01	.66	.21	.12		.01	0	7.13	3.96	.38	.16
23	.63	0	.30	.09	.03		0	0	*35.5	3.24	.16	.09
24	.92	0	.24	.06	.02		.06	0	12.1	1.27	.19	.24
25	.50	0	.28	.03	.01		.07	0	.82	.38	.12	.15
26	.35	0	.33	.02	.01		.01	0	.30	.38	.06	.08
27	.18	0	.35	.01	.01		0	0	.30	.71	.03	.79
28	.09	.02	.33	.01	0		0	0	.24	.24	.65	.28
29	.06	.03	.58	.01	0		0	--------	.13	2.62	.21	.30
30	.04	.02	.28	0	0		0	--------	.06	.33	.10	.21
31	.02	.01	------	0	------		0	--------	.03	------	3.67	------
TOTAL	15.17	32.13	8.61	6.34	0.36	0	29.15	2.53	59.99	38.10	52.64	18.22
MEAN												
MGD	0.489	1.04	0.287	0.205	0.012	0	0.940	0.090	1.94	1.27	1.70	0.607
CFS	0.757	1.60	0.444	0.316	0.019	0	1.45	0.140	2.99	1.96	2.63	0.940
AC-FT	47	99	26	19	1.1	0	89	7.8	184	117	162	56

CALENDAR YEAR 1962: MAX 26.3 MIN 0 MEAN MGD 0.342 MEAN CFS 0.529 AC-FT 383
FISCAL YEAR 1962-63: MAX 35.5 MIN 0 MEAN MGD 0.721 MEAN CFS 1.12 AC-FT 808

* Discharge measurement or observation of no flow made on this day.

Peak discharge (base, 90 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8-4	1830	4.34	245	379	3-23	1800	4.51	288	446
1-16	2330	4.28	230	356	5-16	1600	4.32	240	371

7595. Waiaha Stream near Holualoa

Location.--Lat 19°38'20", long 155°56'35", on left bank 1.2 miles north of Holualoa Post Office and 3.5 miles east of Kailua-Kona.

Drainage area.--7.68 sq mi.

Records available.--December 1957 to June 1963. See also Note below.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,940 ft (from topographic map).

Average discharge.--5 years (1958-63), 0.538 mgd (0.832 cfs).

Extremes.--Maximum discharge during year 1,180 mgd (1,830 cfs) Mar. 23 (gage height, 4.35 ft), from rating curve extended above 160 mgd as explained below; no flow for many days.

1957-63: Maximum discharge, 1,560 mgd (2,410 cfs) Jan. 18, 1959 (gage height, 4.76 ft), from rating curve extended above 160 mgd on basis of 2 slope-area measurements at gage height 3.80 ft; no flow for many days each year.

Remarks.--Records good. Diversion to offstream reservoir one mile above station for stock water.

Note.--Published records for high-water periods in the fiscal years 1959-61 have been found to be in error; revised records are on file in the district office and will be published in the next water-supply paper.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.23	0	0.9	5.20
.3	.03	1.0	7.60
.4	.18	1.2	14.5
.5	.55	1.5	32.0
.6	1.14	2.0	75.0
.7	2.05	2.5	165
.8	3.40		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.02	**0	0	0.03			0	1.99	0	0.01	0.02	0.20
2	.01	.07	0	.93			0	.02	0	.01	.01	.03
3	8.21	1.48	0	.10			0	.01	0	.01	.01	.03
4	.97	*52.5	0	.02			0	0	0	0	.01	.50
5	.20	1.02	0	.07			0	0	0	7.54	0	3.60
6	.33	.03	0	.03			0	0	0	.27	0	.22
7	.02	** .06	0	.01			0	0	.34	.06	2.85	.13
8	.02	.03	.01	.02			0	0	.04	.09	2.45	.07
9	.03	.02	0	.02			0	0	.01	.03	.36	.03
10	.06	.03	0	.01			.01	0	0	.02	.02	.10
11	.02	.03	.64	*.01			.01	0	0	.02	.01	8.24
12	.02	.02	.12	1.88			.01	0	.01	4.76	.01	7.40
13	.01	.01	*.05	.23			0	0	.01	7.41	.01	.58
14	.01	.01	.03	2.15			0	0	.18	3.68	**.01	.03
15	.01	.01	.64	.13	(*)		0	0	.06	2.74	.01	1.18
16	.01	0	.12	.02			*29.0	0	.02	.77	35.9	.09
17	0	0	.23	.31			5.91	0	.01	.04	4.98	16.0
18	.45	0	.94	.33			.02	0	1.46	2.88	5.46	.67
19	.45	0	.15	.03		(*)	.01	0	*.42	*7.18	1.29	*.39
20	.07	0	1.45	.02			0	*0	.06	4.13	.20	.12
21	.44	0	.23	.23			0	0	.05	1.12	.06	.22
22	.06	0	.12	.06			.01	0	23.2	4.56	.86	.02
23	.03	0	.05	.02			0	0	93.7	5.13	.10	.01
24	.50	0	.02	.01			.04	0	*18.4	1.83	.03	.08
25	.37	0	.03	.01			.02	0	.49	.10	.03	.02
26	.18	0	.05	.01			.01	0	.05	.05	.02	.01
27	.06	0	.07	.01			0	0	.06	.03	.01	.33
28	.01	0	.07	0			0	0	.03	.02	.01	.06
29	.01	0	.19	0			0	--------	.02	2.41	.02	.05
30	.01	0	.09	0			0	--------	.02	.05	.01	.03
31	0	0	------	0	---------		0	--------	.02	------	4.15	------
TOTAL	12.59	55.32	5.30	6.70	0	0	35.05	2.02	138.66	56.95	58.91	40.44
MEAN												
MGD	0.406	1.78	0.177	0.216	0	0	1.13	0.072	4.47	1.90	1.90	1.35
CFS	0.628	2.76	0.273	0.334	0	0	1.75	0.111	6.92	2.94	2.94	2.09
AC-FT	39	170	16	21	0	0	108	6.2	426	175	181	124

CALENDAR YEAR	1962:	MAX	52.5	MIN	0	MEAN MGD	0.410	MEAN CFS	0.636	AC-FT	461
FISCAL YEAR	1962-63:	MAX	93.7	MIN	0	MEAN MGD	1.13	MEAN CFS	1.75	AC-FT	1,270

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8- 4	1700	3.80	720	1,110	3-24	1630	2.52	170	263
1-16	2300	3.16	400	619	4- 5	1730	2.17	100	155
3-22	1830	2.56	180	279	5-16	1630	2.93	297	460
3-23	1730	4.35	1,180	1,830					

* Discharge measurement or observation of no flow made on this day.

** Field estimate made on this day.

7598. Kiilae Stream near Honaunau

Location.--Lat 19°24'52", long 155°50'56", on right bank 2.4 miles northeast of Kealia and 2.9 miles southeast of Honaunau Post Office.

Drainage area.--0.67 sq mi.

Records available.--April 1958 to June 1963.

Gage.--Water-stage recorder. Datum of gage is 2,898 ft above mean sea level (by stadia traverse).

Average discharge.--5 years, 0.140 mgd (0.217 cfs).

Extremes.--Maximum discharge during year, 9.00 mgd (13.9 cfs) June 5 (gage height, 1.55 ft), from rating curve extended above 3.7 mgd as explained below; no flow for many days.

1958-63: Maximum discharge, 67 mgd (104 cfs) Jan. 13, 1959 (gage height, 2.32 ft), from rating curve extended above 3.7 mgd by logarithmic plotting; no flow at times each year.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.5	0	0.9	0.40
.6	.03	1.0	.79
.7	.08	1.1	1.40
.8	.18	1.2	2.30

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.07	0.03	0	0.18	0	0	0	0.05	0	0	0.03	0.65
2	.39	.05	.05	.24	0	0	0	0	0	0	.02	.40
3	.52	.46	.25	.12	0	0	0	0	0	0	.12	.85
4	.43	.45	.05	.12	.05	0	0	0	.07	0	.09	.69
5	.56	.23	.03	.07	.03	0	0	0	.51	.03	.18	1.70
6	.21	.15	.03	.08	.05	0	0	0	1.43	.05	.86	.15
7	.25	.13	.03	.06	.02	0	.01	0	.15	.25	1.04	.13
8	.18	*.10	.05	.09	.01	0	.68	0	.05	1.01	.55	.09
9	.13	.12	.02	.08	.01	0	.21	0	.01	1.03	.16	.20
10	.23	.16	0	*.13	0	0	.08	0	0	.34	.05	.94
11	.11	.08	.49	.06	0	0	.03	0	.09	.06	.02	1.26
12	.51	.12	*.24	.60	0	0	.01	0	.02	.04	.02	.71
13	.12	.06	.03	.14	.02	.03	0	0	.26	.27	**.03	1.02
14	.04	.03	.02	.22	*.02	.02	0	0	.09	.43	1.07	.20
15	.03	0	.29	.07	.04	.01	*0	0	.01	.12	.84	.12
16	.08	0	.10	.04	.02	.01	.66	0	.17	.19	1.46	.08
17	.03	0	.08	.03	.01	.01	.77	0	.08	.25	.40	.06
18	.10	0	.29	.02	.01	*.03	.03	.86	*.94	*.89	.21	*.05
19	.37	0	.18	.01	.14	.01	.01	*.67	.21	.74	.14	.07
20	.36	0	.31	0	.03	0	.18	.09	.11	.26	.18	.05
21	.22	0	.17	.02	.12	0	.11	.01	.59	.25	.07	.67
22	.09	0	.17	.07	.23	0	.07	0	1.14	.07	.24	.13
23	.36	.02	.36	.04	.07	0	.03	0	1.56	.02	.28	.11
24	.46	.01	.10	.02	.05	0	.13	0	.69	.15	.81	.25
25	.23	.17	.24	.01	.03	0	.09	0	.10	.35	.44	.07
26	.13	.25	.16	.01	.30	0	.01	0	.54	.31	.10	.05
27	.05	.06	.21	.01	.12	.03	0	0	.15	.33	.02	.35
28	.02	.18	.26	.01	.02	.02	0	0	.01	.31	1.08	.13
29	.01	.13	.55	0	.01	0	0	-------	0	.78	.21	.71
30	0	.05	.12	0	0	0	0	-------	0	.10	.59	.57
31	*.03	.02	------	0	------	0	0	-------	0	------	1.33	--------
TOTAL	6.32	3.06	4.88	2.55	1.41	0.17	3.11	1.68	8.98	8.63	12.64	12.46
MEAN												
MGD	0.204	0.099	0.163	0.082	0.047	0.005	0.100	0.060	0.290	0.288	0.408	0.415
CFS	0.315	0.153	0.252	0.127	0.073	0.008	0.155	0.093	0.448	0.445	0.631	0.642
AC-FT	19	9.4	15	7.8	4.3	0.5	9.5	5.2	28	26	39	38

CALENDAR YEAR	1962:	MAX	1.23	MIN	0	MEAN MGD	0.136	MEAN CFS	0.210	AC-FT	152
FISCAL YEAR	1962-63:	MAX	1.70	MIN	0	MEAN MGD	0.181	MEAN CFS	0.280	AC-FT	202

Peak Discharge (base, 20 mgd).--No peak above base.

* Discharge measurement or observation of no flow made on this day.
** Field estimate made on this day.
Note.--No gage-height record July 30, 31, Oct. 23 to Nov. 14, Dec. 7-18.

7705. Paauau Gulch at Pahala

Location.--Lat 19°12'38", long 155°28'48", on right bank 100 ft downstream from bridge on Wood Valley Road, 0.8 mile north of Pahala, and 12.4 miles northeast of Naalehu.

Drainage area.--1.42 sq mi.

Records available.--May 1962 to June 1963.

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

Extremes.--1962: Maximum discharge during May and June, 19.2 mgd (29.7 cfs) May 5 (gage height, 2.49 ft); no flow for many days.

1962-63: Maximum discharge during fiscal year, 813 mgd (1,260 cfs) Oct. 18 (gage height, 4.87 ft, from floodmark), from rating curve extended above 230 mgd on basis of slope-area measurement at gage height 4.40 ft; no flow for many days.

Remarks.--Records poor. No diversion above station.

Discharge, in million gallons a day, May to June 1962

Day	May	June	Day	May	June	Day	May	June	Day	May	June	Day	May	June
1	0		7	0		13	0.01		19	0.01		25	0	
2	0		8	0		14	0		20	0		26	0	
3	.43		9	0		15	0		21	0		27	0	
4	.70		10	0		16	0		22	0		28	0	
5	1.34		11	0		17	0		23	0		29	0	
6	0		12	.01		18	0		24	0		30	0	
												31	0	
Total													2.50	0
Mean, in million gallons a day													0.081	0
Mean, in cubic feet per second													0.125	0
Runoff in acre-feet													7.7	0

Peak discharge (base, 100 mgd).--No peak above base.

Discharge, in million gallons a day, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			0	0				0	0	0	0	0
2			0	0				0	0	0	0	0
3			0	0				0	0	0	0	.11
4			0	0				0	0	.20	0	0
5			0	0				0	0	.02	.17	0
6			0	0	(*)			0	0	0	0	0
7			0	0				0	*.22	0	0	0
8			0	0			(*)	0	0	0	0	0
9			0	0				0	0	*0	0	.09
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	0	*0
14			0	0	(*)			0	0	8.27	0	0
15			0	0			(*)	0	0	*66.4	0	0
16			0	0				0	0	33.7	2.47	0
17			*3.0	0				.34	1.30	12.5	6.83	0
18			0	*4.0		(*)		.04	*0	*8.60	.02	0
19			0	0				*0	.30	.83	0	0
20			0	0				0	.02	.43	0	0
21			0	0				0	0	.10	0	0
22			0	0				0	0	*0	0	0
23			0	0				0	3.77	0	0	0
24			0	0				0	*.11	0	0	0
25			0	0				0	0	0	.12	0
26			0	0				0	0	0	0	0
27			0	0				0	4.56	0	*0	0
28			0	0				0	*19.8	0	.01	0
29			0	0				--------	*.16	.05	0	0
30			0	0				--------	.26	2.73	0	0
31	(*)		--------	0	--------			--------	.15	--------	.11	--------
Total	0	0	3.0	4.0	0	0	0	0.38	30.65	133.83	9.73	0.20
Mean												
Mgd	0	0	0.10	0.13	0	0	0	0.014	0.989	4.46	0.314	0.007
Cfs	0	0	0.16	0.20	0	0	0	0.022	1.53	6.90	0.486	0.011
Ac-ft	0	0	9.2	12	0	0	0	1.2	94	411	30	0.6

Calendar Year 1962: Max - Min - Mean mgd - Mean cfs - Ac-ft -
Fiscal Year 1962-63: Max 66.4 Min 0 Mean mgd 0.498 Mean cfs 0.771 Ac-ft 558

Peak discharge (base, 100 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
10-18	2200	4.87	813	1,260	4-15	0900	4.01	254	393
3-28	1500	4.40	450	696	5-17	1900	3.74	162	251

* Discharge measurement or observation of no flow made on this day.

8083 (formerly 8840). Finile River at Agat

Location.--Lat 13°22'41" N., long 144°39'26" E., on right bank 0.4 mile upstream from estuary and 0.4 mile southeast of Agat School.

Drainage area.--0.26 sq mi.

Records available.--April 1960 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Extremes.--Maximum discharge during year, 862 cfs June 6 (gage height, 3.77 ft), from rating curve extended above 30 cfs on basis of slope-conveyance study; minimum, 0.16 cfs July 3.

1960-63: Maximum discharge, that of June 6, 1963; minimum, 0.11 cfs June 24, 1962.

Remarks.--Records good except those above 60 cfs, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 1-6)

0.1	0	0.5	4.02
.2	.26	.6	6.85
.3	.86	.9	19.5
.4	2.05	1.2	41.0

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.22	2.05	4.27	8.61	1.25	1.49	1.37	2.72	1.25	0.70	3.33	13.0
2	.22	7.75	1.62	8.28	1.05	1.49	1.62	1.90	1.15	.62	2.72	3.33
3	.19	2.02	1.25	4.33	1.05	1.49	1.49	1.75	1.15	.62	2.55	15.3
4	.26	1.69	1.15	2.72	.95	1.37	1.62	2.72	1.05	.86	2.38	5.78
5	.30	3.58	*1.90	2.38	1.05	1.86	1.49	1.75	1.05	1.81	2.21	11.8
6	*.30	1.90	1.37	2.21	.95	7.99	1.37	1.62	1.15	2.07	2.05	22.2
7	.39	*1.37	1.15	2.05	.95	6.74	1.37	9.72	1.05	.95	1.90	4.02
8	.39	1.25	1.15	2.05	1.05	12.3	1.37	3.32	.95	.78	1.75	3.12
9	.39	1.05	1.05	2.21	.95	3.56	1.25	1.75	.95	*.70	1.49	2.72
10	.70	.95	.95	1.75	1.65	3.01	1.25	1.49	.95	.70	1.49	2.38
11	.56	.86	.95	1.62	19.7	2.38	1.25	1.37	1.05	.70	1.49	3.32
12	.56	1.25	8.45	*1.49	17.0	2.21	1.25	1.37	.95	.62	1.37	2.21
13	.44	1.62	1.37	1.49	2.72	2.21	1.15	1.62	.95	.62	*1.37	*2.05
14	.39	2.61	5.69	1.49	2.55	2.05	1.15	1.37	.86	.70	1.37	2.05
15	.39	6.00	1.75	1.62	2.21	2.05	1.05	1.37	.86	.70	1.37	1.90
16	.34	1.75	1.75	2.00	2.97	1.75	*1.49	1.25	.86	.62	1.37	1.90
17	.30	1.37	2.76	1.75	3.80	2.21	1.25	1.15	.78	.70	1.37	1.90
18	.50	1.15	1.62	1.92	2.38	4.85	2.25	1.05	*.70	2.48	1.25	1.75
19	*.44	1.25	1.37	1.62	2.05	2.21	1.25	1.05	.70	.70	1.25	2.21
20	.78	1.37	1.37	2.39	1.90	*1.90	1.25	1.15	.70	.62	1.05	1.62
21	.44	1.15	1.25	1.75	2.83	2.05	1.25	*1.15	.78	.62	1.25	1.49
22	.34	.95	1.75	1.75	2.05	1.90	1.49	1.25	.95	.62	1.05	1.37
23	1.05	.86	1.25	1.37	1.75	1.75	1.15	2.22	.78	1.96	1.05	1.62
24	.86	.95	1.15	1.49	1.90	1.75	1.15	1.25	.78	.70	1.05	1.49
25	1.92	1.25	1.05	1.88	1.75	2.69	1.15	1.15	.70	.62	1.75	1.37
26	2.32	.86	1.15	1.37	1.90	1.75	4.97	1.15	.70	.62	1.15	1.37
27	3.15	.86	1.05	1.62	1.62	1.49	2.72	1.15	.70	1.09	1.25	1.25
28	1.25	.78	1.37	1.25	1.49	1.49	3.21	1.15	.62	10.6	1.25	1.25
29	.86	.70	7.20	1.25	1.49	1.37	3.68	------	.62	39.8	4.13	1.49
30	.62	.78	11.8	1.15	1.49	1.37	1.90	------	.78	8.41	2.05	1.49
31	7.18	3.99	------	1.15	------	1.37	4.08	------	.70	------	3.11	------
TOTAL	28.05	55.97	71.96	70.01	86.45	84.10	54.29	51.96	27.22	83.31	54.22	118.75
MEAN	0.905	1.81	2.40	2.26	2.88	2.71	1.75	1.86	0.878	2.78	1.75	3.96
AC-FT	56	111	143	139	171	167	108	103	54	165	108	236

CALENDAR YEAR 1962:	MAX	19.7	MIN	0.13	MEAN	1.31	AC-FT	948
FISCAL YEAR 1962-63:	MAX	39.8	MIN	0.19	MEAN	2.15	AC-FT	1,560

Peak discharge (base, 350 cfs, revised)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 2	0430	2.96	457	11-11	2400	3.06	492
9-12	1330	2.76	371	6- 3	1330	3.06	492
9-30	2230	2.71	354	6- 6	1830	3.77	862

* Discharge measurement made on this day.

8094 (formerly 8880). Cetti River near Umatac

Location.--Lat 13°18'58" N., long 144°39'21" E., on right bank 0.1 mile upstream from estuary and 1.3 miles northeast of Umatac School.

Drainage area.--0.72 sq mi.

Records available.--February 1960 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 10 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,400 cfs Sept. 30 (gage height, 6.12 ft), from rating curve extended above 66 cfs as explained below; minimum, 0.50 cfs Mar. 27-30, Apr. 26.

1960-63: Maximum discharge, 1,420 cfs Oct. 19, 1960 (gage height, 6.19 ft), from rating curve extended above 66 cfs by slope-area measurements at gage heights 1.78 and 6.19 ft; minimum, 0.18 cfs May 15, 1960.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge in cubic feet per second)

0.2	0.43	0.8	24.5
.3	1.55	.9	35.0
.4	4.05	1.0	50.0
.5	8.00	2.0	254
.7	17.0		

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.55	13.8	26.5	38.6	1.90	1.70	1.22	10.3	1.37	1.90	15.4	60.3
2	1.08	33.9	6.80	44.8	1.70	1.55	1.55	4.80	1.08	.75	6.40	7.60
3	.96	12.6	15.4	22.3	1.70	1.37	1.55	3.35	.96	.66	4.05	43.0
4	2.51	6.00	5.60	7.20	1.55	1.22	2.30	11.0	1.08	1.48	4.93	19.6
5	1.70	25.4	9.68	5.20	2.24	1.55	1.22	3.70	1.08	.75	2.78	14.8
6	1.22	10.0	4.80	4.05	2.19	14.8	1.22	2.78	2.10	10.9	2.30	6.80
7	1.37	6.00	*4.05	3.03	1.37	25.9	1.08	83.3	1.08	1.08	*2.23	5.60
8	1.75	*4.63	3.03	2.53	1.22	48.7	1.08	11.4	.85	.85	2.30	4.05
9	1.72	3.70	2.53	3.35	1.08	9.20	.96	4.80	.75	.75	2.30	3.35
10	9.88	3.03	2.30	2.30	2.65	7.81	.96	3.03	.85	.75	2.10	2.78
11	*2.10	2.78	2.10	2.10	114	4.05	.85	2.10	.96	1.06	1.90	2.53
12	1.90	2.78	3.20	1.90	62.1	3.03	.85	1.90	.85	*.75	1.90	2.30
13	1.55	4.14	10.7	1.70	6.40	2.53	.85	2.78	.75	.75	1.70	*6.08
14	1.55	21.6	8.63	1.55	6.79	2.30	.85	5.36	*.66	.75	1.70	2.10
15	8.51	13.7	3.70	1.70	3.70	2.10	.85	2.10	.66	1.57	1.70	1.90
16	1.90	6.80	5.80	*3.71	4.35	1.90	2.57	1.55	.66	.96	1.55	1.70
17	1.37	4.80	4.56	3.70	8.62	5.11	1.08	1.55	.66	.75	1.55	1.55
18	1.70	3.70	2.78	4.05	2.78	3.87	*2.10	1.22	.58	1.31	1.37	1.70
19	1.37	2.78	2.30	2.78	3.52	2.30	1.08	*1.22	.58	.75	1.22	4.53
20	1.70	2.53	2.30	9.26	3.72	2.10	1.08	1.70	.58	.75	1.08	1.70
21	3.25	2.30	1.90	3.35	4.05	*1.70	2.30	1.22	.58	1.10	1.08	1.55
22	1.55	2.10	3.60	3.49	2.78	1.55	1.70	1.37	.66	.75	1.08	1.37
23	2.80	1.90	5.09	2.30	2.53	1.90	1.22	9.64	.66	.75	1.70	6.73
24	1.70	2.10	6.27	4.74	2.30	1.37	1.08	2.10	.58	.66	3.73	1.70
25	18.2	1.70	3.35	5.00	2.10	11.5	1.37	1.70	.58	.66	3.70	1.55
26	14.1	1.55	1.70	4.40	11.9	2.78	28.9	1.55	.58	.58	2.10	1.37
27	23.9	2.10	1.22	2.78	2.30	1.90	7.94	1.37	.58	2.61	7.58	1.37
28	8.00	2.07	2.64	2.30	2.10	1.55	3.70	1.37	.50	41.5	6.83	1.90
29	4.40	1.37	55.0	5.83	2.10	1.37	5.90	------	.50	200	26.9	5.63
30	3.35	1.37	68.0	2.30	1.55	1.37	2.78	------	.66	16.8	9.20	2.30
31	43.1	47.4	------	1.90	------	1.22	14.2	------	.75	------	15.7	------
TOTAL	171.74	250.63	275.53	204.20	267.29	171.30	96.39	180.26	24.77	294.68	140.06	219.44
MEAN	5.54	8.08	9.18	6.59	8.91	5.53	3.11	6.44	0.799	9.82	4.52	7.31
AC-FT	341	497	547	405	530	340	191	358	49	584	278	435

CALENDAR YEAR 1962: MAX 114 MIN 0.33 MEAN 4.22 AC-FT 3,060
FISCAL YEAR 1962-63: MAX 200 MIN 0.50 MEAN 6.29 AC-FT 4,560

* Discharge measurement made on this day.

Peak discharge (base, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
9-30	2230	6.12	1,400	4-29	2030	4.68	968
11-11	2400	5.58	1,230	6- 1	0030	4.60	942

8160. Umatac River at Umatac

Location.--Lat 13°17'45" N., long 144°39'50" E., on left bank 0.2 mile upstream from mouth, 0.3 mile southeast of Umatac, 5.7 miles northwest of Inarajan, and 6.0 miles south of Agat.

Drainage area.--2.04 sq mi.

Records available.--September 1952 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8 ft (from topographic map). Prior to Oct. 16, 1953, at datum 0.62 ft higher.

Average discharge.--10 years (1953-63), 8.64 cfs.

Extremes.--Maximum discharge during year, 3,470 cfs Sept. 30 (gage height, 4.94 ft), from rating curve extended above 320 cfs as explained below; minimum, 1.47 cfs Apr. 24-26.

1952-63: Maximum discharge, 7,460 cfs Oct. 19, 1960 (gage height, 7.04 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 3.51 and 7.04 ft; minimum, 0.20 cfs June 23, 1960.

Remarks.--Records good. Water diverted upstream at Piga Spring for domestic use at Umatac. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.56	0.7	19.6
.3	1.80	1.0	51.0
.4	4.00	1.2	85.0
.5	7.65	1.6	188
.6	12.5	2.0	340

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.25	36.0	107	103	4.30	4.30	4.30	32.0	3.75	3.86	18.8	107
2	2.75	87.5	28.5	79.0	4.00	4.00	4.00	11.5	3.75	2.35	13.1	25.8
3	2.15	32.0	17.2	39.5	3.75	3.75	4.00	8.50	3.50	1.97	11.0	75.6
4	4.30	16.4	12.5	20.5	3.50	3.50	6.68	51.3	3.50	4.64	11.0	29.1
5	3.25	73.6	25.3	13.7	4.38	5.50	4.60	11.5	3.50	2.55	8.05	24.4
6	2.55	30.6	*13.7	11.0	4.00	15.0	4.00	8.50	4.00	8.97	6.85	15.0
7	2.75	*20.5	11.5	9.50	4.00	59.0	3.75	122	*3.25	2.75	6.05	16.4
8	2.75	13.7	10.5	8.50	3.25	80.1	3.50	48.8	3.00	2.35	*5.65	17.4
9	8.53	11.5	8.50	7.65	3.00	25.5	3.25	14.3	3.00	2.15	4.95	15.0
10	17.1	9.00	7.65	6.85	5.94	17.1	3.25	11.0	3.25	4.04	4.60	10.5
11	4.60	8.50	6.85	*6.05	195	13.1	3.00	9.50	3.75	2.55	4.30	9.00
12	*5.98	9.00	7.25	5.65	142	8.50	3.25	8.50	3.25	2.15	4.00	7.65
13	4.30	11.9	6.85	5.65	15.7	7.65	3.00	8.37	2.75	2.15	4.00	*8.74
14	4.30	55.7	6.45	5.30	11.5	6.05	3.00	7.65	*2.55	2.15	3.75	6.85
15	6.85	32.7	5.30	5.30	8.50	5.65	*3.00	7.25	2.55	*2.35	3.75	6.45
16	4.30	18.0	19.5	5.48	12.0	5.30	9.44	6.45	2.55	1.97	3.50	5.65
17	3.25	12.5	7.25	8.65	31.6	9.75	4.60	5.65	2.35	1.97	3.50	5.30
18	28.8	10.5	5.65	8.05	10.5	*9.13	4.60	5.30	2.35	2.15	3.50	5.30
19	6.45	9.00	4.95	6.85	9.00	6.85	3.75	5.30	2.35	1.80	3.50	18.0
20	4.60	8.50	6.45	9.51	8.50	5.65	3.50	6.80	2.15	1.80	3.00	5.30
21	6.45	7.25	4.95	6.85	8.05	5.30	3.50	4.95	2.15	1.97	3.50	4.60
22	4.30	7.65	4.60	5.65	7.25	4.60	4.95	4.95	2.55	1.80	3.00	4.30
23	5.30	6.05	15.5	4.60	6.05	4.95	4.30	7.37	2.35	1.97	3.50	10.8
24	3.75	8.25	12.9	6.45	5.65	4.30	3.50	5.30	2.15	1.80	6.05	5.30
25	17.5	6.85	7.25	7.65	5.30	26.3	3.25	4.30	1.97	1.80	7.65	4.30
26	79.5	5.65	5.30	9.00	7.90	14.0	52.3	4.00	1.80	1.63	5.30	4.00
27	57.2	7.91	4.95	6.05	4.95	6.45	11.0	4.00	1.97	3.12	8.50	4.00
28	25.8	6.85	13.5	4.60	4.60	5.30	6.85	3.75	1.80	25.0	17.2	4.60
29	18.1	4.95	229	4.95	5.19	4.95	7.25	------	1.80	319	87.7	12.4
30	13.1	4.60	146	7.99	4.60	4.60	5.65	------	2.15	40.3	34.7	11.4
31	101	128	------	4.95	------	4.30	26.0	------	2.15	------	49.8	------
TOTAL	454.81	701.11	762.80	434.43	543.96	380.43	211.02	428.79	83.94	455.06	353.75	480.14
MEAN	14.7	22.6	25.4	14.0	18.1	12.3	6.81	15.3	2.71	15.2	11.4	16.0
AC-FT	902	1,390	1,510	862	1,080	755	419	850	166	903	702	952

CALENDAR YEAR	1962:	MAX	229	MIN	0.74	MEAN	10.3	AC-FT	7,420
FISCAL YEAR	1962-63:	MAX	319	MIN	1.63	MEAN	14.5	AC-FT	10,490

* Discharge measurement made on this day.

Peak discharge (base, 1,000 cfs, revised)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-26	0030	3.67	1,650	11-11	2400	4.44	2,710
8- 2	0500	3.18	1,140	4-29	0400	4.01	2,060
8-31	0200	3.58	1,550	5-29	0600	3.33	1,300
9-30	2300	4.94	3,470	6- 1	0030	3.46	1,430

8210. Geus River near Merizo

Location.--Lat 13°16'15" N., long 144°40'40" E., on left bank 0.7 mile northeast of Merizo, 2.2 miles southeast of Umatac, and 4.7 miles west of Inarajan.

Drainage area.--0.95 sq mi.

Records available.--April 1953 to June 1963.

Gage.--Water-stage recorder and broad-crested weir. Altitude of gage is 60 ft (from topographic map).

Average discharge.--10 years, 3.34 cfs.

Extremes.--Maximum discharge during year, 1,800 cfs Sept. 30 (gage height, 3.80 ft), from rating curve extended above 56 cfs as explained below; minimum, 0.28 cfs Apr. 20.

1953-63: Maximum discharge, 2,940 cfs Oct. 19, 1960 (gage height, 4.16 ft), from rating curve extended above 56 cfs on basis of slope-area measurements at gage heights 4.00 and 4.16 ft; no flow for part of each day July 17, 1953, May 4, 5, 1960.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Water is diverted half a mile upstream for domestic use and at station for irrigation.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.18	0.9	7.00
.3	.47	1.0	10.0
.4	.93	1.1	14.5
.5	1.57	1.4	34.0
.6	2.40	1.7	70.0
.7	3.52	2.1	140
.8	5.00	2.4	230

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.82	12.5	33.5	52.8	2.23	1.74	1.43	20.2	1.29	1.18	12.4	57.0
2	.63	36.8	5.20	38.2	1.82	1.65	1.36	5.60	1.16	.72	4.30	9.50
3	.43	10.5	4.0	14.8	1.57	1.43	1.29	3.17	1.16	.63	2.73	13.3
4	.59	3.88	3.5	7.20	1.50	1.36	2.49	58.8	1.16	1.46	2.15	9.10
5	*.59	34.5	10.0	4.00	1.8	2.23	1.82	6.40	1.16	.77	1.82	6.20
6	.63	15.1	*2.6	2.95	1.50	3.67	1.29	3.64	1.36	5.67	1.57	4.15
7	.47	6.40	2.2	2.51	1.6	29.7	1.22	37.4	1.16	1.22	*1.36	6.80
8	.47	3.64	2.0	2.15	1.57	44.7	1.10	51.2	1.04	.93	1.36	27.7
9	.40	*2.95	1.8	2.40	1.43	15.5	1.10	5.00	.93	.72	1.29	14.5
10	6.25	2.15	1.50	1.90	2.5	6.70	1.04	3.17	1.04	1.60	1.22	6.20
11	1.50	2.07	1.7	1.74	75	3.76	1.04	2.32	1.22	.87	1.10	4.15
12	3.42	2.06	1.6	*1.57	45	2.95	1.10	*2.07	1.04	.72	1.10	*3.17
13	2.73	4.13	1.5	1.50	6.0	2.32	.98	2.07	*.93	.68	1.04	2.84
14	1.36	31.7	1.4	1.50	4.5	1.98	.87	2.07	.87	.63	1.04	2.51
15	1.36	22.0	1.3	1.82	2.73	1.82	*.93	2.23	.82	*.93	.93	2.32
16	.98	6.60	7.8	1.83	3.61	1.74	3.73	1.90	.77	.63	.87	2.07
17	.68	3.40	2.2	2.84	4.98	2.18	2.07	1.74	.82	.59	.93	1.90
18	6.79	2.51	1.7	3.98	3.64	2.15	1.82	1.57	.77	.59	.87	1.82
19	2.84	2.07	1.4	3.64	2.73	*2.19	1.36	1.50	.72	.51	.87	5.29
20	*1.36	1.74	2.0	7.39	2.40	1.90	1.16	2.24	.68	.47	.77	1.98
21	1.16	1.50	1.6	3.51	2.86	1.82	1.10	1.65	.82	.55	1.16	1.57
22	.93	1.50	1.2	2.15	2.62	1.65	1.90	1.50	.77	.51	.82	1.50
23	1.16	1.36	6.6	1.65	2.07	1.90	1.98	1.78	.68	.59	.87	1.98
24	.82	1.36	2.5	1.98	1.98	1.57	1.43	1.50	.63	.47	2.06	1.74
25	7.54	1.29	2.1	5.09	1.82	15.2	1.16	1.36	.63	.47	5.28	1.43
26	36.7	1.29	1.6	5.54	1.90	12.1	25.1	1.29	.63	.43	2.73	1.36
27	25.2	1.65	1.4	2.95	1.65	3.06	5.20	1.22	.63	.91	3.88	1.29
28	13.0	1.74	2.50	1.98	*1.57	2.15	3.06	1.22	.59	9.19	13.9	1.43
29	11.7	1.36	84.7	1.65	1.82	1.82	2.73	------	.63	197	93.0	9.89
30	5.80	1.29	55.8	4.8	1.82	1.57	2.07	------	.68	23.0	25.5	3.17
31	51.3	39.5	------	3.50	------	1.50	9.93	------	.63	------	34.9	------
TOTAL	189.61	260.54	248.90	191.52	188.22	176.01	84.86	225.81	27.42	254.64	223.82	207.86
MEAN	6.12	8.40	8.30	6.18	6.27	5.68	2.74	8.06	0.885	8.49	7.22	6.93
AC-FT		517	494	380	373	349	168	448	54	505	444	412

CALENDAR YEAR 1962:	MAX	84.7		MIN	0.20		MEAN	3.84		AC-FT	2,780
FISCAL YEAR 1962-63:	MAX	197		MIN	0.40		MEAN	6.24		AC-FT	4,520

Peak discharge (base, 570 cfs, revised)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-25	2400	3.00	570	2- 4	0900	3.21	772
9-30	2300	3.80	1,800	4-29	0400	3.48	1,140
11-11	About 2400	3.58	1,310	5-29	0630	3.44	1,080
				6- 1	0100	3.11	661

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 3-27, Oct. 30, Nov. 5, 7, 10-14.

8350. Inarajan River near Inarajan

Location.--Lat 13°16'40" N., long 144°44'15" E., on right bank 0.6 mile northwest of Inarajan and 4.9 miles east of Merizo.

Drainage area.--4.49 sq mi.

Records available.--September 1952 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

Average discharge.--10 years (1953-63), 17.2 cfs.

Extremes.--Maximum gage height during year, 12.82 ft, from floodmarks, May 29 (discharge not determined); minimum discharge, 2.45 cfs July 18.

1952-63: Maximum gage height, that of May 29, 1963; minimum discharge, 0.99 cfs July 6, 7, 1960.

Remarks.--Records good except those for period of no gage-height record, which are fair, and those above 1,820 cfs, which are poor. Stage-discharge relation not determined above gage height 11.0 ft owing to ungaged overbank flow. Village of Inarajan diverts about 40,000 gallons a day above station for domestic use.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.4	1.65	1.3	41.0
.5	3.05	1.6	75.0
.6	5.00	2.0	148
.7	7.80	3.0	295
1.0	19.5	6.0	820

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	4.35	37.6	178	232	17.7	13.4	10.7	81.9	10.0	7.11	50.1	94.1
2	4.35	169	39.3	217	15.9	12.2	10.7	19.1	9.40	5.75	22.5	58.7
3	2.90	38.1	23.7	89.6	14.2	11.8	11.0	15.0	9.08	5.50	19.4	a30
4	4.55	22.5	18.6	39.3	13.8	11.4	61.1	267	9.40	11.7	16.4	a24
5	*3.35	175	60.5	30.4	14.6	17.5	13.4	19.5	9.40	6.00	14.2	a19
6	3.35	51.3	*23.7	24.9	14.2	54.5	11.0	15.5	12.3	5.75	12.6	a20
7	3.55	27.6	19.1	21.9	14.2	199	10.4	240	9.08	5.50	11.8	a64
8	3.35	19.1	18.6	19.5	13.0	325	10.4	175	8.44	5.50	*10.4	a24
9	3.35	*19.1	15.9	*20.7	11.8	69.7	9.72	23.1	7.80	*5.00	10.0	a18
10	9.24	15.0	14.6	19.5	40.2	24.3	9.40	18.2	8.44	10.8	10.0	a17
11	4.35	14.6	14.6	17.3	409	18.2	8.76	15.9	9.40	5.50	9.40	a17
12	4.55	12.6	14.6	16.8	328	16.8	9.72	*15.5	8.12	4.75	9.08	*a17
13	5.00	26.6	13.4	16.4	29.0	14.6	8.76	16.4	*7.50	5.00	8.76	16.4
14	3.75	224	18.6	18.2	21.3	13.4	8.12	23.6	7.20	4.75	9.08	14.2
15	4.75	87.9	15.0	23.5	18.2	13.0	*7.80	23.5	7.20	5.25	8.12	13.8
16	3.35	31.8	13.0	21.6	42.2	12.2	41.6	15.0	7.20	4.75	8.44	13.0
17	2.90	20.7	13.8	30.0	35.1	47.9	13.0	13.4	6.90	4.55	8.76	11.8
18	5.25	18.6	11.4	29.2	19.1	22.1	11.4	13.3	6.60	4.55	8.12	11.4
19	5.25	15.9	11.0	21.9	17.7	*14.2	9.40	13.8	6.60	4.35	8.12	41.5
20	4.35	15.0	14.2	31.0	17.7	13.4	8.76	23.7	6.60	4.15	7.80	11.8
21	4.35	14.6	11.4	18.6	19.1	13.4	9.08	12.6	6.90	4.55	8.12	10.7
22	3.55	14.6	12.2	19.1	17.3	11.8	15.3	13.4	7.20	4.35	7.80	10.4
23	7.27	11.8	15.5	14.6	15.0	14.2	9.72	13.3	6.30	4.55	7.50	12.3
24	3.55	12.2	14.6	40.5	15.0	11.4	8.44	11.8	6.00	4.15	13.0	10.7
25	67.8	14.2	11.4	28.3	14.6	143	7.80	10.4	6.00	3.95	13.8	9.08
26	100	12.6	11.0	23.1	17.4	56.5	176	10.0	6.00	3.95	11.0	8.76
27	115	15.0	11.8	19.2	13.8	15.5	18.2	9.72	5.75	7.34	15.1	8.76
28	29.7	12.6	22.5	20.9	*13.0	13.8	14.2	10.0	5.50	53.5	34.9	9.40
29	24.3	10.7	493	55.2	14.6	12.2	15.0	------	5.50	655	280	24.1
30	15.0	14.6	235	38.5	13.0	11.4	10.7	------	5.75	83.3	54.6	16.6
31	184	146	------	19.1	------	11.0	157	----	6.00	------	88.0	------
TOTAL	640.36	1,320.9	1,390.0	1,237.8	1,259.7	1,238.8	726.58	1,139.62	233.56	940.85	796.90	657.50
MEAN	20.7	42.6	46.3	39.9	42.0	40.0	23.4	40.7	7.53	31.4	25.7	21.9
AC-FT	1,270	2,620	2,760	2,460	2,500	2,460	1,440	2,260	463	1,870	1,580	1,300

CALENDAR YEAR	1962:	MAX	493	MIN	1.89	MEAN	21.7	AC-FT	15,720
FISCAL YEAR	1962-63:	MAX	655	MIN	2.90	MEAN	31.7	AC-FT	22,980

* Discharge measurement made on this day.
a No gage-height record.

Peak discharge (base, 1,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-25	2400	10.43	1,690	2- 4	0830	12.62	-
8- 2	0430	9.70	1,540	2- 8	0030	About 12.0	-
8-14	0100	10.28	1,650				
9-30	2330	12.74	-	4-29	0500	12.48	-
11-11	2200	12.54	-	5-29	0800	12.82	-
12- 8	2300	12.30	-				

8400. Paulilue River near Inarajan

Location.--lat 13°17'05" N., long 144°45'00" E., on right bank 0.3 mile upstream from mouth, 0.9 mile northeast of Inarajan, and 3.8 miles south of Talofofo.

Drainage area.--1.86 sq mi.

Records available.--October 1952 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 15 ft (from topographic map).

Average discharge.--10 years (1953-63), 5.90 cfs.

Extremes.--Maximum discharge during year, 1,520 cfs Sept. 30 (gage height, 9.48 ft), from rating curve extended above 210 cfs as explained below; minimum, 0.76 cfs July 18.

1952-63: Maximum discharge, 2,980 cfs Oct. 15, 1953 (gage height, 13.11 ft), from rating curve extended above 210 cfs by logarithmic plotting; minimum, 0.16 cfs June 2, 1954, Apr. 27, May 1, 1955, May 18, 1956.

Remarks.--Records good. No diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 13-15)

0.3	0.40	0.8	7.40
.4	.88	1.0	18.3
.5	1.60	1.5	55.0
.6	2.65	2.0	106
.7	4.40	3.0	218

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.36	19.0	76.5	94.4	5.90	4.20	3.25	31.6	3.60	2.10	21.1	27.1
2	1.60	77.7	15.4	89.5	5.10	3.60	3.40	6.60	3.25	2.30	7.91	23.9
3	1.20	17.7	8.93	55.4	4.85	3.40	3.60	5.10	3.10	2.00	6.60	11.5
4	2.10	9.44	6.20	16.0	4.20	3.25	10.2	91.9	3.25	3.96	5.60	9.95
5	*1.74	59.2	31.5	11.5	4.40	3.80	4.85	7.00	3.40	2.40	4.85	8.93
6	1.06	20.3	8.93	8.93	5.35	8.87	3.40	5.35	4.20	2.10	4.00	7.91
7	1.00	11.0	6.20	7.91	4.40	56.0	3.10	83.5	3.10	1.80	3.40	8.42
8	1.06	6.20	7.91	7.00	4.00	85.9	2.95	59.7	2.65	1.70	*3.10	7.40
9	1.06	*7.20	7.00	*7.00	3.60	24.9	2.80	8.42	2.50	*1.60	3.10	6.20
10	3.15	5.35	4.85	6.60	16.5	8.42	2.65	6.60	2.50	1.80	2.95	5.10
11	1.90	4.60	*4.60	5.90	167	5.90	2.50	5.60	2.80	1.60	2.95	*5.90
12	1.36	4.20	4.60	5.60	107	5.60	2.80	5.10	2.50	1.52	2.65	5.90
13	1.20	21.0	4.00	5.35	9.95	5.10	2.65	5.35	*2.40	1.44	2.50	4.85
14	1.00	70.6	5.60	5.60	8.93	4.85	2.50	*9.58	2.30	1.36	2.50	4.60
15	1.52	37.1	5.10	8.42	6.24	4.40	*2.50	7.40	2.30	1.44	2.40	4.20
16	1.44	12.0	4.00	8.67	11.8	4.20	9.22	5.10	2.30	1.36	2.30	4.00
17	1.00	7.91	4.40	13.6	5.90	8.88	4.00	4.60	2.20	1.36	2.40	3.80
18	.81	6.20	3.80	8.93	5.60	12.5	4.00	4.60	2.10	1.28	2.30	3.80
19	.81	5.35	3.25	7.40	5.60	*6.55	3.25	4.40	2.10	1.28	2.20	11.8
20	1.28	4.93	4.85	6.60	5.10	4.85	2.95	7.91	2.00	1.20	2.20	4.40
21	1.52	5.35	4.60	5.60	5.90	4.85	3.60	5.10	2.00	1.36	2.10	3.80
22	1.44	4.85	3.60	5.60	4.85	4.20	4.20	5.60	2.00	1.28	2.00	3.60
23	8.58	4.20	5.35	4.60	4.40	4.40	3.40	4.85	2.00	1.28	2.00	4.20
24	1.90	4.60	8.98	12.2	4.40	4.00	2.80	4.40	1.90	1.20	4.00	4.00
25	25.1	5.90	5.10	9.95	4.20	17.4	2.50	3.80	1.80	1.13	4.40	3.40
26	36.0	4.20	3.60	7.91	5.35	13.5	48.1	3.60	1.70	1.06	5.26	3.10
27	44.2	5.10	4.00	9.95	4.20	4.85	5.90	3.25	1.70	2.15	11.0	3.10
28	11.3	4.00	7.86	27.0	3.92	4.20	4.85	3.40	1.70	10.6	7.40	3.10
29	12.9	3.40	162	9.17	4.40	3.80	4.85	------	1.60	182	42.8	4.60
30	5.60	4.60	105	13.6	4.20	3.80	4.00	------	1.90	33.4	15.4	5.90
31	75.6	32.6	------	10.1	------	3.40	51.0	------	2.20	------	19.6	------
TOTAL	251.79	485.78	527.71	495.99	437.24	333.57	211.77	399.41	75.05	271.06	202.97	208.46
MEAN	8.12	15.7	17.6	16.0	14.6	10.8	6.83	14.3	2.42	9.04	6.55	6.95
AC-FT	499	964	1,050	984	867	662	420	792	149	538	403	413

CALENDAR YEAR 1962:	MAX	167	MIN	0.43	MEAN	7.54	AC-FT	5,460
FISCAL YEAR 1962-63:	MAX	182	MIN	0.81	MEAN	10.7	AC-FT	7,740

* Discharge measurement made on this day.

Peak discharge (base, 320 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-25	2300	4.46	432	12- 8	1730	4.64	463
8- 2	0530	4.24	396	1-31	2230	4.22	393
8- 5	1800	4.05	368	2- 4	0830	6.53	831
9- 1	1600	4.45	430	2- 7	2400	4.27	400
9-30	2400	9.48	1,520	4-29	0430	5.13	555
11-11	2300	8.24	1,220				

8470. Imong River near Agat

Location.--Lat 13°20'14" N., long 144°41'55" E., on left bank 500 ft upstream from Fena Valley Reservoir, 1.4 miles southwest of Fena Dam spillway, and 4.3 miles southeast of Agat School.

Drainage area.--1.93 sq mi.

Records available.--March 1960 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 120 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,440 cfs Sept. 30 (gage height, 8.29 ft), from rating curve extended above 110 cfs as explained below; minimum, 1.80 cfs July 3, 4.

1960-63: Maximum discharge, 3,370 cfs Oct. 19, 1960 (gage height, 10.06 ft), from rating curve extended above 110 cfs on basis of slope-area measurements at gage heights 7.46 and 10.06 ft; minimum, 1.25 cfs July 7, 8, 1960.

Remarks.--Records good. No diversion above station. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.4	1.80	1.1	42.4
.5	4.00	1.5	88.0
.6	7.50	2.0	163
.8	18.7	3.0	385

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	3.00	45.1	59.5	*128	7.50	7.50	6.30	*22.0	4.90	3.25	30.0	80.5
2	2.35	94.4	34.4	65.4	6.30	7.10	*7.33	10.5	4.60	3.00	*13.9	16.9
3	*1.95	27.2	44.2	67.1	6.30	*6.70	6.30	8.00	4.30	*2.55	9.50	65.3
4	3.25	14.5	19.2	24.3	6.70	6.70	8.16	18.6	*4.30	4.93	8.50	*28.5
5	2.35	49.0	31.7	18.7	*9.90	7.50	6.30	9.00	4.60	3.00	7.10	19.5
6	2.35	30.4	16.9	15.7	9.39	16.8	5.55	7.10	5.92	3.49	6.30	19.8
7	4.31	15.1	13.9	13.9	6.70	55.4	5.55	137	4.00	3.00	5.55	27.3
8	4.67	11.0	11.0	12.7	6.30	119	5.20	31.5	3.50	2.75	5.55	16.5
9	4.08	10.0	10.0	13.3	5.90	29.5	5.20	11.0	3.00	2.55	5.20	11.5
10	6.48	8.50	9.00	12.7	11.3	16.9	5.20	8.50	3.25	2.75	5.20	9.50
11	6.32	8.00	8.50	11.0	156	11.5	4.90	7.10	3.25	3.00	4.90	10.0
12	6.70	7.50	11.1	10.5	214	10.5	5.20	6.70	3.00	2.35	4.90	9.00
13	5.88	11.0	14.7	10.5	16.3	9.50	4.90	10.3	2.75	2.55	4.60	12.0
14	3.75	47.7	54.1	10.0	10.5	8.50	4.90	9.28	2.75	2.35	4.60	9.00
15	9.92	34.3	16.5	10.9	8.00	8.50	4.90	8.00	2.75	2.75	4.30	8.00
16	4.60	17.5	13.8	20.7	15.8	8.00	9.04	6.70	2.75	2.55	4.30	7.50
17	3.25	11.5	11.0	14.7	12.2	12.7	6.30	5.90	2.75	2.55	4.30	7.50
18	2.75	9.50	9.00	16.3	9.00	14.2	6.70	5.55	2.75	5.00	5.55	7.10
19	3.25	8.50	8.50	11.5	10.6	10.5	5.55	5.55	2.75	2.55	5.20	12.0
20	4.93	8.50	8.50	19.2	10.0	9.00	5.20	6.30	2.55	2.35	4.30	8.00
21	8.65	7.50	7.50	11.5	11.0	8.50	5.55	5.20	2.75	2.55	4.90	6.70
22	5.19	7.50	12.6	11.1	9.50	7.50	6.30	9.80	3.00	2.35	4.30	6.30
23	10.0	6.70	11.9	8.50	8.50	8.00	5.20	13.2	2.55	2.35	4.90	9.37
24	4.60	7.10	30.5	19.2	8.50	7.10	4.90	7.10	2.55	2.15	7.51	7.50
25	9.03	7.10	11.5	16.7	8.00	15.8	4.60	5.55	2.35	2.15	9.00	6.70
26	37.9	6.70	9.00	12.7	17.6	11.0	31.5	4.90	2.35	2.15	9.73	6.30
27	33.6	7.20	9.00	11.8	9.00	8.00	10.0	4.60	2.35	5.00	11.0	6.30
28	20.0	6.30	11.5	9.50	8.00	7.10	8.00	4.60	2.35	36.4	13.9	6.30
29	10.7	6.30	159	17.9	8.00	6.70	9.00	------	2.35	312	40.2	8.44
30	8.00	6.70	131	9.00	7.50	6.30	7.10	------	3.00	44.8	21.6	14.8
31	*88.1	*78.5	------	7.10	------	6.30	26.3	------	3.00	------	20.1	------
TOTAL	321.91	616.80	799.00	642.10	634.29	468.30	237.13	389.53	99.02	471.17	290.89	464.11
MEAN	10.4	19.9	26.6	20.7	21.1	15.1	7.65	13.9	3.19	15.7	9.38	15.5
AC-FT	638	1,220	1,580	1,270	1,260	929	470	773	196	935	577	921

CALENDAR YEAR 1962: MAX 214 MIN 1.50 MEAN 11.3 AC-FT 8,170
FISCAL YEAR 1962-63: MAX 312 MIN 1.95 MEAN 14.9 AC-FT 10,770

* Discharge measurement made on this day.

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 2	0430	5.30	1,160	11-12	0030	7.48	2,080
8- 5	1900	4.72	942	12- 8	1630	5.88	1,390
9-14	1300	5.06	1,060	2- 7	1730	6.92	1,820
9-30	2300	8.29	2,440	4-29	2030	6.32	1,570
10- 3	1500	5.05	1,060	6- 3	1400	5.48	1,230

8480. Almagosa Springs near Agat

Location.--Lat 13°20'45" N., long 144°40'45" E., on left bank 3.5 miles southeast of Agat and 3.5 miles northeast of Umatac.

Drainage area.--0.74 sq mi, hydrologic drainage boundary uncertain owing to ground-water exchange.

Records available.--September 1951 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 640 ft (from topographic map).

Average discharge.--11 years (1952-63), 3.70 cfs.

Extremes.--Maximum discharge during year, 320 cfs Nov. 12 (gage height, 4.20 ft), from rating curve extended above 53 cfs as explained below; no flow Mar. 13, 14, Apr. 10, 12, 24-26.

1951-63: Maximum discharge, 760 cfs Oct. 15, 1953 (gage height, 5.02 ft), from rating curve extended above 53 cfs by test on model of station site; no flow at times.

Remarks.--Records good. Up to 3.9 cfs diverted above station for municipal use.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.01	0	0.7	5.00
.1	.04	1.0	14.2
.2	.16	1.5	38.3
.3	.48	2.0	73.0
.4	1.06	3.0	143
.5	1.95	3.5	198
.6	3.20		

Discharge, in cubic feet per second, fiscal year July 1962 to June 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.12	*32.5	21.2	70.8	2.23	2.41	1.28	15.0	1.65	0.05	*27.5	42.0
2	.08	52.8	21.2	46.2	1.55	2.05	*1.37	10.2	1.26	.05	16.1	20.5
3	.03	25.5	17.2	32.3	1.37	1.85	1.13	6.74	.99	.05	10.8	26.7
4	.03	14.2	*12.2	22.2	1.13	1.55	.99	6.74	.79	.04	8.48	24.2
5	.03	17.9	13.0	14.6	*2.12	1.65	.85	*4.02	.73	.07	6.16	21.6
6	.03	23.0	10.8	11.1	1.46	3.51	.67	3.50	*.79	5.73	4.40	*18.9
7	.15	13.5	8.48	9.06	.99	19.9	.57	23.2	.32	2.40	3.20	15.7
8	.24	9.06	5.58	7.03	.85	52.0	.40	36.5	.32	.62	2.80	14.0
9	.26	5.87	4.02	5.58	.79	36.5	.36	13.5	.18	.14	2.53	11.5
10	.10	3.67	3.07	4.60	2.09	*16.9	.20	9.06	.10	0	1.95	9.06
11	.77	2.80	2.29	3.50	35.6	11.5	.14	5.87	.15	.07	1.65	7.90
12	2.80	2.80	2.17	3.20	104	9.35	.06	4.60	.03	0	1.37	5.87
13	2.53	2.66	5.71	2.94	25.5	7.03	.03	4.51	0	.04	1.13	4.80
14	1.06	20.3	23.9	2.53	13.9	5.58	.03	6.64	0	.08	.99	4.02
15	2.20	24.0	17.4	*2.68	9.93	4.40	.02	5.58	.01	.09	.79	3.35
16	1.46	17.2	9.35	6.29	11.8	3.50	1.11	4.20	.02	.10	.62	2.94
17	.44	10.2	6.16	3.67	9.93	3.67	.40	3.67	.08	.08	.48	2.53
18	.10	6.74	4.20	4.02	8.77	4.64	.52	2.94	.15	.08	.79	2.29
19	.48	4.40	3.07	3.84	7.03	3.35	.57	2.41	.14	.08	.62	2.91
20	1.03	3.20	2.66	6.92	6.74	3.07	.44	2.41	.12	.08	.29	2.05
21	.92	2.53	2.05	7.90	6.74	2.80	.52	1.75	.09	.05	.20	1.55
22	.62	1.75	1.97	5.67	5.37	2.41	.73	3.33	.08	.05	.10	1.37
23	.79	1.28	6.50	4.02	5.29	2.17	.79	5.75	.10	.04	.03	4.51
24	.52	1.13	6.74	6.07	4.40	1.95	.67	6.45	.08	0	.32	2.53
25	1.16	.92	4.02	4.60	3.84	3.14	.57	3.84	.12	0	1.92	1.75
26	14.9	.67	2.94	4.02	5.63	6.35	10.7	3.07	.10	0	1.95	1.75
27	14.0	.62	2.41	4.20	3.84	3.35	9.64	2.29	.06	.32	2.57	1.46
28	19.3	.23	2.29	3.20	3.30	2.66	7.03	1.75	.07	6.74	5.87	1.65
29	9.06	.07	38.5	2.66	3.07	2.05	8.48	------	.06	159	16.7	2.55
30	4.20	.07	35.8	2.41	2.66	1.85	7.03	------	.06	57.5	22.4	2.58
31	35.0	19.0	------	1.85	------	1.46	8.36	------	.07	------	16.5	------
TOTAL	114.41	320.57	300.38	309.86	292.42	224.60	65.66	199.52	8.95	234.05	161.21	264.52
MEAN	3.69	10.3	10.0	10.0	9.75	7.25	2.12	7.13	0.289	7.80	5.20	8.82
AC-FT	227	636	597	615	580	445	130	396	18	464	320	525

CALENDAR YEAR 1962:	MAX	104	MIN	0.01	MEAN	4.42	AC-FT	3,200
FISCAL YEAR 1962-63:	MAX	159	MIN	0	MEAN	6.84	AC-FT	4,950

* Discharge measurement made on this day.

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 2	0530	2.65	118	2- 7	2000	2.23	89.1
9-30	2300	3.72	228	4-29	0630	4.00	274
11-12	0030	4.20	320	6- 1	0230	2.50	108
12- 8	1700	3.17	159	6- 3	1600	2.11	80.7

8490. Fena Dam spillway near Agat

Location.--Lat 13°21'30" N., long 144°42'10" E., on left bank 4.0 miles southeast of Agat and 5.5 miles southwest of Yona.

Drainage area.--5.81 sq mi.

Records available.--September 1951 to July 1952, November 1952 to June 1963.

Gage.--Water-stage recorder and concrete-dam control. Datum of gage is 111.35 ft above mean sea level (from U. S. Navy construction plans).

Average discharge.--10 years (1953-63), 17.8 cfs.

Extremes.--Maximum discharge during year, 1,830 cfs Nov. 12 (gage height, 2.27 ft), from rating curve extended above 130 cfs on basis of broad-crested weir formula; no flow for many days.

1951-63: Maximum discharge, not determined, occurred Oct. 15, 1953 (gage height, at least 4.5 ft); no flow for many days each year.

Remarks.--Records fair. About 10 cfs is diverted from Fena Valley Reservoir and tributary springs for military and civilian use. Records represent only flow over spillway. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0	0	0.5	189
.1	16.9	1.0	535
.2	47.8	2.0	1,510
.3	89.0		

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0	*147	167	448	28.0	14.4	9.90	89.0	9.90	0	103	218
2	0	282	117	297	14.4	14.4	*9.90	34.2	7.86	0	47.8	89.0
3	0	103	89.0	193	14.4	12.1	7.86	22.2	5.99	0	31.1	148
4	0	55.2	*51.5	94.0	12.1	9.90	2.78	40.9	5.99	0	25.1	108
5	0	97.2	79.2	47.8	*25.3	16.9	5.99	*25.1	5.99	0	16.9	98.3
6	0	103	44.3	34.2	25.1	50.4	5.99	19.5	*9.90	0	14.4	150
7	0	55.2	31.1	31.1	12.1	208	2.78	248	7.86	2.78	9.90	97.7
8	0	34.2	25.1	28.0	12.1	326	1.50	226	2.78	2.78	9.90	62.9
9	0	25.1	19.5	25.1	12.1	172	2.78	40.9	2.78	.54	12.1	37.5
10	0	22.2	19.5	25.1	33.9	*66.9	1.50	28.0	1.50	2.78	14.4	31.1
11	0	19.5	16.9	22.2	290	37.5	2.78	22.2	2.78	2.78	12.1	37.5
12	0	25.1	22.2	22.2	624	31.1	4.28	16.9	1.50	0	12.1	28.0
13	0	37.5	43.6	22.2	87.9	22.2	4.28	31.1	.54	0	9.90	25.1
14	0	136	182	22.2	40.9	22.2	4.28	40.9	0	0	14.4	25.1
15	0	131	70.8	*25.1	34.2	19.5	2.78	31.1	0	0	12.1	19.5
16	0	70.9	31.1	61.5	57.0	19.5	12.1	19.5	0	0	9.90	16.9
17	0	37.5	*28.0	31.1	37.5	37.5	12.1	16.9	0	0	12.1	16.9
18	0	31.1	19.5	34.2	31.1	40.9	14.4	14.4	0	.54	14.4	16.9
19	0	25.1	16.9	25.1	25.1	31.1	12.1	12.1	0	0	19.5	31.1
20	0	*22.2	16.9	46.4	25.1	16.9	7.86	19.5	0	0	16.9	28.0
21	0	14.4	16.9	34.2	40.9	16.9	7.86	16.9	0	0	16.9	12.1
22	0	12.1	19.5	*28.0	31.1	14.4	14.4	22.2	0	0	12.1	9.90
23	0	9.90	40.9	16.9	25.1	14.4	12.1	31.1	0	0	14.4	19.5
24	0	12.1	49.1	52.8	22.2	12.1	7.86	28.0	0	0	19.5	22.2
25	0	14.4	34.9	37.5	22.2	23.7	2.78	14.4	0	0	37.5	9.90
26	0	14.4	19.5	28.0	47.8	48.6	84.3	9.90	0	0	31.1	7.86
27	0	16.9	19.5	31.1	22.2	14.4	44.3	9.90	0	1.04	34.2	7.86
28	0	9.90	19.5	25.1	16.9	12.1	37.5	7.86	0	58.9	47.8	9.90
29	0	5.99	354	28.1	16.9	9.90	44.3	------	0	909	120	22.2
30	0	12.1	242	31.1	16.9	9.90	28.0	------	0	273	109	19.5
31	73.7	185	------	16.9	------	9.90	56.6	------	0	------	82.9	------
TOTAL	73.7	1,767.19	1,906.9	1,865.2	1,704.5	1,355.70	467.94	1,138.66	65.37	1,254.14	943.40	1,426.42
MEAN	2.38	57.0	63.6	60.2	56.8	43.7	15.1	40.7	2.11	41.8	30.4	47.5
AC-FT	146	3,510	3,780	3,700	3,380	2,690	928	2,260	130	2,490	1,870	2,830

CALENDAR YEAR	1962:	MAX	624	MIN	0	MEAN	24.1	AC-FT	17,450
FISCAL YEAR	1962-63:	MAX	909	MIN	0	MEAN	38.3	AC-FT	27,710

* Discharge measurement made on this day.

8550. Ugum River near Talofofo

Location.--Lat 13°20'00" N., long 144°44'55" E., on left bank 0.3 mile upstream from confluence with Talofofo River, 1.3 miles south of Talofofo, and 4.2 miles north of Inarajan.

Drainage area.--6.96 sq mi.

Records available.--June 1952 to June 1963.

Gage.--Water-stage recorder and concrete control. Datum of gage is 3.23 ft above mean sea level.

Average discharge.--11 years, 29.2 cfs.

Extremes.--Maximum discharge during year, 3,800 cfs Oct. 1 (gage height, 11.70 ft), from rating curve extended above 910 cfs as explained below; minimum, 6.25 cfs July 3.

1952-63: Maximum discharge, 5,900 cfs Oct. 19, 1960 (gage height, 11.90 ft), from rating curve extended above 910 cfs on basis of slope-area measurements at gage heights 11.30, 11.36, 11.87 and 11.90 ft; minimum, 3.19 cfs June 15, 1960.

Remarks.--Records good except those above 200 cfs, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.6	8.00	1.5	97.0
.7	12.2	2.0	197
.9	24.0	6.0	714
1.2	53.0		

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	9.20	97.0	223	384	31.2	29.6	22.1	114	22.1	14.3	74.8	245
2	8.80	225	94.9	290	29.6	28.0	22.7	40.0	20.8	13.8	45.3	81.9
3	8.80	*76.6	58.2	183	28.8	26.4	23.4	29.6	18.8	12.2	35.0	69.1
4	10.4	45.3	44.2	87.4	26.4	24.8	32.0	149	18.8	19.6	29.6	54.3
5	9.20	132	87.4	66.0	34.0	28.0	28.0	45.3	20.1	14.9	26.4	48.6
6	8.80	82.6	50.8	62.1	32.0	47.5	22.1	38.0	22.7	12.7	24.0	51.0
7	10.0	53.0	40.0	55.6	30.4	200	21.4	275	18.8	12.2	22.7	103
8	10.4	40.0	37.0	51.9	25.6	265	20.8	231	17.0	11.2	21.4	58.2
9	9.20	37.0	34.0	*49.7	24.0	114	19.5	49.7	16.4	11.2	*20.1	46.4
10	24.4	31.2	29.6	47.5	45.7	54.3	18.2	40.0	17.0	14.6	19.5	43.1
11	15.4	30.4	*28.8	43.1	374	46.4	17.5	38.0	17.5	*12.7	18.8	43.1
12	*14.3	27.2	28.8	42.0	425	37.0	17.5	36.0	17.0	10.8	18.2	43.1
13	10.8	51.7	28.8	42.0	66.0	*33.0	17.5	35.0	16.4	10.8	17.5	45.3
14	9.20	171	44.2	41.0	51.9	29.6	17.0	*37.7	15.9	10.4	17.5	40.0
15	17.8	98.8	35.0	42.0	41.0	28.8	16.4	35.0	*15.4	11.2	17.0	34.0
16	11.2	58.2	38.0	47.5	53.7	28.8	29.6	29.6	15.4	10.8	16.4	31.2
17	8.80	44.2	31.2	49.7	52.7	42.2	24.0	27.2	14.9	10.4	17.0	29.6
18	10.4	36.0	27.2	53.0	44.2	44.2	*22.1	27.2	14.3	10.8	16.4	28.0
19	10.8	33.0	23.4	45.3	43.1	37.0	18.8	26.4	13.8	10.0	16.4	*64.3
20	11.2	30.4	25.6	48.9	40.0	30.4	17.5	35.1	13.8	9.60	15.9	31.2
21	18.1	30.4	22.7	41.0	41.0	29.6	18.8	27.2	13.8	10.4	17.0	27.2
22	12.7	26.4	26.4	40.0	38.0	27.2	20.1	41.3	13.8	9.60	15.9	24.8
23	29.4	24.8	43.1	33.0	35.0	27.2	19.5	31.2	13.3	9.60	15.9	28.8
24	13.8	24.8	89.6	49.3	32.0	26.4	17.0	27.2	12.2	9.20	24.8	27.2
25	12.7	28.0	39.0	47.5	32.0	39.6	15.9	24.8	11.7	8.80	24.8	24.0
26	156	24.0	28.8	44.2	43.1	65.8	114	22.7	11.7	8.80	24.8	23.4
27	74.4	30.4	28.8	48.0	32.0	30.4	36.0	22.1	11.7	14.8	28.8	23.4
28	61.7	24.0	39.0	63.4	31.2	28.0	29.6	21.4	11.2	34.0	42.0	24.0
29	36.8	22.7	491	37.0	30.4	24.8	28.8	------	11.2	685	110	31.2
30	30.4	28.0	213	44.6	29.6	24.0	22.7	------	13.3	149	66.0	42.4
31	232	179	------	36.0	------	22.7	83.7	------	13.8	------	81.7	------
TOTAL	907.10	1,843.1	2,031.5	2,215.7	1,843.6	1,520.7	834.2	1,556.7	484.6	1,183.40	941.6	1,466.8
MEAN	29.3	59.4	67.7	71.5	61.5	49.1	26.9	55.6	15.6	39.4	30.4	48.9
AC-FT	1,800	3,660	4,030	4,390	3,660	3,020	1,650	3,090	961	2,350	1,870	2,910

CALENDAR YEAR	1962:	MAX	491		MIN	4.29		MEAN	33.3		AC-FT	24,110
FISCAL YEAR	1962-63:	MAX	685		MIN	8.80		MEAN	46.1		AC-FT	33,390

* Discharge measurement made on this day.

Peak discharge (base, 1,400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
10- 1	0030	11.70	3,800	4-29	0530	11.02	1,710
11-11	2300	11.45	2,300				

8580. Ylig River near Yona

Location.--Lat 13°23'20" N., long 144°45'00" E., on right bank 2 miles upstream from mouth, 2.1 miles southwest of Yona, and 5.8 miles south of Agana.

Drainage area.--6.58 sq mi.

Records available.--June 1952 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Average discharge.--11 years, 26.2 cfs.

Extremes.--Maximum discharge during year, 4,040 cfs Sept. 30 (gage height, 17.55 ft), from rating curve extended above 620 cfs on basis of slope-area measurements at gage heights 11.24 and 15.87 ft; minimum, 3.57 cfs Apr. 22, 26, 27.

1952-63: Maximum discharge, 4,040 cfs Oct. 15, 1953 (gage height, 19.36 ft) and Sept. 30, 1962 (gage height, 17.55 ft), from rating curves extended, respectively, above 270 cfs on basis of slope-area measurement at gage height 14.07 ft, and above 620 cfs on basis of slope-area measurements at gage heights 11.24 and 15.87 ft; minimum, 0.16 cfs June 18-22, 1959.

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

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.5	3.57	1.5	64.0
.6	5.50	2.0	129
.8	11.2	3.0	259
1.0	19.6	6.0	760
1.2	33.0		

DISCHARGE, IN CUBIC FEET PER SECOND, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	17.8	91.6	307	476	18	15.9	13.9	128	18.8	5.10	70	322
2	15.9	519	74.8	347	17	14.6	14.2	40.9	13.5	6.00	52	130
3	13.9	*97.5	50.8	115	16	14.6	13.5	31.5	12.0	4.90	40	95.7
4	18.7	78.7	41.1	68.8	15	14.2	13.9	45.4	11.2	8.10	34	56.3
5	18.2	111	175	54.1	24	85.1	13.9	27.2	11.6	13.7	30	67.7
6	17.3	92.4	47.5	41.1	20	164	12.0	23.9	13.8	13.7	*26	371
7	13.9	56.3	37.5	37.5	15	443	11.2	543	10.9	15.2	23.3	80
8	14.2	43.1	33.0	37.5	14	716	10.6	209	9.60	7.25	20.2	58
9	16.2	40.2	29.4	30.1	14	136	10.2	52.3	9.28	5.50	18.7	45
10	82.6	32.3	26.4	31.5	60	49.7	9.92	41.1	9.28	16.0	17.3	35
11	19.6	32.3	25.1	*24.5	310	36.6	9.92	33.9	9.60	*13.1	16.8	30
12	*16.8	146	*27.6	22.7	350	31.5	9.92	30.1	8.96	6.00	15.0	24
13	15.5	134	37.9	21.4	60	26.4	9.28	32.0	8.00	5.50	14.2	26
14	13.9	185	39.3	19.6	44	23.9	8.96	*43.4	7.75	5.30	13.5	23
15	15.0	241	25.1	37.0	32	21.4	8.64	25.7	*7.25	6.00	12.7	22
16	13.5	78.6	21.4	126	31	20.2	10.2	22.0	7.00	4.90	12.0	21
17	10.9	55.2	34.0	39.5	30	26.3	*10.0	19.1	6.75	4.30	11.6	*20.2
18	26.2	43.1	24.5	91.2	28	141	12	17.8	6.50	4.50	10.9	20.2
19	17.8	40.2	19.1	39.3	26.4	28.6	14	16.8	6.00	4.10	11.2	74.6
20	55.2	370	25.7	164	26.4	*22.7	11	50.6	5.75	3.91	9.92	20.8
21	160	40	27.2	51.7	39.4	22.7	18	21.1	5.75	3.91	19.8	19.1
22	29.4	38	61.5	30.8	27.2	19.1	22	43.6	6.25	3.91	12.0	17.3
23	109	36	49.3	27.2	22.7	17.8	18	19.1	6.50	8.64	9.92	15.5
24	33.9	37	23.3	40.9	21.4	16.8	12	17.8	5.30	4.30	10.9	15.0
25	31.5	32	20.2	33.0	22.0	22.9	9.0	15.5	5.10	3.91	51.5	14.6
26	120	29	33.1	26.4	36.2	31.3	300	14.6	4.90	3.74	15.5	14.6
27	157	26	20.8	27.9	19.6	18.2	36	13.5	4.90	13.0	22.5	13.5
28	78.6	23	29.4	26	17.8	17.3	120	16.6	4.90	269	49.9	17.8
29	54.1	21	350	32	16.8	15.9	260	--------	4.70	180	444	20.8
30	44.2	27	350	34	16.4	15.5	48	--------	4.90	100	69.3	17.8
31	341	306	------	26	------	14.2	240	--------	5.10	------	89.0	------
TOTAL	1,591.8	3,102.5	2,067.0	2,179.7	1,390.3	2,243.4	1,310.24	1,595.5	251.82	743.47	1,253.64	1,708.5
MEAN	51.3	100	68.9	70.3	46.3	72.4	42.3	57.0	8.12	24.8	40.4	57.0
AC-FT	3,160	6,150	4,100	4,320	2,760	4,450	2,600	3,160	499	1,470	2,490	3,390

CALENDAR YEAR	1962:	MAX	716		MIN	1.51		MEAN	38.4		AC-FT	27,830
FISCAL YEAR	1962-63	MAX	716		MIN	3.74		MEAN	53.3		AC-FT	38,550

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 20-30, Oct. 28 to Nov. 18, Jan. 18-31, Apr. 29 to May 6, June 7-16.

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 2	0630	15.20	3,230	2- 7	About 1900	15.32	3,260
9-30	2400	17.55	4,040				
11-11	About 2300	14.38	2,970	4-28	About 2200	16.86	3,790
12- 8	1800	17.32	3,930	6- 6	2030	15.68	3,390

8650. Pago River near Ordot

Location.--Lat 13°26'10" N., long 144°45'15" E., on left bank 0.8 mile south of Ordot, 2.5 miles south of Agana, and 3.6 miles southeast of Asan.

Drainage area.--6.18 sq mi.

Records available.--September 1951 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 25 ft (from topographic map).

Average discharge.--11 years (1952-63), 25.6 cfs.

Extremes.--Maximum discharge during year, 9,470 cfs Aug. 2 (gage height, 18.87 ft, from floodmarks), from rating curve extended above 190 cfs on basis of slope-area measurements at gage heights 13.22, 15.07 and 18.87 ft; minimum, 2.10 cfs Apr. 24-27.

1951-63: Maximum discharge, that of Aug. 2, 1962; no flow June 5-7, 10-23, 1959.

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

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	1.50	1.0	72.0
.3	3.96	1.5	174
.4	7.90	2.0	256
.5	13.5	3.0	455
.6	21.0	6.0	1,210
.7	30.5		

Discharge, in cubic feet per second, fiscal year July 1962 to June 1963

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.6	114	232	342	14.9	7.90	11	98.6	18.4	3.64	50	162
2	12.8	*975	57.6	364	14.2	7.90	11	42.0	10.5	4.28	38	116
3	13.5	96.0	37.2	103	13.5	7.90	10	30.5	8.90	3.34	*30.5	93.3
4	25.5	64.0	38.4	73.9	12.8	7.45	10	27.5	7.90	5.89	23.7	56.0
5	21.9	126	*262	49.0	16.7	11.5	9.9	22.8	7.90	6.14	20.1	39.6
6	16.3	105	43.4	36.0	12.8	150	9.0	19.3	9.40	4.94	16.3	419
7	23.7	57.6	36.0	32.7	11.0	420	8.4	495	7.45	6.93	13.5	92.2
8	20.1	42.0	29.5	*31.6	10.5	800	8.2	174	6.55	4.94	11.6	57.8
9	20.1	36.0	28.5	24.6	10.5	410	8.0	37.2	6.55	3.64	10.5	39.6
10	265	30.5	21.9	23.7	60.1	120	7.6	29.5	6.55	16.3	11.6	26
11	*21.0	36.0	20.1	20.1	454	*30.5	7.6	22.8	6.55	8.65	9.40	22
12	17.8	114	22.8	17.8	496	24.6	7.6	20.1	6.10	4.28	8.40	20
13	27.8	91.0	32.2	16.3	51.8	21.9	7.2	20.1	5.70	3.64	7.90	22
14	17.0	212	33.9	17.0	32.7	20.1	6.8	19.3	5.30	3.34	7.45	*16.3
15	17.8	259	21.0	24.8	25.5	18.5	6.4	18.5	5.30	*3.34	7.00	15.6
16	14.2	79.6	17.8	46.2	24.6	16.3	7.2	14.9	5.30	3.06	6.55	14.2
17	12.2	54.6	78.7	42.6	24.6	21.0	7.0	12.8	4.94	3.34	6.55	14.2
18	48.9	39.6	25.5	164	19.3	160	*9.0	*12.8	*4.60	4.67	6.10	12.8
19	24.6	30.5	17.8	48.4	17.0	46	12.8	11.6	4.28	3.34	6.55	46.7
20	99.4	412	28.5	124	13.5	17	8.40	29.8	4.28	2.80	5.70	13.5
21	120	43.4	24.6	156	39.5	16	8.90	13.5	4.28	2.56	72.8	12.2
22	28.5	30.5	75	37.2	17.8	15	24.6	12.8	4.60	2.56	11.0	11.0
23	157	27.5	48	28.5	13.5	14	14.9	11.6	4.94	2.56	7.90	9.40
24	37.4	28.5	22	62.3	12.2	13	8.40	10.5	3.96	2.32	12.2	8.40
25	32.7	25.5	12.2	30.5	12.8	19	7.00	9.40	3.96	2.32	117	7.90
26	78.4	22.8	14.9	28.5	25.5	34	327	8.90	3.64	2.32	27.7	7.90
27	92.2	20.1	19.3	25.5	12.2	14	27.5	8.40	3.64	2.80	116	7.45
28	64.0	18.5	17.8	20.1	10.5	13	135	44.0	3.64	280	65.0	11.6
29	98.1	16.3	322	24.6	9.40	12	288	--------	3.64	170	430	14.2
30	56.0	20.1	696	24.6	8.40	12	38.4	--------	3.64	70	75.8	12.2
31	551	210	--------	19.1	--------	11	260	--------	4.28	--------	84.0	--------
Total	2050.5	3437.6	2336.6	2058.6	1497.80	2491.55	1312.80	1278.20	186.67	637.94	1316.80	1401.05
Mean	66.1	111	77.9	66.4	49.9	80.4	42.3	45.7	6.02	21.3	42.5	46.7
Ac-ft	4070	6820	4630	4080	2970	4940	2600	2540	370	1270	2610	2780

Calendar Year 1962:	Max	975	Min	0.90	Mean	42.4	Ac-ft	30,680
Fiscal Year 1962-63:	Max	975	Min	2.32	Mean	54.8	Ac-ft	39,680

* Discharge measurement made on this day.

Note.--No gage-height record Sept. 22-24, Dec. 6-10, Dec. 18 to Jan. 18, Apr. 28 to May 2, June 10-13.

Peak discharge (base, 3,000, revised)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 2	0600	18.87	9,470	12- 8	About	15.94	5,320
8-20	1400	15.87	5,270		1900		
9-30	2300	18.76	9,300	2- 7	2000	13.04	3,650
11-11	2230	12.94	3,610	4-28	2330	14.15	4,120
				6- 6	1800	13.12	3,680

9060. Vaitolu Stream at Aoa

Location.--lat 14°17'50" S., long 170°35'45" W., on left bank 0.4 mile southwest of Aoa and 0.5 mile upstream from mouth.

Drainage area.--0.22 sq mi.

Records available.--March 1958 to June 1963. Prior to July 1961, published as "near Aoa."

Gage.--Water-stage recorder. Altitude of gage is 185 ft (from topographic map).

Average discharge.--5 years, 0.353 mgd (0.546 cfs).

Extremes.--Maximum discharge during year, 154 mgd (238 cfs) Dec 19 (gage height, 6.16 ft), from rating curve extended above 2.1 mgd by logarithmic plotting; minimum, 0.08 mgd (0.12 cfs) June 22, 23.

1958-63: Maximum discharge, that of Dec. 19, 1962; minimum, 0.01 mgd (0.02 cfs) Sept. 7, 8, 1961.

Remarks.--Records good except those above 5 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.1	0.03	1.5	1.49
1.2	.20	1.8	3.90
1.3	.50	2.1	7.45
1.4	.94		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.17	0.58	0.60	0.22	0.15	0.15	0.36	0.29	0.66	0.61	0.17	0.11
2	.15	.39	.39	.20	.13	.17	.48	.22	1.88	.39	.26	.13
3	.15	.33	.33	.20	.11	.13	.39	.20	2.29	.25	.39	.43
4	.17	.27	.30	.20	.11	.13	.36	.20	.58	.20	.17	.22
5	.15	.25	.27	.17	*.11	.13	.40	.39	.27	.17	.15	.15
6	.15	.27	.27	.20	.11	.13	.39	.20	.20	.28	.15	.11
7	.15	.25	.27	.17	.13	.15	.43	.20	.17	.57	.15	.11
8	.15	.22	.27	.35	.19	.13	.49	*.20	.15	.25	.11	.10
9	.17	.25	.25	*.20	.63	.13	*.39	.25	.48	.17	.11	.10
10	*.14	.39	*.22	.15	.15	*.26	1.81	.22	1.46	.31	.11	.11
11	.13	.39	.22	.15	.25	3.54	.69	.20	.58	.30	.15	.13
12	.13	.43	.33	.15	.35	1.43	.43	.25	.27	.22	.20	.11
13	.13	.36	.22	.15	.20	3.89	.39	.29	.27	.17	.13	.11
14	.13	.22	.22	.29	.13	1.58	.44	.22	.22	.15	.11	.13
15	.13	.20	.22	.15	.13	1.56	.33	.44	.25	.15	.11	.15
16	.19	.20	.20	.13	.11	.78	.33	.33	.17	.15	.11	.11
17	.15	.69	.20	.13	.11	1.89	.27	.22	.15	.13	.11	.11
18	.15	3.28	.20	.13	.13	3.21	.27	.21	.19	.13	.32	.10
19	.16	.70	.17	.15	.13	4.57	.38	.20	.17	.11	.10	.10
20	.19	.57	.17	.13	.17	1.57	.36	.22	.22	.11	.11	.11
21	.15	*.42	.17	.86	.13	2.80	.25	.13	.58	.11	*.10	.10
22	.13	.33	*.20	.44	.15	1.26	*.27	.15	.17	.11	.10	.10
23	*.13	.30	.25	.20	1.25	.78	.29	.13	.13	.11	.27	.10
24	2.46	.27	.75	*.17	1.12	.58	.27	.13	.13	.33	.15	.10
25	1.06	.27	.39	.55	.58	.58	.27	.11	.13	.71	.13	.10
26	.99	.25	.22	.22	.25	1.12	.25	.72	.13	.43	.11	.10
27	.27	.29	.20	.17	.17	.66	.25	.44	.13	.33	.32	.13
28	.22	2.98	.32	.26	*.15	.46	.25	.27	.72	.25	.22	.13
29	6.96	.62	1.26	.17	.33	.39	.25	------	.25	.20	.13	.11
30	5.96	.69	.36	.15	.15	.36	.22	------	.15	.17	.11	.10
31	1.19	.50	------	.15	------	.36	.22	------	.13	------	.11	------
TOTAL	22.56	17.16	9.44	6.96	7.81	34.88	12.18	7.03	13.28	7.57	4.97	3.80
MEAN												
MGD	0.728	0.554	0.315	0.225	0.260	1.13	0.393	0.251	0.428	0.252	0.160	0.127
CFS	1.13	0.856	0.487	0.347	0.403	1.74	0.608	0.389	0.663	0.390	0.248	0.196
AC-FT	69	53	29	21	24	107	37	22	41	23	15	12

CALENDAR YEAR	1962:	MAX	6.96	MIN	0.11	MEAN MGD	0.508	MEAN CFS	0.786	AC-FT	568
FISCAL YEAR 1962-63:		MAX	6.96	MIN	0.10	MEAN MGD	0.404	MEAN CFS	0.625	AC-FT	453

* Discharge measurement made on this day.

Peak discharge (base, 40 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-24	0930	4.26	63.6	98.4	12-13	1530	4.35	66.8	103
7-29	0630	4.49	71.6	111	12-19	2000	6.16	154	238
8-28	0800	4.27	64.0	99.0					

9120. Afono Stream at Afono

Location.--Lat 14°16'55" S., long 170°39'10" W., on left bank at Afono and 1,500 ft upstream from mouth.

Drainage area.--0.67 sq mi.

Records available.--October 1958 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 20 ft (from topographic map).

Extremes.--Maximum discharge during year, 430 mgd (665 cfs) July 24 (gage height, 4.55 ft), from rating curve extended above 14 mgd as explained below; minimum, 0.40 mgd (0.62 cfs) Nov. 5.

1958-63: Maximum discharge, 486 mgd (752 cfs) Feb. 5, 1959 (gage height, 4.69 ft), from rating curve extended above 14 mgd by logarithmic plotting; minimum, 0.16 mgd (0.25 cfs) Sept. 30, 1961.

Remarks.--Records good except those above 30 mgd, which are fair. About 0.04 mgd diverted above station for domestic use in Afono.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.5	0.44	2.0	7.06
1.6	.99	2.1	10.0
1.7	1.86	2.3	17.5
1.8	3.17	2.6	35.5
1.9	4.83	2.9	62.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.21	3.92	3.47	0.99	0.62	1.06	0.99	1.06	1.06	2.96	0.99	0.80
2	1.14	2.72	2.31	.86	.57	1.21	5.23	.74	3.41	2.87	1.20	1.06
3	1.14	2.19	1.86	.86	.52	1.06	5.42	.68	6.04	1.66	1.47	2.49
4	.99	1.76	1.56	.74	.48	.92	1.86	.62	4.23	1.21	1.90	2.12
5	.92	1.56	1.86	.68	.44	.80	1.56	2.02	2.44	1.14	1.21	1.29
6	.86	1.47	1.47	.68	.44	.74	1.86	*.86	1.47	1.51	.99	1.06
7	1.18	1.29	1.56	.68	.48	.80	1.66	.80	1.14	4.66	.92	1.06
8	.80	1.21	1.66	4.23	*.71	.80	2.29	.80	.99	2.65	.86	.92
9	.92	*1.79	1.38	1.47	2.30	.74	2.19	.80	2.40	1.56	.80	.80
10	.80	4.71	1.21	.99	1.06	.86	5.93	1.10	11.3	1.66	.80	.80
11	.74	4.63	1.14	*.86	1.66	14.9	3.77	.86	3.39	3.55	.92	.86
12	.74	5.26	1.14	.80	3.47	7.19	2.19	.80	1.96	2.68	1.56	.92
13	.68	3.52	*.92	.74	2.19	*31.1	1.76	.86	1.56	1.56	1.14	.80
14	.68	1.86	.86	1.53	1.14	9.73	1.76	.92	1.29	1.29	.92	.74
15	.68	1.47	.80	1.14	.86	5.22	1.56	1.89	1.21	1.14	.86	.80
16	1.05	1.38	.80	.86	.74	3.47	1.38	1.38	1.14	1.14	.80	.86
17	.80	3.22	.80	.80	.68	25.5	1.29	.86	1.06	.99	.80	.74
18	.68	19.6	.74	.80	.62	20.6	1.21	.86	1.14	.86	1.82	.68
19	.80	4.43	.68	.74	.62	13.3	1.21	.80	.99	.86	3.21	.62
20	1.34	3.32	.68	.68	.68	8.11	1.14	.80	1.17	.80	4.39	.76
21	.80	2.57	.74	3.56	.74	14.3	1.14	.68	.99	.80	1.96	.80
22	.74	2.07	.62	2.99	.92	6.14	.99	.68	.86	.74	1.38	.68
23	.96	1.66	.62	1.06	6.66	3.62	1.14	.62	.80	.68	3.37	.62
24	27.2	1.56	1.21	1.06	7.59	2.72	.99	.62	.80	.74	2.07	.57
25	3.79	1.38	1.06	.86	3.17	2.07	.92	.52	.74	.86	1.29	.57
26	4.63	1.38	.68	.68	1.66	2.19	.86	1.30	.74	5.25	1.14	.52
27	2.07	1.38	.57	.62	1.29	1.86	.92	1.38	.85	2.52	1.36	.62
28	1.66	19.7	.92	1.52	1.06	1.56	.86	1.56	10.1	1.38	1.47	.62
29	14.2	3.78	5.33	1.29	1.79	1.29	.80	------	3.67	1.29	1.14	.52
30	52.6	3.23	1.56	.86	1.47	1.21	.80	------	1.47	1.06	1.06	.48
31	7.96	2.72	------	.68	------	1.14	.80	------	1.06	------	.92	------
TOTAL	135.76	112.74	40.91	36.31	46.63	186.21	57.48	26.87	71.47	52.07	44.72	26.18
MEAN												
MGD	4.38	3.64	1.36	1.17	1.55	6.01	1.85	0.960	2.31	1.74	1.44	0.873
CFS	6.77	5.63	2.11	1.81	2.40	9.29	2.87	1.48	3.57	2.69	2.23	1.35
AC-FT	417	346	126	111	143	571	176	82	219	160	137	80

CALENDAR YEAR	1962:	MAX	53.6	MIN	0.44	MEAN MGD	2.74	MEAN CFS	4.24	AC-FT	3,070
FISCAL YEAR	1962-63:	MAX	53.6	MIN	0.44	MEAN MGD	2.29	MEAN CFS	3.54	AC-FT	2,570

* Discharge measurement made on this day.

Peak discharge (base, 110 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-24	0930	4.55	430	665	12-13	1630	4.15	298	461
7-30	1130	3.83	218	337	12-17	2100	4.52	418	647
8-28	0830	3.74	195	302	3-28	0600	3.31	112	173
12-11	1930	3.32	114	176					

9205. Aasu Stream at Aasu

Location.--Lat 14°19'00" S., long 170°45'35" W., on right bank at Aasu and 300 ft upstream from mouth.

Drainage area.--0.97 sq mi.

Records available.--October 1958 to June 1963.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 5 ft (by hand levels from high-tide mark).

Extremes.--Maximum discharge during year, 415 mgd (642 cfs) Aug. 10 (gage height, 4.72 ft), from rating curve extended above 9.4 mgd by logarithmic plotting; minimum, 0.72 mgd (1.11 cfs) July 23, 28.

1958-63: Maximum discharge, that of Aug. 10, 1962; minimum, 0.32 mgd (0.50 cfs) Sept. 29 to Oct. 1, 1961.

Remarks.--Records good except those for period of no gage-height record and those above 20 mgd, which are fair. Small diversion above station for domestic use. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

1.3	0.63	1.7	6.60
1.4	1.32	1.9	13.4
1.5	2.58	2.1	22.4
1.6	4.34	2.4	41.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.70	4.34	5.24	1.12	1.7	3.64	3.11	6.41	4.57	5.99	2.57	2.20
2	1.57	3.99	4.16	1.03	1.5	3.81	8.77	2.76	4.16	4.79	4.76	2.58
3	1.70	3.81	3.99	1.03	1.3	3.28	6.34	2.08	4.16	3.64	8.70	5.91
4	1.45	3.46	3.46	.88	1.2	3.11	4.59	1.70	7.59	3.41	4.79	3.99
5	1.32	3.28	3.81	.82	1.2	2.45	7.53	*1.57	10.2	2.76	3.28	3.39
6	1.22	3.11	3.11	.82	1.9	2.33	8.89	1.57	5.92	9.27	2.93	3.28
7	1.46	2.93	2.93	1.03	1.6	2.79	7.20	1.59	5.02	5.17	2.58	2.93
8	1.32	2.76	3.28	1.80	1.5	3.11	9.57	1.96	4.79	4.34	2.45	2.58
9	1.22	3.46	2.58	1.49	3.1	2.20	7.20	1.57	6.58	5.15	2.33	2.20
10	1.12	36.8	2.33	1.03	1.9	2.33	7.08	1.82	13.8	4.49	2.20	2.33
11	1.03	16.6	2.20	.88	2.9	8.27	5.92	3.37	7.50	6.27	2.20	2.33
12	.88	25.2	2.20	.88	5.0	5.47	5.24	2.76	5.70	5.47	5.53	2.08
13	.88	14.6	1.95	.82	4.0	16.7	4.57	2.74	5.24	4.16	2.45	1.95
14	.88	9.60	1.82	4.20	3.4	14.9	4.16	4.10	4.79	3.81	2.20	1.82
15	.82	8.10	*1.82	2.20	*3.11	10.0	3.81	2.45	4.79	3.28	1.95	1.82
16	1.79	8.10	1.82	1.32	2.93	8.70	3.81	2.45	4.16	3.11	1.70	2.20
17	1.03	15.8	1.70	1.22	2.93	25.3	*2.93	2.08	4.45	2.76	1.82	1.95
18	.82	29.7	1.57	*1.7	2.76	36.5	2.58	2.22	4.06	2.45	1.70	1.95
19	*.82	16.2	1.45	1.3	2.58	16.9	2.93	6.22	3.81	2.33	2.81	1.70
20	1.03	13.4	1.32	1.2	4.99	12.5	2.58	3.64	5.60	2.20	6.18	2.20
21	1.03	9.60	1.32	26	4.96	25.6	2.20	2.93	3.81	2.20	2.93	1.95
22	.88	7.50	1.22	8.9	5.86	15.3	2.08	2.58	3.81	1.95	2.33	1.57
23	.77	*6.59	1.45	3.2	13.2	11.5	2.20	2.33	3.46	1.82	3.95	1.45
24	1.54	5.70	2.35	5.0	15.9	9.60	1.95	2.33	2.76	2.08	3.52	1.22
25	1.26	5.24	1.82	2.7	8.10	9.60	2.54	2.08	2.45	2.42	3.28	1.12
26	1.22	5.38	1.32	2.0	5.92	6.60	1.82	3.28	2.20	3.64	2.58	1.12
27	.77	4.79	1.32	1.7	5.24	5.70	5.12	4.47	4.46	3.16	4.62	1.22
28	.72	8.44	1.69	1.8	4.79	4.79	2.76	6.91	6.57	4.84	3.81	1.32
29	1.65	6.37	1.91	1.9	5.70	4.16	1.95	------	3.99	3.99	2.93	1.12
30	33.6	6.89	1.32	2.5	4.34	3.81	1.82	------	3.11	2.58	2.45	1.03
31	6.60	5.02	------	1.9	------	3.46	2.60	------	2.76	------	2.45	------
TOTAL	74.10	296.76	68.46	84.37	125.51	284.41	135.85	81.97	156.27	113.53	99.98	64.51
MEAN												
MGD	2.39	9.57	2.28	2.72	4.18	9.17	4.38	2.93	5.04	3.78	3.23	2.15
CFS	3.70	14.8	3.53	4.21	6.47	14.2	6.78	4.53	7.80	5.85	4.99	3.33
AC-FT	227	911	210	259	385	873	417	252	480	348	307	198

CALENDAR YEAR 1962:	MAX	58.3	MIN	0.72	MEAN MGD	5.08	MEAN CFS	7.86	AC-FT	5,690
FISCAL YEAR 1962-63:	MAX	36.8	MIN	0.72	MEAN MGD	4.34	MEAN CFS	6.71	AC-FT	4,870

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 18 to Nov. 14.

Peak discharge (base, 100 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-30	1130	3.80	225	348	12-17	2000	3.63	191	296
8-10	2000	4.72	415	642	12-21	0130	3.27	132	204

9310. Ataulona Stream at Afao

Location.--Lat 14°21'05" S., long 170°47'45" W., on left bank at Afao, 100 ft upstream from bridge, and 500 ft upstream from mouth.

Drainage area.--0.59 sq mi.

Records available.--October 1958 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (by hand levels from high-tide mark).

Extremes.--Maximum discharge during year, 253 mgd (391 cfs) Aug. 12 (gage height, 3.48 ft), from rating curve extended above 5.3 mgd by logarithmic plotting; minimum, 0.19 mgd (0.29 cfs) June 30.

1958-63: Maximum discharge, that of Aug. 12, 1962; minimum, 0.11 mgd (0.17 cfs) July 14, Aug. 22, 24, 25, 1959, Oct. 9, 1961.

Remarks.--Records good except those for period of no gage-height record and those above 20 mgd, which are fair. Diversion above station for use at Ataulona School averages 10,400 gallons per day. Continuous records of rainfall are obtained at station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.4	0.08	0.9	2.95
.5	.26	1.0	4.35
.6	.60	1.2	8.20
.7	1.13	1.5	17.5
.8	1.89		

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.48	0.73	0.78	0.40	0.44	0.40	0.48	1.27	1.11	2.1	*0.51	0.31
2	.48	.60	.78	.37	.40	.37	2.19	.73	.94	1.4	.55	.45
3	.61	.51	.78	.40	.34	.34	1.43	.51	.78	.81	.81	*2.12
4	.55	.44	.60	*.34	.31	*.37	1.62	.48	2.20	.70	.51	.78
5	.44	.40	.64	.31	.31	.31	1.41	.51	1.66	.47	.44	.54
6	.40	.44	.51	.31	.48	.28	2.19	.40	.94	2.2	.40	.56
7	.44	.37	.51	.37	.34	.34	1.76	.37	.68	.90	.37	.48
8	.34	.34	.55	.46	.32	.40	6.92	.40	.60	.70	.34	.37
9	*.34	.40	.48	.80	.80	.34	1.89	*.37	1.10	1.8	.34	.34
10	.34	5.14	.48	.34	.40	.37	1.45	4.28	7.06	.70	.31	.31
11	.31	2.81	.44	.26	.81	3.04	1.06	*2.71	1.74	2.1	.31	.55
12	.31	15.5	.62	.26	1.71	1.11	.83	1.13	1.06	1.8	1.14	.40
13	.31	2.66	.44	.23	1.08	1.42	.78	.78	.94	1.2	.49	.34
14	.28	1.43	.37	1.91	.60	1.21	.75	*1.21	.68	1.1	.45	.34
15	.31	1.17	.61	.68	.40	2.26	.60	.73	.68	.90	.37	.31
16	.48	2.99	.57	*.46	.34	6.13	.60	.55	.55	.86	.34	.48
17	.31	4.77	.40	.48	.31	11.3	.55	.48	.51	.72	.31	.31
18	.28	12.1	.34	.71	.28	4.88	.51	.44	.51	.60	.34	.34
19	.35	3.02	.34	.44	.26	3.09	.57	.74	.51	.48	.37	.31
20	.89	2.40	.37	.34	*.95	1.99	.55	.51	1.60	.48	.49	.34
21	.48	1.59	*.37	7.34	.68	3.92	.44	.44	1.89	.44	.34	.34
22	.34	*1.21	*.31	2.20	.73	2.16	.40	.48	.92	.40	.34	.28
23	.31	1.06	.45	.94	1.84	1.28	.44	.48	.68	.40	1.03	.26
24	.34	.94	3.01	1.31	3.20	1.00	.48	.44	.55	.54	.64	.23
25	.54	.89	1.18	.73	1.36	.83	1.58	.37	.51	.51	.40	.21
26	.40	1.13	.55	.60	.78	1.08	.55	.99	.48	.56	.37	.21
27	.31	.78	.44	.48	.60	.83	1.46	1.66	.45	.51	1.04	.21
28	.26	1.30	.61	.51	.48	.68	.78	2.48	1.3	2.02	.64	.23
29	.61	1.13	.95	.51	.63	.64	.55	------	.80	1.16	.44	.21
30	7.70	1.87	.51	.65	.44	.55	.66	------	.60	.60	.37	.19
31	1.28	*1.13	------	*.51	------	.51	.98	------	.47	------	.34	------
TOTAL	20.82	71.25	18.99	25.65	21.62	53.43	36.46	25.94	34.50	29.16	15.14	12.35
MEAN												
MGD	0.672	2.30	0.633	0.827	0.721	1.72	1.18	0.926	1.11	.972	0.488	0.412
CFS	1.04	3.56	0.979	1.28	1.12	2.67	1.82	1.43	1.72	1.50	0.755	0.637
AC-FT	64	219	58	79	66	164	112	80	106	89	46	38

CALENDAR YEAR	1962:	MAX	15.5	MIN	0.23	MEAN MGD	1.12	MEAN CFS	1.73	AC-FT	1,250
FISCAL YEAR	1962-63:	MAX	15.5	MIN	0.19	MEAN MGD	1.00	MEAN CFS	1.55	AC-FT	1,120

Peak discharge (base, 70 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
8-12	1230	3.48	253	391	2-10	2100	2.40	80.1	124
12-17	2000	3.31	217	336	3-10	0930	2.63	106	164
1-8	1200	3.42	239	370					

* Discharge measurement made on this day.

Note.--No gage-height record Mar. 27 to Apr. 18.

9480. Afuelo Stream at Matuu
(Formerly published as Matuu Stream at Matuu)

Location.--Lat 14°19'20" S., long 170°41'15" W., on left bank 0.4 mile northwest of Matuu and 0.5 mile upstream from mouth.

Drainage area.--0.24 sq mi.

Records available.--March 1958 to June 1963. Prior to July 1962, published as Matuu Stream at Matuu.

Gage.--Water-stage recorder. Altitude of gage is 75 ft (from topographic map).

Average discharge.--5 years, 0.998 mgd (1.54 cfs).

Extremes.--Maximum discharge during year, 206 mgd (319 cfs) July 24 (gage height, 3.42 ft), from rating curve extended above 5.4 mgd as explained below; minimum, 0.17 mgd (0.26 cfs) June 29, 30.

1958-63: Maximum discharge, 262 mgd (405 cfs) May 17, 1962 (gage height, 3.70 ft), from rating curve extended above 5.4 mgd by logarithmic plotting; minimum, 0.07 mgd (0.11 cfs) Sept. 29, 30, 1961.

Remarks.--Records good except those for periods of no gage-height record and those above 20 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.6	0.14	1.1	2.87
.7	.34	1.2	4.25
.8	.64	1.4	8.20
.9	1.09	1.7	17.9
1.0	1.81	2.0	33.0

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	1.05	1.09	1.40	0.39	0.38	0.48	0.42	0.65	2.53	2.52	0.56	0.31
2	.54	.82	.82	.31	.29	.53	4.52	.81	1.77	1.48	.73	.48
3	.36	.69	.60	.31	.23	.48	2.68	.42	2.33	.73	1.74	1.06
4	.29	.54	.48	.25	.21	*.36	.92	.29	3.53	.56	2.56	.64
5	.29	.48	*2.37	.23	.21	.31	.86	.47	3.38	.46	.87	.46
6	.25	.48	.78	.21	.21	.27	1.09	.36	.87	.86	.54	.62
7	1.69	*.52	.54	.25	.22	.43	1.21	.27	.54	2.98	.54	.42
8	.48	.42	.54	*1.09	.24	.54	4.51	.38	.42	1.16	.39	.34
9	.78	.61	.44	.42	1.3	.29	1.16	*.27	1.37	.78	.31	.29
10	.44	3.26	.42	.27	.38	.47	1.58	.29	9.93	.73	.29	.31
11	*.31	2.40	.39	.25	.56	6.44	1.23	.34	1.65	1.41	.62	.31
12	.27	6.78	.52	.25	2.4	2.29	.73	*.57	.78	1.05	3.53	.29
13	.25	2.12	.42	.46	.82	15.3	.54	.50	.60	.60	.96	.27
14	.23	*.91	.34	.52	.29	5.54	.44	.60	.50	.54	.69	.25
15	.21	.78	.31	.33	.27	3.79	.42	.42	.44	.39	.54	.25
16	1.55	1.16	.31	.30	.24	2.22	.39	.51	.39	.36	.42	.29
17	.59	3.00	.29	.27	.22	12.3	.34	.31	.38	.34	.45	.23
18	.34	11.2	.27	.27	.22	12.3	.31	1.25	.34	.29	1.08	.23
19	.45	2.35	.27	.27	.25	*4.21	.43	1.53	.39	.27	2.55	.56
20	1.06	1.70	.27	.27	.28	2.34	.46	.86	.91	.25	3.04	.62
21	.44	1.16	.25	3.0	.27	6.88	*.29	.48	1.18	.23	.96	.61
22	.34	.78	.25	.70	.28	3.36	.27	.39	.54	.23	.78	.29
23	.29	.64	.28	.31	3.3	1.52	.27	.27	.44	.21	1.77	.23
24	8.42	.54	.71	.27	4.3	1.05	.27	.31	.31	.23	1.00	.21
25	1.81	.48	.39	.25	2.3	.87	.57	.25	.33	1.39	.69	.19
26	1.53	.54	.23	.25	*.60	.87	.66	.75	.27	3.13	.54	.19
27	.60	.48	.21	.25	.50	.78	.34	.84	1.03	1.45	1.08	.19
28	.60	3.78	*.85	.38	.48	.64	.29	1.33	5.90	1.50	.78	.19
29	5.16	1.16	2.87	*.34	1.41	.54	.25	------	1.03	1.27	.54	.19
30	28.7	1.59	.64	.29	.64	.48	.23	------	.56	.60	.42	.17
31	2.16	1.05	------	.27	------	.44	.25	------	.44	------	.36	------
TOTAL	61.48	53.51	18.46	13.23	23.30	88.32	27.93	15.72	45.08	28.00	31.33	10.69
MEAN												
MGD	1.98	1.73	0.615	0.427	0.777	2.85	0.901	0.561	1.45	0.933	1.01	0.356
CFS	3.07	2.67	0.952	0.661	1.20	4.41	1.39	0.869	2.25	1.44	1.56	0.551
AC-FT	189	164	57	41	72	271	86	48	138	86	96	33

CALENDAR YEAR	1962:	MAX	28.7	MIN	0.16	MEAN MGD	1.30	MEAN CFS	2.01	AC-FT	1,460
FISCAL YEAR 1962-63:		MAX	28.7	MIN	0.17	MEAN MGD	1.14	MEAN CFS	1.76	AC-FT	1,280

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 13-28, Nov. 5-25.

Peak discharge (base, 70 mgd, revised)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-24	0830	3.42	206	319	12-13	1700	2.58	82.0	127
7-30	0700	3.03	138	214	12-17	2100	3.30	190	294

9600. West Branch Alega Stream at Alega

Location.--Lat 14°18'05" S., long 170°38'35" W., on left bank 500 ft above confluence with East Branch and 0.2 mile northwest of Alega.

Drainage area.--0.16 sq mi.

Records available.--March 1958 to June 1963.

Gage.--Water-stage recorder. Altitude of gage is 85 ft (from topographic map).

Average discharge.--5 years, 0.825 mgd (1.28 cfs).

Extremes.--Maximum discharge during year, 73.2 mgd (113 cfs) July 24 (gage height, 3.47 ft), from rating curve extended above 3.5 mgd by logarithmic plotting; minimum, 0.35 mgd (0.54 cfs) Nov. 8.

1958-63: Maximum discharge, that of July 24, 1962; minimum, 0.20 mgd (0.31 cfs) July 11, 12, 1959.

Remarks.--Records good except those for periods of no gage-height record and those above 7 mgd, which are fair. No diversion above station.

Rating table (gage height, in feet, and discharge, in million gallons a day)

0.9	0.38	1.3	2.75
1.0	.74	1.6	6.25
1.2	1.90	2.0	13.7

DISCHARGE, IN MILLION GALLONS A DAY, FISCAL YEAR JULY 1962 TO JUNE 1963

DAY	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE
1	0.79	2.16	1.39	0.58	0.44	0.58	0.79	0.62	0.84	1.52	a0.56	0.51
2	.66	1.64	1.04	.51	.44	.58	2.28	.55	1.89	1.14	a.74	.62
3	.66	1.39	.99	.51	.41	.55	1.93	.51	2.24	.84	a1.0	.99
4	.62	1.20	.84	.48	.41	.48	1.14	.51	2.01	.70	a1.3	.66
5	.58	1.04	.84	*.48	.41	.44	1.09	.63	1.20	.74	a1.1	.58
6	.55	1.04	*.74	.48	.41	.44	1.14	.51	.79	.66	a.70	.55
7	.66	.99	.79	.51	.41	*.48	1.09	.48	.66	1.36	*.48	.55
8	.55	.84	.79	.94	.44	.44	1.72	*.48	.62	.84	.48	.51
9	.55	.92	.66	.66	.90	.44	1.14	.48	1.12	.70	.48	.48
10	.51	1.24	.66	.84	.48	.56	2.01	.55	4.35	.79	.48	.48
11	.48	1.42	.62	.94	.76	4.18	1.71	.48	1.58	1.11	.62	.51
12	.44	1.61	.72	.79	1.29	2.18	1.20	.51	1.09	.84	.70	.48
13	.44	1.26	.62	.79	.79	5.76	1.04	.51	.84	.70	.58	.48
14	.44	.99	.62	.85	.51	3.39	*.99	*.51	.74	.62	.55	a.46
15	.44	.84	.62	.58	.48	2.46	.89	.66	.70	.58	.51	a.48
16	*.66	.79	.58	.55	.44	1.90	.84	.51	.66	.58	.51	a.52
17	.51	1.45	.55	.51	.41	4.69	.79	.44	.62	.51	.48	a.49
18	.48	5.32	.55	.51	.41	5.99	.74	.60	.62	.48	.71	a.46
19	.44	2.07	.55	.51	*.44	4.48	.74	.87	.62	.48	1.01	a.45
20	.53	1.77	*.55	.51	.51	3.25	.70	.55	.81	.44	.B9	a.43
21	.44	1.45	.55	1.37	.48	4.59	.66	.48	.62	.44	.58	.41
22	.44	1.32	.51	.92	.51	2.95	.62	.48	.58	.44	.58	.41
23	.48	1.39	.51	.55	1.46	2.07	.62	.44	.55	.44	.78	.38
24	4.92	1.32	.75	.51	1.72	1.64	.62	.44	.55	a.47	*.66	.41
25	1.70	1.26	.58	.48	1.24	1.45	.62	.44	.64	a.54	.58	.38
26	1.34	1.26	.51	*.48	.70	1.45	.62	.74	.51	a1.7	.62	.38
27	1.04	.99	.54	.48	.58	1.26	.66	.66	.58	a1.2	.84	.41
28	.89	3.44	.70	.66	.55	*1.04	.62	.84	3.32	a.90	.70	.41
29	5.85	1.39	1.71	.55	.91	.94	.58	------	1.27	a.66	.58	.38
30	11.7	1.34	.58	.48	.79	.89	.58	------	.79	a.58	.58	.38
31	*3.79	1.14	------	.44	------	.84	.55	------	.66	------	.55	------
TOTAL	43.58	46.28	21.66	19.45	19.73	62.39	30.72	15.48	34.07	23.00	20.93	14.64
MEAN												
MGD	1.41	1.49	0.722	0.627	0.658	2.01	0.991	0.553	1.10	0.767	0.675	0.488
CFS	2.17	2.31	1.12	0.971	1.02	3.11	1.53	0.855	1.70	1.19	1.04	0.755
AC-FT	134	142	66	60	61	191	94	48	105	71	64	45

CALENDAR YEAR 1962:	MAX	11.7	MIN	0.41	MEAN MGD	1.07	MEAN CFS	1.66	AC-FT	1,200
FISCAL YEAR 1962-63:	MAX	11.7	MIN	0.38	MEAN MGD	0.964	MEAN CFS	1.49	AC-FT	1,080

Peak discharge (base, 20 mgd)

Date	Time	Gage height	Discharge Mgd	Discharge Cfs	Date	Time	Gage height	Discharge Mgd	Discharge Cfs
7-24	0900	3.47	73.2	113	12-17	2030	2.86	41.4	64.1
7-30	0100	2.81	39.2	60.7	3-28	0430	2.46	26.4	40.8
8-28	0830	2.40	24.5	37.9	4-26	About 1500	2.43	25.5	39.5
12-13	1600	2.68	34.1	52.8					

* Discharge measurement made on this day.
a No gage-height record.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better area coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow, partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the fiscal years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during fiscal year 1963

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Kauai					
110	aWaiakoali Stream near Waimea.	Lat 22°07'25", long 159°37'25", 0.3 mile above mouth and 12 miles northeast of Waimea.	1.7	1909-13≠, 1914-18, 1920-25≠, 1961-63	7- 9-62 9-25-62	2.13 .621	3.29 .961
120	Kauaikinana Stream near Waimea.	Lat 22°07'45", long 159°38'05", 0.6 mile above mouth and 12 miles northeast of Waimea.	a1.17	1912-13, 1915-17, 1920-25≠, 1961-63	7- 9-62	.588	.910
*180	Koaie Stream near Waimea.	Lat 22°04'45", long 159°38'45", 0.5 mile above mouth and 0.7 miles north of Waimea.	11.7	1916, 1917-18≠, 1920-21, 1954-55, 1963	7-19-62	14.2	22
*295	Mokihana Stream near Waimea.	Lat 21°59'35", long 159°40'03", 500 ft above mouth and 2.5 miles north of Waimea.	4.77	1962-63	7-20-62	.666	1.03
		Island of Oahu					
2641	Kahunaiki Stream at Kailua Road, near Kailua.	Lat 21°22'49", long 157°46'06", at Kailua Road and 1.9 miles southwest of Kailua Post Office	a1.45	1960-63	6-14-63	1.54	2.38
2709	aLuluku Stream at altitude 220 ft, near Kaneohe.	Lat 21°23'42", long 157°48'46", 1.4 miles southwest of Castle High School and 2.1 miles south of St. Ann's School.	.45	1960-63	6-14-63	.756	1.17
*2744.99	Keaahala Stream at Kamehameha Highway, at Kaneohe.	Lat 21°25'12", long 157°48'15", 36 ft above bridge on Kamehameha Highway in Kaneohe.	.59	1961-63	6-14-63	2.92	4.52
2825	Ahuimanu Stream near Kahaluu.	Lat 21°27'04", long 157°50'13", at bridge site on Ahuimanu Road and 0.8 mile south of Kahaluu.	2.25	1962-63	6-14-63	3.12	4.83
2834	Kahaluu Stream near Kahaluu.	Lat 21°27'14", long 157°50'17", 600 ft above confluence with Ahuimanu Stream and 0.6 mile south of Kahaluu.	1.36	1962-63	6-14-63	2.07	3.20
2845	Waihee Stream above Kahaluu Stream, near Kahaluu.	Lat 21°27'31", long 157°50'26", 300 ft above confluence with Kahaluu Stream and 0.1 mile southwest of Kahaluu.	2.24	1961-63	6-14-63	8.66	13.4
2931	Waianu Stream at Waiahole.	Lat 21°28'59", long 157°51'49", 0.6 mile southwest of Waiahole School and 2.3 miles northwest of Kahaluu.	1.65	1961-63	6-14-63	2.26	3.50
3250	Kananamui Stream at Pupukea Military Road, near Maunawai.	Lat 21°37'25", long 158°01'04", 3.5 miles southeast of Maunawai and 4.5 miles east of Kawailoa Camp.	a3.13	1961-63	10-15-62 1-27-63 6-11-63	.78 1.22 3.86	.121 1.89 5.98

* Also a crest-stage partial-record station.
≠ Operated as a continuous-record gaging station.
a Revised.

Discharge measurements made at low-flow partial-record stations during fiscal year 1963--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Maui					
5320	Haipuaena Stream at Haiku-uka boundary, near Kailiili.	Lat 20°49'26", long 156°12'30", 340 ft below Haiku-uka trail and 4.5 miles southeast of Kailiili	a0.61	1919-27≠, 1933-34≠, 1963	7-18-62 9-14-62 10-18-62 11-28-62 1-14-63 2-27-63 4-11-63 5-27-63	4.27 .267 .229 1.31 .357 .191 .429 2.37	6.61 .413 .354 2.02 .552 .295 .664 3.66
5420	East Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili.	Lat 20°49'36", long 156°12'39", 200 ft below Haiku-uka trail and 4.3 miles east of Kailiili.	.14	1920-27≠, 1933≠, 1963	2-27-63 4-11-63 5-27-63	.086 .129 .615	.133 .199 .951
5440	West Branch Puohokamoa Stream at Haiku-uka boundary, near Kailiili.	Lat 20°49'51", long 156°13'03", 150 ft below Haiku-uka trail and 3.8 miles southeast of Kailiili.	.50	1919-28≠, 1933-35, 1963	7- 9-62 9- 5-62 10-19-62 11-29-62 1-14-63 2-27-63 4-11-63 5-27-63	1.17 .204 .131 .336 .158 .078 .207 1.33	1.81 .315 .203 .520 .245 .121 .320 2.06
5540	Waikamoi Stream at Haiku-uka boundary, near Kailiili.	Lat 20°49'55", long 156°13'23", at Haiku-uka trail and 3.4 miles east of Kailiili.	a3.46	1918-28≠, 1933-35, 1963	2-28-63 4-12-63	.056 1.05	.087 1.63
5545	East Branch Waikamoi Stream at Haiku-uka boundary, near Kailiili.	Lat 20°49'53", long 156°13'21", 150 ft above Haiku-uka trail and 3.4 miles southeast of Kailiili.	a.07	1918-28≠, 1933≠, 1963	7-19-62 9- 5-62 10-19-62 11-29-62 1-15-63 2-28-63 4-12-63	1.14 .300 .118 .282 .125 .094 .187	1.77 .194 .183 .437 .194 .145 .290
5691	Nailiilihaele Stream near Kailiili.	Lat 20°50'27", long 156°13'38", 0.6 mile below Haiku-uka trail and 3.0 miles east of Kailiili.	.11	1963	6- 7-63	.058	.089
5762	East Branch Kailua Stream near Kailiili.	Lat 20°50'25", long 156°14'07", on right bank 0.4 mile below Haiku-uka trail and 2.5 miles east of Kailiili.	.35	1963	6- 6-63	.756	1.17
		Island of Guam, Mariana Islands					
*8073 (formerly 8790)	Fonte River at dam, near Nimitz Hill.	Lat 13°27'25" N., long 144°43'34" E., at old diversion dam, 0.4 mile south of Force Headquarters building on Nimitz Hill, and 1.2 miles southeast of Asan.	.60	1961-63	3-28-63 4-24-63		.295 .196
8082 (formerly 8835)	Faata Spring near Agat.	Lat 13°22'25" N., long 144°39'58" E., 0.4 mile southwest of Alifan Mountain and 1.0 mile southeast of Agat.	-	1963	4-25-63		.246
8085 (formerly 8850)	Taleyfac River near Agat.	Lat 13°21'40" N., long 144°39'00" E., 800 ft above bridge on Agat-Umatac Road and 1.7 miles southwest of Agat School.	.46	1959-63	3-27-63 4-25-63		1.03 1.16
8096 (formerly 8010)	La Sa Fua River near Umatac.	Lat 13°18'25" N., long 144°39'45" E., 0.6 mile northeast of Umatac and 3.1 miles north of Merizo.	1.10	1953-61≠, 1962-63	3-27-63 4-23-63		.958 1.04
8100	Right Branch Umatac River at Umatac.	Lat 13°17'50" N., long 144°39'50" E., 50 ft above confluence with Left Branch and 0.3 mile southeast of Umatac Catholic Church.	.33	1960-63	3-27-63 4-23-63		.897 .871
8120	Left Fork of Left Branch Umatac River near Umatac.	Lat 13°17'25" N., long 144°39'50" E., 0.4 mile above confluence with Right Fork and 1.2 miles southeast of Umatac Catholic Church.	.15	1960-63	3-27-63 4-22-63		.320 .257
8130	Piga Spring near Umatac.	Lat 13°17'55" N., long 144°40'47" E., at the source of the Right Fork of Left Branch Umatac River and 1.4 miles due east of Umatac Catholic Church.	-	1955, 1961-63	3-27-63 4-23-63		.167 .167

* Also a crest-stage partial-record station.
≠ Operated as a continuous-record gaging station.
a Revised.

Discharge measurements made at low-flow partial-record stations during fiscal year 1963--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Guam, Mariana Islands--Continued					
8140	Right Fork of Left Branch Umatac River at Umatac.	Lat 13°17'40" N., long 144°40'20" E., 50 ft above confluence with Left Fork and 0.9 mile southeast of Umatac Catholic Church.	0.16	1960-63	3-27-63 4-23-63		0.238 .191
8170	Toguan River near Umatac.	Lat 13°17'05" N., long 144°39'35" E., at highway bridge on Route 4 and 1.0 mile south of Umatac Catholic Church.	.21	1952, 1960-63	3-27-63 4-23-63		.321 .322
8200	Geus River above Siligin Spring tributary, near Merizo.	Lat 13°16'45" N., long 144°49'55" E., above pipeline diversion to village of Merizo and 2.0 miles northeast of Merizo School.	.20	1960-63	3-27-63 4-23-63		.216 .179
8205	Siligin Spring near Merizo.	Lat 13°16'44" N., long 144°40'55" E., 0.2 mile above Geus River diversion dam and 1.6 mile northeast of Merizo School.	-	1954, 1961-63	3-27-63 4-23-63		.543 .074
8207	Geus River below Siligin Spring tributary, near Merizo.	Lat 13°16'41" N., long 144°40'55" E., 1.6 miles northeast of Merizo School and 2.0 miles southeast of Umatac School.	.60	1962-63	4-23-63		.432
8250	Ajayan River near Inarajan.	Lat 13°15'16" N., long 144°42'56" E., 2.4 miles southwest of Inarajan School and 3.8 miles southeast of Merizo School.	1.08	1962-63	3-29-63 4-24-63		.392 .244
8280	Agfayan River near Inarajan.	Lat 13°16'03" N., long 144°43'42" E., 1.2 miles southwest of Inarajan School and 4.5 miles east of Merizo School.	1.67	1962-63	4-24-63		.430
8300	Right Fork of Right Branch Inarajan River near Inarajan.	Lat 13°17'00" N., long 144°43'25" E., above confluence with Left Fork and 1.6 miles northwest of Inarajan Catholic Church.	.62	1960-63	3-29-63 4-24-63		1.43 1.23
8310	Left Fork of Right Branch Inarajan River near Inarajan.	Lat 13°17'00" N., long 144°43'25" E., above confluence with Right Fork and 1.6 miles northwest of Inarajan Catholic Church.	.44	1960-63	3-29-63 4-24-63		.650 .986
8330	Right Fork of Left Branch Inarajan River near Inarajan.	Lat 13°17'25" N., long 144°43'45" E., 1.6 miles northwest of Inarajan Catholic Church and 4.9 miles southwest of Talofofo School.	.27	1960-63	3-29-63		1.44
8340	Left Fork of Left Branch Inarajan River near Inarajan.	Lat 13°17'10" N., long 144°44'10" E., above confluence with Right Fork and 1.0 mile northwest of Inarajan Catholic Church.	.17	1960-63	3-29-63 4-24-63		.356 .267
8420	Asalonso River near Talofofo.	Lat 13°19'41" N., long 144° 45'34" E., 300 ft below highway bridge on Route 4 and 1.8 miles south of Talofofo School.	1.50	1952, 1961-63	3-29-63 4-24-63		.685 .471
8450	Tolaeyuus River near Agat.	Lat 13°21'55" N., long 144°42'40" E., 3.7 miles southeast of Agat and 4.8 miles southwest of Yona.	6.5	1952-61≠, 1962-63	3-26-63 5- 9-63 5-15-63		7.69 13.1 10.6
8460	Tolaeyuus River at mouth, near Agat.	Lat 13°21'30" N., long 144°42'30" E., above confluence with Fena River, about 0.4 miles east of Fena Dam spillway, and 4.0 miles southeast of Agat School.	7.42	1962-63	5- 9-63 5-15-63		18.5 13.7
8520	Sarasa River near Talofofo.	Lat 13°20'20" N., long 144°44'05" E., 50 ft above Talofofo River and 1.6 miles southwest of Talofofo School.	.42	1960-63	3-28-63		.782
8540	Left Branch Ugun River near Talofofo.	Lat 13°19'10" N., long 144°43'45" E., 50 ft above confluence with Right Branch and 2.9 miles southwest of Talofofo School.	2.96	1961-63	4-26-63		4.47
8545	Right Branch Ugun River near Talofofo.	Lat 13°19'10" N., long 144°43'45" E., at confluence with Left Branch and 2.9 miles southwest of Talofofo School.	2.70	1961-63	4-26-63		3.20
8620	Lonfit River near Ordot.	Lat 13°26'05" N., long 144°45'10" E., 0.9 mile south of Ordot and 2.6 miles south of Agana.	3.1	1952-60≠, 1961-63	3-28-63		1.81
8630	Sigun River near Ordot.	Lat 13°26'10" N., long 144°45'10" E., 0.9 mile south of Ordot and 2.6 miles south of Agana.	3.1	1961-63	3-28-63		1.79

≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during fiscal year 1963--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Tutuila, American Samoa					
9000	Vailoa Stream at Tula.	(a) Lat 14°15'33" S., long 170°34'19" W., 0.5 mile west of Tula and 0.6 mile above mouth.	0.06	1959-63	2- 7-63 2-18-63	0.018 .025	0.028 .039
9010	Right Fork Vaisa Stream at Onenoa.	(a) Lat 14°15'27" S., long 170°34'42" W., 100 ft above mouth and 0.1 mile southeast of Onenoa.	.03	1959-63	2- 7-63 2-18-63	.025 .040	.039 .062
9020	Left Fork Vaisa Stream at Onenoa.	(a) Lat 14°15'30" S., long 170°34'43" W., 0.1 mile above Right Fork and 0.1 mile south of Onenoa.	.09	1959-63	2- 7-63 2-18-63	.150 .142	.232 .220
9030	Afimuao Stream at Onenoa.	(a) Lat 14°15'35" S., long 170°34'53" W., 0.2 mile above mouth and 0.2 mile south of Onenoa.	.07	1959-63	2- 7-63 2-18-63	.055 .053	.085 .082
9040	(a) Laoulu Stream at Aoa.	(a) Lat 14°15'54" S., long 170°34'50" W., 0.2 mile east of Aoa and 0.2 mile above mouth.	.03	1959-63	2- 8-63 2-21-63	.012 .012	.019 .019
9050	Lepa Stream at Aoa.	(a) Lat 14°16'22" S., long 170°35'17" W., 0.5 mile above mouth and 0.6 mile south of Aoa.	.06	1959-63	2- 8-63 2-21-63	.085 .054	.132 .084
9070	Panota Stream at Masausi.	(a) Lat 14°15'54" S., long 170°36'09" W., 0.1 mile southeast of Masausi and 0.2 mile above mouth.	.05	1959-63	2-13-63 2-21-63	.083 .056	.128 .087
9080	Vaipito Stream at Masausi.	(a) Lat 14°16'04" S., long 170°36'18" W., 0.3 mile above mouth and 0.3 mile south of Masausi.	.08	1959-63	2-13-63 2-21-63	.041 .074	.063 .114
9090	Tagau Stream at Masefau.	(a) Lat 14°15'48" S., long 170°38'20" W., 0.4 mile above mouth and 0.6 mile southwest of Masefau.	.02	1959-63	2- 6-63 2-15-63	.036 .101	.056 .156
9100	Talaloa Stream at Masefau.	(a) Lat 14°15'51" S., long 170°38'07" W., 0.4 mile southwest of Masefau and 0.5 mile above mouth.	.39	1959-63	2- 6-63 2-15-63	.481 .665	.744 1.03
9110	(a) Pago Stream tributary at Afono.	(a) Lat 14°16'06" S., long 170°38'55" W., 200 ft above mouth and 0.3 mile south of Afono.	.32	1960-63	2- 6-63 2-15-63	.144 .234	.223 .362
9130	Gaoa Stream at Vatia.	(a) Lat 14°15'33" S., long 170°40'36" W., 0.3 mile southwest of Vatia and 0.3 mile above mouth.	.26	1959-63	2- 6-63 2-15-63	.085 .169	.132 .261
9140	Leafu Stream at Vatia.	(a) Lat 14°15'24" S., long 170°40'44" W., 0.3 mile above Gaoa Stream and 0.4 mile west of Vatia.	.12	1959-63	2- 6-63 2-15-63	.081 .274	.125 .424
9160	Leua Stream at Fagasa.	(a) Lat 14°17'24" S., long 170°43'00" W., 0.2 mile above mouth and 0.3 mile northeast of Fagasa.	.14	1960-63	2- 4-63 2-22-63	.035 .028	.054 .043
9170	(a) Leele Stream at Fagasa.	(a) Lat 14°17'32" S., long 170°43'00" W., 0.2 mile above mouth and 0.3 mile east of Fagasa.	.26	1960-63	2- 4-63 2-22-63	.222 .253	.343 .391
9180	Lesina Stream at Fagasa.	(a) Lat 14°17'38" S., long 170°43'14" W., 0.1 mile above mouth and 0.1 mile south of Fagasa.	.30	1960-63	2- 4-63 2-22-63	.007 .014	.011 .022
9190	(a) Leaveave Stream near Aasu.	(a) Lat 14°18'28" S., long 170°45'06" W., 500 ft above Upper Right Branch and 0.9 mile southeast of Aasu.	.69	1960-63	2- 5-63 2-16-63	1.05 1.34	1.62 2.07
9192	(a) Upper Right Branch Leaveave Stream near Aasu.	(a) Lat 14°18'24" S., long 170°45'03" W., 50 ft above mouth and 0.8 mile southeast of Aasu.	.15	1961-63	2- 5-63 2-16-63	.215 .192	.333 .297
9194	(a) Lower Right Branch Leaveave Stream near Aasu.	(a) Lat 14°18'21" S., long 170°45'01" W., 50 ft above mouth and 0.8 mile southeast of Aasu.	.17	1961-63	2- 5-63 2-16-63	.112 .206	.173 .319
9198	(a) Aasu Stream at Aoloaufou.	(a) Lat 14°18'54" S., long 170°46'00" W., 0.3 mile north of Aoloaufou and 1.3 miles southeast of Aoloautuai.	.27	1960-63	2-11-63 2-20-63	.151 .209	.234 .323
9200	Aasu Stream near Aasu.	(a) Lat 14°18'14" S., long 170°45'30" W., 0.5 mile above mouth and 0.5 mile south of Aasu.	.73	1960-63	2- 5-63 2-16-63	1.65 2.20	2.55 3.40

a Revised.

Discharge measurements made at low-flow partial-record stations during fiscal year 1963--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Tutuila, American Samoa--Continued					
9220	(a) Vaisa Stream at Aoloautuai.	(a) Lat 14°18'15" S., long 170°46'59" W., 0.3 mile above Vailolo Stream and 0.4 mile southwest of Aoloautuai.	0.67	1960-63	2- 5-63 2-16-63	1.75 3.15	2.71 4.87
9230	(a) Vailolo Stream at Aoloautuai.	(a) Lat 14°18'21" S., long 170°46'46" W., 0.4 mile south of Aoloautuai and 0.4 mile above mouth.	.29	1960-63	2- 5-63 2-16-63	.367 .531	.568 .822
9240	Matavai Stream at Fagaralo.	(a) Lat 14°18'21" S., long 170°48'22" W., 0.2 mile southeast of Fagarala and 0.2 mile above mouth.	.81	1960-63	2- 5-63 2-16-63	.325 .459	.503 .710
9250	(a) Maloata Stream at Maloata	(a) Lat 14°18'45" S., long 170°48'36" W., 0.4 mile southeast of Maloata and 0.4 mile above mouth.	.47	1960-63	2- 5-63 2-16-63	1.39 2.09	2.15 3.23
9260	Vaitele Stream at Poloa.	(a) Lat 14°19'18" S., long 170°49'36" W., 750 ft above unnamed tributary on right and 0.4 mile east of Poloa.	.12	1960-63	2- 9-63 2-18-63	.050 .057	.077 .088
9270	(a) Puna Stream at Aranave.	(a) Lat 14°19'39" S., long 170°49'49" W., 0.2 mile above mouth and 0.2 mile north of Aranave.	.04	1959-63	2- 9-63 2-18-63	.064 .060	.099 .093
9280	Afutele Stream at Agugulu.	(a) Lat 14°20'05" S., long 170°49'06" W., 30 ft below right branch and 300 ft north of Agugulu.	.15	1959-63	2- 9-63 2-18-63	.201 .237	.311 .367
9290	(a) Vaialae Stream at Utumea.	(a) Lat 14°19'56" S., long 170°48'50" W., 600 ft north of Utumea and 700 ft above mouth.	.14	1959-63	2- 9-63 2-18-63	.196 .237	.303 .367
9298	(a) Utanuatele Stream at Seetaga.	(a) Lat 14°19'41" S., long 170°48'35" W., 250 ft above Soonapule Stream and 0.2 mile north of Seetaga.	.12	1961-63	2- 9-63 2-18-63	.181 .210	.280 .325
9300	(a) Soonapule Stream at Seetaga.	(a) Lat 14°19'42" S., long 170°48'36" W., 100 ft above mouth and 0.1 mile north of Seetaga.	.12	1959-63	2- 9-63 2-18-63	.218 .249	.337 .371
9320	Asili Stream near Asili.	(a) Lat 14°19'46" S., long 170°47'42" W., 0.1 mile below right branch and 0.4 mile north of Asili.	.38	1960-63	2- 9-63 2-18-63	.827 1.53	1.28 2.37
9325	Asili Stream at Asili.	(a) Lat 14°20'05" S., long 170°47'40" W., 300 ft north of Asili and 600 ft above mouth.	.54	1958-59≠, 1960-63	2- 9-63 2-18-63	1.05 1.53	1.62 2.37
9330	(a) Vaipuna Stream at Amaluia.	(a) Lat 14°19'48" S., long 170°47'21" W., 0.6 mile north of Amaluia and 0.6 mile northeast of Asili.	.19	1960-63	2-12-63 2-19-63	.291 .169	.450 .261
9340	Leafu Stream near Leone.	(a) Lat 14°19'54" S., long 170°46'48" W., 0.8 mile north of Leone and 0.8 mile northeast of Amaluia.	.20	1959-63	2-13-63 2-20-63	2.58 2.57	3.99 3.98
9350	Fuafua Stream at Malaeloa.	(a) Lat 14°20'01" S., long 170°46'09" W., 1,000 ft above branch on left side and 0.7 mile north of Malaeloa.	.35	1960-63	2-13-63 2-20-63	.509 .698	.788 1.08
9355	Sigaloa Stream at Malaeloa.	(a) Lat 14°20'27" S., long 170°45'53" W., 0.1 mile above Vaitai Stream and 0.2 mile north of Malaeloa.	.04	1960-63	2-13-63 2-20-63	.016 .016	.025 .025
9360	(a) Leaveave Stream at Mapusagafou.	(a) Lat 14°19'12" S., long 170°44'59" W., 0.7 mile northwest of Mapusagatuai and 0.7 mile northwest of Mapusagafou.	.05	1960-63	2-14-63 2-20-63	.202 .357	.313 .552
9370	(a) Mapusagatuai Stream at Mapusagatuai.	(a) Lat 14°19'38" S., long 170°44'48" W., 0.3 mile west of Mapusagatuai and 0.5 mile northeast of Mapusagafou.	.08	1960-63	2-12-63 2-20-63	.086 .170	.133 .263
9380	(a) Right Branch Taumata Stream near Mapusagatuai.	(a) Lat 14°18'22" S., long 170°44'04" W., 0.5 mile above Left Branch and 1.5 mile north of Mapusagatuai.	.08	1960-63	2-12-63 2-19-63	.112 .079	.173 .122
9390	(a) Left Branch Taumata Stream near Mapusagatuai.	(a) Lat 14°18'27" S., long 170°43'49" W., 0.5 mile above Right Branch and 1.5 miles northeast of Mapusagatuai.	.24	1960-63	2-12-63 2-19-63	.173 .076	.268 .118

≠ Operated as a continuous-record gaging station.
a Revised.

Discharge measurements made at low-flow partial-record stations during fiscal year 1963--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Cfs	Mgd
		Island of Tutuila, American Samoa--Continued					
9400	Right Branch Vaitele Stream at Tafuna.	(a) Lat 14°18'52" S., long 170°43'34" W., 0.3 mile above Left Branch, 0.7 mile north of Lepine, and 1.0 mile north of Tafuna.	0.25	1959-63	2-11-63 2-21-63	0.441 .329	0.682 .509
9410	Left Branch Vaitele Stream at Tafuna.	(a) Lat 14°18'57" S., long 170°43'21" W., 900 ft above mouth, 0.6 mile northeast of Lepine, and 0.9 mile north of Tafuna.	.11	1959-63	2-11-63 2-21-63	.187 .133	.289 .206
9420	(a) Sauino Stream near Nuuuli.	(a) Lat 14°18'52" S., long 170°43'04" W., 0.5 mile above mouth and 1.3 miles west of cemetery in Nuuuli.	.10	1960-63	2- 9-63 2-21-63	.122 .109	.189 .169
9430	(a) Mataalii Stream near Nuuuli.	(a) Lat 14°18'42" S., long 170°42'51" W., 0.6 mile above mouth and 1.2 miles northwest of cemetery in Nuuuli.	.16	1960-63	2- 9-63 2-22-63	.389 .392	.602 .607
9440	(a) Leele Stream near Nuuuli.	(a) Lat 14°18'26" S., long 170°42'29" W., 1.0 mile above mouth and 1.1 miles northwest of cemetery in Nuuuli.	.61	1960-63	2- 9-63 2-22-63	.769 1.03	1.19 1.59
9450	Amaile Stream at Nuuuli.	(a) Lat 14°18'43" S., long 170°41'48" W., 0.3 mile above mouth and 0.6 mile north of cemetery in Nuuuli.	.14	1960-63	2- 9-63 2-19-63	.273 .282	.422 .435
9460	Avau Stream at Faganeanea.	(a) Lat 14°18'32" S., long 170°41'37" W., 0.2 mile above mouth and 0.4 mile southwest of Faganeanea.	.08	1960-63	2- 9-63 2-22-63	.153 .115	.237 .178
9470	Afu Stream at Faganeanea.	(a) Lat 14°18'16" S., long 170°41'24" W., 0.2 mile northwest of Faganeanea and 0.3 mile above mouth.	.21	1959-63	2- 9-63 2-22-63	.080 .116	.124 .179
9490	(a) Matafao Stream at Fagealu.	(a) Lat 14°17'35" S., long 170°41'42" W., at Vaitanoa Pool and 0.8 mile west of Fagaalu.	.24	1960-63	2-13-63 2-22-63	.375 .335	.580 .518
9498	(a) Utunoa Stream near Pago Pago.	(a) Lat 14°17'36" S., long 170°42'20" W., 0.8 mile east of Fagalea and 1.1 miles south of Colman School in Pago Pago.	.06	1961-63	2- 4-63 2-22-63	.191 .233	.296 .361
9505	(a) Utunoa Stream at Pago Pago.	(a) Lat 14°17'21" S., long 170°42'22" W., 0.8 mile east of Fagalea and 0.8 south of Colman School in Pago Pago.	.13	1957-58≠, 1961-63	2- 4-63 2-22-63	.143 .242	.221 .374
9510	(a) Vaica Stream at Pago Pago. 540 Dm	(a) Lat 14°17'31" S., long 170°42'29" W., 0.7 mile east of Fagalea and 1.0 mile south of Colman School in Pago Pago.	.09	1960-63	2- 4-63 2-22-63	.080 .085	.124 .125
9530	Matagimaile Stream above reservoir, at Aua.	(a) Lat 14°16'23" S., long 170°39'58" W., 0.2 mile above mouth and 0.2 mile northwest of Aua.	.09	1959-63	2- 7-63 2-22-63	.101 .076	.156 .118
9535	(a) Lalolamauta Stream at Aua.	(a) Lat 14°16'25" S., long 170°39'31" W., 0.3 mile northeast of Aua and 0.4 mile above mouth.	.10	1959-63	2- 7-63 2-22-63	.064 .085	.099 .132
9550	(a) Anasosopo Stream at Anasosopo.	(a) Lat 14°17'14" S., long 170°39'43" W., 300 ft north of Anasosopo and 0.1 mile above mouth.	.05	1960-63	2- 7-63 2-22-63	.048 .039	.074 .060
9555	(a) Vaisina Stream at Lauliifou.	(a) Lat 14°17'34" S., long 170°39'24" W., 0.1 mile north of Lauliifou and 0.2 mile above mouth.	.04	1960-63	2- 7-63 2-22-63	.033 .031	.051 .048
9560	(a) Vaitele Stream at Lauliituai.	(a) Lat 14°17'04" S., long 170°39'08" W., 0.2 mile above confluence with Maga Stream and 0.5 mile north of Lauliituai.	.05	1960-63	2- 7-63 2-22-63	.275 .308	.425 .477
9565	(a) Maga Stream at Lauliituai.	(a) Lat 14°17'12" S., long 170°39'10" W., 0.1 mile above confluence with Vaitele Stream and 0.3 mile north of Lauliituai.	.21	1960-63	2- 7-63 2-22-63	.034 .023	.053 .036
9570	(a) Lesea Stream at Lauliituai.	(a) Lat 14°17'19" S., long 170°39'00" W., 0.1 mile above mouth and 0.3 mile northeast of Lauliituai.	.17	1960-63	2- 7-63 2-22-63	.023 .139	.036 .215
9580	Right Branch Visa Stream at Aumi.	(a) Lat 14°17'20" S., long 170°38'39" W., 0.2 mile above mouth and 0.3 mile northeast of Aumi.	.05	1959-63	2- 8-63 2-22-63	.064 .065	.099 .101

≠ Operated as a continuous-record gaging station.
a Revised.

Discharge measurements made at low-flow partial-record stations during fiscal year 1963--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Tutuila, American Samoa--Continued					
9585	Left Branch Visa Stream at Auni.	(a) Lat 14°17'24" S., long 170°38'35" W., 250 ft above mouth and 0.3 mile northeast of Auni.	0.02	1959-63	2- 8-63 2-22-63	0.029 .032	0.045 .050
9590	Visa Stream at Auni.	(a) Lat 14°17'28" S., long 170°38'36" W., 100 ft above coastal road and 0.2 mile east of Auni.	.14	1957-58≠, 1963	2- 8-63 2-22-63	.193 .172	.299 .266
9605	East Branch Alega Stream at Alega.	(a) Lat 14°16'57" S., long 170°38'16" W., 300 ft above mouth and 0.2 mile north of Alega.	.16	1962-63	2- 8-63 2-14-63	.123 .142	.190 .220
9610	(a) Muliolevai Stream at Auto.	(a) Lat 14°16'37" S., long 170°37'54" W., 0.5 mile above mouth and 0.5 mile northwest of Auto.	.14	1959-63	2- 8-63 2-14-63	.242 .261	.374 .404
9620	Laloi Stream at Amouli.	(a) Lat 14°16'43" S., long 170°35'15" W., 0.2 mile above Fusiloa Stream and 0.3 mile west of Amouli.	.08	1959-63	2- 8-63 2-21-63	.070 .045	.108 .070
9630	Televai Stream at Amouli.	(a) Lat 14°16'24" S., long 170°34'54" W., 0.2 mile above Tuaven Stream and 0.3 mile north of Amouli.	.10	1959-63	2- 8-63 2-21-63	.056 .038	.087 .059
9640	Leafu Stream at Auasi.	(a) Lat 14°16'28" S., long 170°34'26" W., 0.1 mile north of Auasi and 0.2 mile above mouth.	.55	1959-63	2- 7-63 2-21-63	.067 .072	.104 .111
9650	Vaialili Stream at Alao.	(a) Lat 14°16'15" S., long 170°34'10" W., 0.2 mile above confluence with Vaifusi Stream and 0.4 mile west of Alao.	.05	1959-63	2- 7-63 2-18-63	.074 .065	.114 .101
9660	Vaifusi Stream at Alao.	(a) Lat 14°16'09" S., long 170°34'04" W., 300 ft above confluence with Vaialili Stream and 0.3 mile west of Alao.	.02	1959-63	2- 7-63 2-15-63	.011 .012	.017 .019

≠ Operated as a continuous-record gaging station.
a Revised.

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each fiscal year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent fiscal years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum			
					Date	Gage height (feet)	Discharge	
							Mgd	Cfs
		Island of Guam, Marisna Islands						
*8073 (formerly 8790)	Fonte River at dam, near Nimitz Hill.	Lat 13°27'25" N., long 144°43'34" E., 0.4 mile south of Force Headquarters building on Nimitz Hill and 1.2 miles southeast of Asan Village.	0.60	1962-63	8- 2-62	6.25		890
8093	Sabu River at Umatac.	Lat 13°17'52" N., long 144°39'37" E., at highway culvert between Catholic church and public school at Umatac.	.038	1963	10-1-62	4.95		161

* Also a low-flow partial-record station.

Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table.

Discharge measurements made at miscellaneous sites during fiscal year 1963

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (fiscal years)	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Kauai					
Kawaikoi Stream tributary	Kawaikoi Stream	Lat 22°08'05", long 159°37'29", at mouth, on right bank 100 ft below Kawaikoi Stream station, and 12.5 miles north of Waimea.			4- 8-63	*0.321	*0.497
Kauaikinana Stream tributary	Kauaikinana Stream	Lat 22°08'05", long 159°38'02", above Kokee ditch intake and 12 miles north of Waimea.			9-26-62	*.043	*.066
Waiahulu Stream tributary	Waiahulu Stream	Lat 22°06'50", long 159°40'00", at Kokee ditch intake and 11 miles north of Waimea.			9-27-62	*.014	*.022
Kokee Stream	Waiahulu Stream	Lat 22°06'55", long 159°39'30", above Kokee ditch intake and 10.5 miles north of Waimea.			9-26-62	*.164	*.254
Waiahi Stream	South Fork Wailua River	Lat 21°01'12", long 159°29'14", at elevation 1,035 ft and 7.8 miles northwest of Lihue.	1.18		4-15-63	/2,440	/3,770
Waikoko Stream	South Fork Wailua River	Lat 22°03'37", long 159°28'03", 200 ft below crossing of Lihue Plantation's North Wailua ditch and 8.2 miles northwest of Lihue.	1.11	1915	4-15-63	/2,600	/4,020
South Branch of North Fork Wailua River	North Fork Wailua River	Lat 22°04'04", long 159°28'32", 0.2 mile above Lihue Plantation's intake structure for North Wailua ditch and 8.8 miles northwest of Lihue.	1.55		4-15-63	/3,650	/5,650
Anini Stream	Pacific Ocean	Lat 22°13'18", long 159°28'04", 1,050 ft above mouth and 2.6 miles northeast of Hanalei.			4-12-62 6-13-62	*2.64 *1.99	*4.08 *3.08
		Island of Oahu					
Kaukonahua Stream	Kiiki Stream	Lat 21°33'56", long 158°07'26", 0.4 mile southeast of Waialua High School and 0.55 mile west of Thompson Corner intersection.	38.7		4-15-63	/10,100	/15,600
Makaleha Stream	Pacific Ocean	Lat 21°33'14", long 158°09'24", 0.4 mile above 7-barrel road culvert and 1.5 miles east of Waialua.	3.87		1-31-63	/1,590	/2,460
Kapalama Stream	Pacific Ocean	Lat 21°19'52", long 157°52'10", 0.4 mile southeast of Farrington High School and 0.4 mile west of Lanakila School, in Honolulu.	1.48		5-14-63	/1,030	/1,590
Waimanalo Stream	Pacific Ocean	Lat 21°21'09", long 157°44'00", 0.2 mile above Kalanianaole Highway and 1.0 mile west of Waimanalo School.	2.07		3- 6-63	/2,950	/4,560
Keolu Hills flood channel	Pacific Ocean	Lat 21°22'54", long 157°43'49", 300 ft east of Keolu Drive and 1.5 miles southeast of Kailua Post Office.	.36		1- 8-63 3- 6-63	/412 /905	/638 /1,400
Kaelepulu Stream tributary	Kaelepulu Stream	Lat 20°21'45", long 157°44'23", at bridge on Kalanianaole Highway and 1.5 miles northwest of Waimanalo Village.	.16		3- 6-63	/239	/370
Kaelepulu Stream tributary No. 2	Kaelepulu Stream	Lat 21°23'21", long 157°43'43", at 3-barrel culvert on Pookano Loop and 1.3 miles southwest of Kailua Post Office.	.20		4-15-63	/148	/229
Kahanaiki Stream	Maunawili Stream	Lat 21°22'49", long 157°46'06", at bridge crossing Kahanaiki Stream on Kailua Road and 1.9 miles southwest of Kailua Post Office.	1.42	1957-60	4-30-63	/601	/930
Baskerville Springs	Keaahala Stream	Lat 21°25'18", long 157°48'31" near Ahuna's house 0.25 mile south of St. Ann's School and 1.3 miles northwest of Castle High School at altitude 90 ft.			6-13-63	*2.36	*3.65

* Base flow.
/ Peak flow.

Discharge measurements made at miscellaneous sites during fiscal year 1963--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (fiscal years)	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Oahu--Continued					
Haiku Stream	Pacific Ocean	Lat 21°24'37", long 157°50'04", at altitude 460 ft and 2.2 miles southwest of Heeia.			6-12-63	*0.017	*0.031
Haiku Stream	Pacific Ocean	Lat 21°25'19", long 157°49'02", at altitude 90 ft, 0.6 miles southwest of St. Ann's School and 0.7 mile southwest of Heeia.			6-13-63	*3.88	*6.01
Ahuimanu Stream tributary	Ahuimanu Stream	Lat 21°26'37", long 157°50'01", 1.2 miles south of Kahaluu and 2.0 miles northwest of St. Ann's School.	1.19		4-15-63	/1,170	/1,810
Ahuimanu Stream	Kahaluu Stream	Lat 21°27'04", long 157°50'13", at Ahuimanu Road bridge and 0.8 mile south of Kahaluu.	2.16		4-15-63	/1,660	/2,570
South Fork Waihee Stream	Waihee Stream	Lat 21°26'50", long 157°52'08", at altitude 480 ft and 2.4 miles southwest of Kahaluu.			11-14-62 12-13-62 1-21-63 3-11-63 5-29-63	*.950 *1.01 *.924 *.953 *1.01	*1.47 *1.56 *1.43 *1.49 *1.56
North Fork Waihee Stream	Waihee Stream	Lat 21°26'52", long 157°52'09", at altitude 480 ft and 2.4 miles southwest of Kahaluu.			11-15-62 12-13-62 1-21-63 3-11-63 5-29-63	*1.07 *1.11 *.933 *1.05 *.931	*1.65 *1.72 *1.52 *1.63 *1.44
Waihee Stream	Pacific Ocean	Lat 21°26'52", long 157°52'05", at altitude 400 ft and 2.3 miles southwest of Kahaluu.			11-15-62 12-19-62 1-21-63 3-11-63 5-29-63	*1.75 *1.75 *1.81 *1.91 *2.00	*2.71 *2.72 *2.80 *2.96 *3.09
Waihee Stream	Pacific Ocean	Lat 21°26'55", long 157°51'59", at altitude 330 ft and 2.2 miles southwest of Kahaluu.			11-15-62 3-13-63 5-29-63	*1.95 *2.20 *2.51	*3.02 *3.40 *3.89
Waihee Stream tributary	Waihee Stream	Lat 21°26'55", long 157°51'58", at altitude 330 ft and 2.2 miles southwest of Kahaluu.			11-14-62 3-13-63 5-29-63	*.067 *.265 *.323	*.103 *.410 *.500
Waihee Stream	Pacific Ocean	Lat 21°26'55", long 157°51'58", at altitude 320 ft and 2.1 miles southwest of Kahaluu.			12-19-62	*2.30	*3.56
Waihee Stream	Pacific Ocean	Lat 21°26'58", long 157°51'50", at altitude 210 ft and 1.9 miles southwest of Kahaluu.		1962	11-16-62 12-19-62 3-13-63 6-11-63	*2.07 *2.87 *2.81 *2.68	*3.20 *4.44 *4.34 *4.26
Waihee Springs	Waihee Stream	Lat 21°26'59", long 157°51'39", at altitude 210 ft, about 100 ft from Waihee tunnel portal, and 1.8 miles west of Kahaluu.		1962	11-16-62 12-19-62 3-13-63 6-11-63	*.540 *.629 *.861 *1.40	*.836 *.973 *1.33 *2.17
Waihee Stream	Pacific Ocean	Lat 21°27'02", long 157°51'37", at altitude 180 ft, 360 ft below gage near Heeia, and 1.8 miles southwest of Kahaluu.			7- 5-62	*4.70	*7.27
Waihee Stream	Pacific Ocean	Lat 21°27'07", long 157°51'35", at altitude 160 ft, above Higa ditch diversion, and 1.75 miles southwest of Kahaluu.		1962	7- 5-62 11-16-62 12-19-62	*5.09 *4.54 *5.90	*7.88 *7.02 *9.13
Hakipuu Stream	Pacific Ocean	Lat 21°30'44", long 157°51'35", 0.8 mile north of Waikane and 3.2 miles south of Kaaawa.	0.78		4-15-63	/1,310	/2,030
Kaaawa Stream at Kualoa Ranch, Ltd.	Pacific Ocean	Lat 21°32'10", long 157°51'05", 1.1 miles northwest of ruins of old sugar mill and 1.6 miles south of Kaaawa.	1.64		4-15-63	/2,770	/4,280

* Base flow.
/ Peak flow.

Discharge measurements made at miscellaneous sites during fiscal year 1963--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (fiscal years)	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Oahu--Continued					
Kaluanui Stream	Pacific Ocean	Lat 21°34'23", long 157°55'21", at altitude 1,980 ft, 60 ft below Castle trail crossing, and 2.7 miles south of Hauula.			9-21-62	*0.93	*1.44
Kaluanui Stream	Pacific Ocean	Lat 21°34'57", long 157°54'57", at altitude 390 ft, at Sacred Falls, and 2.1 miles south of Hauula.			9-21-62	*.427	*.660
Kaluanui Stream	Pacific Ocean	Lat 21°35'32", long 157°54'28", at altitude 70 ft and 1.2 miles south of Hauula.			9-21-62	*.382	*.591
Kaipapau Stream	Pacific Ocean	Lat 21°35'22", long 157°56'15", at altitude 1,000 ft and 2.2 miles southwest of Hauula School.			9- 4-62	*.056	*.087
Kaipapau Stream	Pacific Ocean	Lat 21°35'46", long 157°56'10", at altitude 680 ft and 1.9 miles southwest of Hauula School			8- 6-62	.617	.954
Waielc Stream	Pacific Ocean	Lat 21°38'26", long 157°55'51", 0.7 mile south of Laie Temple and 2.9 miles southeast of Kahuku School.	1.23		4-15-63	/605	/936
Ihiihi Stream	Pacific Ocean	Lat 21°38'42", long 157°56'22", 0.55 mile southwest of Laie Temple and 2.4 miles southeast of Kahuku School.	1.28		4-15-63	/704	/1,090
		Island of Molokai					
Waikolu Stream	Pacific Ocean	Lat 21°08'33", long 156°55'14", at altitude 1,000 ft and 5.4 miles southeast of Kalaupapa Post Office.		1930, 1956, 1957	11-27-60	*.611	*.946
					1-21-61	*.878	*1.36
					3- 5-61	*1.33	*2.06
					5- 7-61	*.62	*.967
					8-26-61	*.542	*.838
					10- 9-62	*.41	*.628
					11-27-62	*.567	*.877
					1- 9-63	*1.14	*1.76
					2- 8-63	*1.00	*1.55
					3-20-63	*.789	*1.22
					6- 9-63	*.762	*1.18
Waikolu Stream tributary	Waikolu Stream	Lat 21°08'35", long 156°55'13", at altitude 1,000 ft and 5.4 miles southeast of Kalaupapa Post Office.		1956	11-27-60	*.32	*.49
					3- 5-61	*.355	*.550
Waikolu Stream tributary No. 2	Waikolu Stream	Lat 21°08'40", long 156°55'14", at altitude 1,000 ft and 5.3 miles southeast of Kalaupapa Post Office.		1956	11-27-60	*.14	*.213
					1- 8-61	*.120	*.185
					3- 5-61	*.392	*.606
					4- 5-61	*.565	*.874
					5- 7-61	*.031	*.048
					8-26-61	*.049	*.076
Waikolu Stream	Pacific Ocean	Lat 21°08'37", long 156°55'15", at altitude 960 ft and 5.3 miles southeast of Kalaupapa Post Office.			1- 8-61	*.730	*1.13
					4- 5-61	*2.08	*3.22
					8-26-61	*2.34	*3.62
					10-25-61	*.959	*1.48
Waikolu Stream	Pacific Ocean	Lat 21°08'37", long 156°55'15", at altitude 950 ft and 5.3 miles southeast of Kalaupapa Post Office.			10-25-61	*1.98	*3.07
					10- 9-62	*.692	*1.07
					2- 8-63	*1.15	*1.78
					3-20-63	*1.01	*1.56
					6- 9-63	*.943	*1.46
Waikolu Stream	Pacific Ocean	Lat 21°08'44", long 156°55'20", at altitude 900 ft and 5.3 miles southeast of Kalaupapa Post Office.			3- 6-61	*4.78	*7.40
					4- 5-61	*4.76	*7.37
Waikolu Stream	Pacific Ocean	Lat 21°08'53", long 156°55'25", at altitude 850 ft and 5.2 miles southeast of Kalaupapa Post Office.			1-10-61	*3.23	*5.00
					3- 6-61	*5.19	*8.03
					4- 5-61	*7.32	*11.3
					5- 8-61	*4.56	*7.06
					2- 8-63	*2.09	*3.23
					3-20-63	*1.88	*2.91

* Base flow.
/ Peak flow.
≠ Operated as a continuous-record gaging station.

Discharge measurements made at miscellaneous sites during fiscal year 1963--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (fiscal years)	Measurements		
					Date	Discharge	
						Mgd	Cfs
		Island of Molokai--Continued					
Waikolu Stream	Pacific Ocean	Lat 21°08'48", long 156°55'25", at altitude 775 ft and 5.0 miles southeast of Kalaupapa Post Office.			8-13-60	*2.13	*3.30
					1-10-61	*3.13	*4.84
					3- 6-61	*5.50	*8.51
					5- 8-61	*4.67	*7.23
Waikolu Stream	Pacific Ocean	Lat 21°09'05", long 156°55'33", at altitude 640 ft and 4.8 miles southeast of Kalaupapa Post Office.		1920, 1921-23≠	8-13-60	*2.50	*3.87
					1-10-61	*3.14	*4.86
					2-8-63	*3.10	*4.80
					3-20-63	*3.23	*5.00
					6- 9-63	*3.52	*5.44
Waikolu Stream	Pacific Ocean	Lat 21°09'17", long 156°55'31", at altitude 525 ft and 4.6 miles southeast of Kalaupapa Post Office.			8-13-60	*4.18	*6.47
					1-10-61	*4.85	*7.50
					3- 6-61	*6.59	*10.2
					5- 8-61	*7.24	*11.2
Waikolu Stream	Pacific Ocean	Lat 21°09'27", long 156°55'37", at altitude 430 ft and 4.5 miles southeast of Kalaupapa Post Office.			2- 8-63	*4.47	*6.91
					2- 9-63	*4.12	*6.38
					3-20-63	*4.40	*6.81
					6- 9-63	*5.07	*7.84
Waikolu Stream	Pacific Ocean	Lat 21°09'26", long 156°55'32", at altitude 275 ft and 4.2 miles southeast of Kalaupapa Post Office.			2- 9-63	*4.27	*6.60
					3-20-63	*4.49	*6.95
					6- 9-63	*5.07	*7.85
Waikolu Stream	Pacific Ocean	Lat 21°10'18", long 156°56'00", at altitude 20 ft and 3.7 miles southeast of Kalaupapa Post Office.		1937-39, 1956-60	2- 9-63	*7.43	*11.4
		Island of Maui					
Papaahawahawa Gulch	Pacific Ocean	Lat 20°41'27", long 156°00'57", 700 ft above highway bridge and 0.4 mile north of Muolea Point.	0.95		3-13-63	/2,380	/3,690
Waiohonu Stream	Pacific Ocean	Lat 20°42'31", long 156°00'01", about 350 ft above highway bridge and 3.4 miles southwest of Hana.	4.30		3-13-63	/8,920	/13,800
Kawaiapapa Gulch	Pacific Ocean	Lat 20°46'08", long 156°00'04", 1000 ft above highway bridge and 0.3 mile northwest of Hana Hospital.	5.83		3-13-63	/2,370	/3,670
Honokowai Gulch	Pacific Ocean	Lat 20°56'59", long 156°41'07", near Pioneer Mill Co. low-level pump and 0.6 mile above mouth.	5.59	1962	1-16-63	/212	/328
Pohakea Gulch	Pacific Ocean	Lat 20°48'31", long 156°29'50", 50 ft above Lower Maalaea Road and 2.65 miles northwest of Kihei Post Office.	2.40		1-16-63	/23.7	/36.6
Paleaahu Gulch	Kealia Pond	Lat 20°48'45", long 156°29'23", 120 ft below Lower Maalaea Road and 2.5 miles northwest of Kihei Post Office.	4.70		1-16-63	/30.2	/46.7
Pulehu Gulch	Kealia Pond	Lat 20°50'29", long 156°28'06", below bridge on Highway 35 and 2.2 miles southwest of Puunene.	12.2		1-16-63	/32.1	/497
Kalaloa Gulch	Kealia Pond	Lat 20°48'23", long 156°28'13", below concrete bridge on Highway 35 and 1.5 miles northwest of Kihei Post Office.	12.8		1-16-63	/282	/436
Keahualwi Gulch	Kealia Pond	Lat 20°47'20", long 156°27'55", below concrete bridge on Highway 35 and 0.35 mile north of Kihei Post Office.	10.0		1-16-63	/254	/394
		Island of Hawaii					
Wailuku River	Pacific Ocean	Lat 19°42'42", long 155°14'18", at altitude 2,750 ft and 6.5 miles west of Kaumana.			12-13-62	*.014	*.021
Wailuku River	Pacific Ocean	Lat 19°42'28", long 155°11'58", at altitude 2,040 ft and 3.9 miles west of Kaumana.			12-13-62	*1.09	*1.68

* Base flow
/ Peak flow.
≠ Operated as a continuous-record gaging station.

Discharge measurements made at miscellaneous sites during fiscal year 1963--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
		Island of Hawaii--Continued				
Spring near Wailuku River	Wailuku River	Lat 19°42'20", long 155°11'58", at altitude 2,100 ft and 3.8 miles west of Kaumana.		12-13-62	*0.607	*0.939
Kapehu Stream	Wailuku River	Lat 19°43'52", long 155°09'43", at altitude 1,500 ft and 2 miles northwest of Piihonua.		10-16-62	*1.49	*2.30
Hilo Sugar Co. ditch	Diversion from Awehi Stream	Lat 19°44'52", long 155°10'22", at altitude 1,800 ft, 5 ft below intake from Awehi Stream, and 3.1 miles northwest of Piihonua.		10-16-62	b1.27	b1.97
Awehi Stream	Pacific Ocean	Lat 19°44'52", long 155°10'23", at altitude 1,800 ft, 25 ft below Hilo Sugar Co. Ditch intake, and 3.1 miles northwest of Piihonua.		10-16-62	b3.06	b4.74
Right Fork Awehi Stream	Awehi Stream	Lat 19°43'52", long 155°09'53", at altitude 1,600 ft and 2 miles northwest of Piihonua.		10-16-62	*.615	*.952
Pukihae Stream	Pacific Ocean	Lat 19°45'10", long 155°09'40", at altitude 1,600 ft, 100 ft below Hilo Sugar Co. domestic supply intake, and 3 miles northwest of Piihonua.		10-16-62	*.540	*.836
Honolii Stream	Pacific Ocean	Lat 19°46'40", long 155°13'35", at altitude 3,270 ft and 7.2 miles northwest of Piihonua.		11- 1-62	*.789	*1.22
Honolii Stream	Pacific Ocean	Lat 19°46'15", long 155°12'35", at altitude 2,890 ft and 6.0 miles northwest of Piihonua.		11- 1-62	*.644	*.996
Honolii Stream	Pacific Ocean	Lat 19°46'10", long 155°12'20", at altitude 2,750 ft and 5.8 miles northwest of Piihonua.		11- 1-62	*.847	*1.31
Honolii Stream	Pacific Ocean	Lat 19°46'10", long 155°11'20", at altitude 2,350 ft, 25 ft above Hilo Sugar Intake Dam, and 5.0 miles northwest of Piihonua.	1962	11- 1-62	*.827	*1.28
Pohakupaa Stream	Honolii Stream	Lat 19°46'10", long 155°09'45", at altitude 1,720 ft and 4.1 miles northwest of Piihonua.		11- 2-62	*1.45	*2.24
Onomea Sugar Co. ditch	Diversion from Honolii Stream	Lat 19°46'05", long 155°07'00", at altitude 500 ft and 2.0 miles southwest of Papaikou.		11- 2-62	b4.65	b7.19
Honolii Stream	Pacific Ocean	Lat 19°46'05", long 155°07'00", at altitude 500 ft and 2.0 miles southwest of Papaikou.		11- 2-62	b3.08	b4.77
Honolii Stream	Pacific Ocean	Lat 19°45'40", long 155°05'55", at altitude 180 ft and 1.7 miles southwest of Papaikou.	1959-62	11- 2-62	*3.73	*5.77
Right Fork Kalaoa Stream	Kalaoa Stream	Lat 19°48'10", long 155°09'05", at altitude 1,680 ft and 3.5 miles southwest of Onomea.		10-17-62	*.743	*1.15
Left Fork Kalaoa Stream	Kalaoa Stream	Lat 19°48'05", long 155°09'05", at altitude 1,680 ft and 3.5 miles southwest of Onomea.		10-17-62	*.160	*.248
Hanawi Stream	Pacific Ocean	Lat 19°48'20", long 155°09'50", at altitude 2,030 ft and 4.7 miles southwest of Pepeekeo.		10-17-62	*.343	*.531
Right Fork Kawainui	Kawainui Stream	Lat 19°49'10", long 155°09'20", at altitude 1,730 ft and 3.8 miles southwest of Pepeekeo.		10-17-62	*1.27	*1.96
Middle Fork Kawainui	Kawainui Stream	Lat 19°49'25", long 155°09'25", at altitude 1,730 ft and 3.7 miles west of Pepeekeo.		10-17-62	*1.18	*1.83
Right Branch of Left Fork Kawainui Stream	Left Fork Kawainui Stream	Lat 19°49'15", 155°08'50", at altitude 1,400 ft and 3.0 miles west of Pepeekeo.		10-17-62	*.827	*1.28
Left Branch of Left Fork Kawainui Stream	Left Fork Kawainui Stream	Lat 19°49'20", long 155°08'50", at altitude 1,400 ft and 3.0 miles west of Pepeekeo.		10-17-62	*1.42	*2.20
Waiaana Stream	Pacific Ocean	Lat 19°50'00", long 155°09'50", at altitude 1,720 ft and 3.8 miles west of Pepeekeo.		10-18-62	*1.90	*2.94

* Base flow.
b Base flow of stream at diversion is sum of stream and diversion.

Discharge measurements made at miscellaneous sites during fiscal year 1963--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
		Island of Hawaii--Continued				
Waiaama Stream	Pacific Ocean	Lat 19°50'00", long 155°08'00", at altitude 1,000 ft and 2.0 miles southwest of Pepeekeo.		10-18-62	*0.853	*1.32
Honomu Stream	Pacific Ocean	Lat 19°50'40", long 155°09'30", at altitude 1,520 ft and 3.5 miles west of Pepeekeo.		10-18-62	*.272	*.421
Kolekole Stream	Pacific Ocean	Lat 19°49'50", long 155°12'25", at altitude 2,940 ft and 6.5 miles southwest of Honomu.		11- 3-62	*.159	*.246
Kolekole Stream	Pacific Ocean	Lat 19°49'50", long 155°12'05", at altitude 2,800 ft and 6.2 miles southwest of Honomu.		11- 3-62	*.165	*.256
North Fork Kolekole	Kolekole Stream	Lat 19°50'05", long 155°11'45", at altitude 2,690 ft and 5.8 miles southwest of Honomu.		11- 3-62	*.050	*.077
Kolekole Stream	Pacific Ocean	Lat 19°50'10", long 155°11'35", at altitude 2,560 ft and 5.6 miles southwest of Honomu.		11- 3-62	*.249	*.386
Kolekole Stream	Pacific Ocean	Lat 19°50'35", long 155°10'50", at diversion dam, at altitude 2,100 ft, and 4.6 miles southwest of Honomu.		10-18-62	*1.14	*1.77
Kolekole Stream	Pacific Ocean	Lat 19°50'35", long 155°10'50", at altitude 2,100 ft and 4.6 miles southwest of Honomu.		11- 3-62	*1.13	*1.75
Spring at Field 40	Hakalau Stream	Lat 19°53'00", long 155°10'40", at Left Branch Kamaee Stream, at altitude 1,470 ft, and 3.5 miles west of Hakalau.		11- 7-62	*.487	*.753
Hakalau Stream	Pacific Ocean	Lat 19°52'30", long 155°10'15", at altitude 1,380 ft and 3.3 miles southwest of Hakalau.		11- 7-62	*.20	*.31
Waawaa Stream	Hakalau Stream	Lat 19°52'50", long 155°10'05", at altitude 1,230 ft and 3 miles southwest of Hakalau.		11- 7-62	*.357	*.552
Hakalau Stream above diversion ditch	Pacific Ocean	Lat 19°52'40", long 155°09'50", at altitude 1,130 ft and 3 miles southwest of Hakalau.		11- 7-62	*1.59	*2.46
Urauma Stream diversion ditch	Diversion from Urauma Stream	Lat 19°53'20", long 155°11'15", at altitude 1,700 ft and 4 miles west of Hakalau.		11- 7-62	b.808	b1.25
Urauma Stream	Pacific Ocean	Lat 19°53'20", long 155°11'15", just below diversion to Hakalau flume, at altitude 1,700 ft, and 4 miles west of Hakalau.		11- 7-62	b.340	b.526
Urauma Stream	Pacific Ocean	Lat 19°54'30", long 155°08'40", at altitude 350 ft and 1.3 miles northwest of Hakalau.		11- 9-62	*1.63	*2.52
Nanue Stream	Pacific Ocean	Lat 19°54'40", long 155°11'15", at altitude 1,320 ft and 2.3 miles southwest of Honohina.		11- 7-62	*.424	*.656
Opea Stream	Pacific Ocean	Lat 19°53'55", long 155°11'15", about 0.5 mile below forest at altitude 1,600 ft and 4.0 miles west of Hakalau.		11- 9-62	*.449	*.695
Pohakupuka Stream	Pacific Ocean	Lat 19°56'00", long 155°12'10", at altitude 1,240 ft and 2 miles southwest of Pohakupuka School.		10-19-62	*.162	*.251
Heakoa Stream	Pacific Ocean	Lat 19°55'33", long 155°15'40", at altitude 3,080 ft and 4.5 miles southwest of Papaaloa.		11- 5-62	*.005	*.008
Kawainui Stream	Waipio Stream	Lat 20°05'30", long 155°41'25", 300 ft upstream from tributary and 4.8 miles north of Kamuela Post Office.		9-25-62	2.00	3.10
Kawainui Stream tributary	Kawainui Stream	Lat 20°05'28", long 155°41'25", at altitude 4,240 ft and 4.8 miles north of Kamuela Post Office.		9-25-62	.397	.614

* Base flow.
b Base flow of stream at diversion is sum of stream and diversion.

Discharge measurements made at miscellaneous sites during fiscal year 1963--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Measurements		
				Date	Discharge	
					Mgd	Cfs
		Island of Hawaii--Continued				
Kawainui Stream	Waipio Stream	Lat 20°05'18", long 155°40'55", at altitude 4,040 ft and 4.5 miles north of Kamuela Post Office.		9-25-62 9-25-62 11- 8-62 11-16-62 12-12-62	3.85 5.08 *.153 *.094 *.228	5.95 7.86 *.236 *.146 *.352
Upper Hamakua ditch	Kawaiki Stream	Lat 20°05'18", long 155°40'50", at tunnel outlet and 4.5 miles north of Kamuela Post Office.		11- 8-62	.125	.193
Kawaiki Stream	Kawainui Stream	Lat 20°05'18", long 155°40'50", at altitude 4,020 ft and 4.5 miles north of Kamuela Post Office.		9-25-62	.817	1.26
Upper Hamakua ditch intake	Diversion from Kawainui and Kawaiki Streams	Lat 20°05'18", long 155°40'50", at altitude 3,780 ft and 4.5 miles north of Kamuela Post Office.		11- 8-62 11-16-62	c.126 c.098	c.195 c.151
Lower Hamakua ditch	Diversion from Kawainui Stream	Lat 20°05'12", long 155°38'45", at altitude 1,035 ft and 5 miles southwest of Kukuihaele.		12-11-62	9.44	14.6
Kawainui Stream	Waipio Stream	Lat 20°05'12", long 155°38'46", 1000 ft below Lower Hamakua ditch intake, at altitude 1,020 ft, and 5.1 miles southwest of Kukuihaele.		12-11-62	*.404	*.625
Kawainui Stream	Waipio Stream	Lat 20°04'41", long 155°38'31", at altitude 720 ft and 4.5 miles northeast of Kamuela Post Office.		12-11-62	*1.12	*1.74
Alakahi Stream	Waipio Stream	Lat 20°04'35", long 155°40'35", at altitude 4,000 ft and 3.5 miles north of Kamuela Post Office.		9-27-62	*.155	*.240
Alakahi Stream	Waipio Stream	Lat 20°04'25", long 155°40'36", at altitude 3,980 ft and 3.6 miles north of Kamuela Post Office.		9-27-62	*.070	*.109
Alakahi Stream	Waipio Stream	Lat 20°04'26", long 155°40'25", at altitude 3,890 ft and 3.5 miles north of Kamuela Post Office.		9-25-62 11- 8-62 11-16-62 12-12-62	*1.92 *1.53 *.087 *.146	*2.97 *2.36 *.135 *.226
Alakahi Stream	Waipio Stream	Lat 20°04'39", long 155°38'30", 150 ft above mouth, at altitude 720 ft, and 4.5 miles northwest of Kamuela Post Office.		12-11-62	*2.08	*3.22
Koiawe Stream	Waipio Stream	Lat 20°04'35", long 155°38'10", 100 ft upstream of Trail X, at altitude 650 ft, and 4.3 miles northwest of Kamuela Post Office.		12-11-62	*2.96	*4.58
Waipio Stream	Wailoa Stream	Lat 20°04'44", long 155°37'24", at altitude 340 ft and 4.4 miles southwest of Kukuihaele.		12-11-62	*7.76	*12.0
Waima Stream	Wailoa Stream	Lat 20°04'06", long 155°37'34", at altitude 960 ft and 4.3 miles northeast of Kamuela Post Office.		7-19-62	*.50	*.772
Right Fork Waima Stream	Waima Stream	Lat 20°04'07", long 155°37'33", at altitude 960 ft and 4.3 miles northeast of Kamuela Post Office.		7-19-62	*.49	*.753
Waima Stream	Wailoa Stream	Lat 20°04'10", long 155°37'33", at altitude 800 ft and 4.4 miles northeast of Kamuela Post Office.		7-19-62	*2.02	*3.13
Waima Stream	Wailoa Stream	Lat 20°04'15", long 155°37'30", at altitude 760 ft and 4.5 miles northeast of Kamuela Post Office.		7-19-62	*7.05	*10.9
Waima Stream	Wailoa Stream	Lat 20°04'21", long 155°37'27", at altitude 680 ft and 4.5 miles southwest of Kukuihaele.		7-19-62	*14.1	*21.8

* Base flow.
c Includes total flow of Kawainui and Kawaiki Streams.

Discharge measurements made at miscellaneous sites during fiscal year 1963--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (fiscal years)	Measurements		
					Date	Discharge Mgd	Discharge Cfs
Island of Hawaii--Continued							
Waima Spring	Waima Stream	Lat 20°04'22", long 155°37'25", at altitude 710 ft and 4.5 miles southwest of Kukuihaele.			7-19-62	*0.21	*0.32
Waima Stream	Wailoa Stream	Lat 20°04'42", long 155°37'23", 150 ft above mouth, at altitude 360 ft, and 4.2 miles southwest of Kukuihaele.			7-19-62	*13.7	*21.2
Waima Stream	Wailoa Stream	Lat 20°04'42", long 155°37'23", 75 ft above mouth, at altitude 360 ft, and 4.2 miles southwest of Kukuihaele.			12-11-62	*14.2	*21.9
Hillawe Stream	Wailoa Stream	Lat 20°06'39", long 155°35'55", just above diversion ditch at altitude 30 ft and 1.6 miles southwest of Kukuihaele.			12-11-62	*.801	*1.24
West Branch Honokane Iki Stream	Honokane Iki Stream	Lat 20°09'47", long 155°43'25", 2.3 miles upstream from mouth of Honokane Iki Stream and 4.3 miles southeast of Niulii Cemetery.		1961-62	7-23-62 9- 6-62 10-25-62 12- 6-62 1-24-63 3- 5-63 5- 3-63 6-12-63	.339 .557 .013 .111 .129 1.75 .434 .364	.525 .826 .020 .172 .200 2.71 .671 .563
Kohakohau Stream	Keanuiomano Stream	Lat 20°04'03", long 155°41'23", just above lowest pool (pipeline intake), at altitude 4,200 ft, and 3.3 miles northwest of Kamuela Post Office.			9-28-62	*.243	*.376
Kohakohau Stream	Keanuiomano Stream	Lat 20°04'02", long 155°41'22", 30 ft below ranch diversion dam, at altitude 4,180 ft, and 3.3 miles northwest of Kamuela Post Office.			9-28-62	*.180	*.278
Kohakohau Stream	Keanuiomano Stream	Lat 20°01'45", long 155°42'05", at bridge at junction of Kohala, Kawaihae and Waimea Roads, and 2.0 miles west of Kamuela Post Office.		1955-62	7-22-62 8-22-62 9-21-62 10-18-62 11-21-62 12-27-62 2-27-63 3- 7-63 6- 6-63	1.54 .377 .821 .037 No flow .098 No flow 13.2 .769	2.39 .583 1.27 .057 - .152 - 20.4 1.19
Waikoloa Stream	Waiulaula Gulch	Lat 20°03'35", long 155°40'15", at altitude 3,680 ft and 2.5 miles north of Kamuela Post Office.			9-28-62 11- 8-62	1.18 *.492	1.82 *.762
Island of Guam, Mariana Islands							
Chaot River	Agana River	Lat 13°27'11" N., long 144°45'27" E., at Highway 4 crossing and 1.6 miles south of Leary Junction in Agana.	1.21		8- 2-62		/1,210
Left Branch Ugum River	Ugum River	Lat 13°19'08" N., long 144°42'25" E., above unnamed tributary on the right bank and 3.5 miles east of Umatac Church.			4-26-63		2.36
Left Branch Ugum River tributary	Left Branch Ugum River	Lat 13°19'08" N., long 144°42'25" E., at mouth and 3.5 miles east of Umatac Church.			4-26-63		0.448
Left Branch Ugum River	Ugum River	Lat 13°19'23" N., long 144°42'42" E., above mouth of Meya River and 3.9 miles northeast of Umatac Church.			4-26-63		2.11
Meya River	Left Branch Ugum River	Lat 13°19'23" N., long 144°42'43" E., at mouth and 3.9 miles northeast of Umatac Church.			4-26-63		0.796

* Base flow.
/ Peak flow.

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