

# Surface Water Supply of Hawaii 1954-55

*Prepared under the direction of J. V. B. WELLS, Chief, Surface Water Branch*

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GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1399

*Prepared in cooperation with the  
Territory of Hawaii*



**UNITED STATES DEPARTMENT OF THE INTERIOR**

**FRED A. SEATON, *Secretary***

**GEOLOGICAL SURVEY**

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## **PREFACE**

This report was prepared by the Geological Survey in cooperation with the Territory of Hawaii by personnel of the Water Resources Division, C. G. Paulsen, chief, under the general direction of J. V. B. Wells, chief, Surface Water Branch, and B. J. Peterson, chief, Annual Reports Section.

The data were collected and computed under the supervision of H. S. Leak, district engineer, Honolulu.

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## SCOPE OF WORK

This volume contains records of daily flow of streams and ditches at 116 gaging stations in the Territory of Hawaii during the year ending June 30, 1955. In addition, discharge measurements only have been made at many other points, and rather extensive studies of ground water have been made on all the inhabited islands.

Since the beginning of stream-gaging work in Hawaii, in 1910, records of flow of streams and ditches have been obtained at about 582 stations for periods ranging from a few months to 44 years. Also, hundreds of discharge measurements only have been made at points other than gaging stations. Most of the results of ground-water studies have been published in bulletins of the Territorial Division of Hydrography.

## COOPERATION

The work during the year ending June 30, 1955, was done under cooperative agreement with the Territory of Hawaii through the commissioner of public lands. Assistance in collecting records was rendered also on the island of Kauai by the Kekaha Sugar Co. Ltd., the McBryde Sugar Co. Ltd., the East Kauai Water Co. Ltd., the Kilauea Sugar Co. Ltd., and the Lihue Plantation Co. Ltd.; on the island of Oahu by the Waialua Agricultural Co. Ltd. and Waihole Water Co. Ltd.; on the island of Maui by the Pioneer Mill Co. Ltd., the East Maui Irrigation Co. Ltd., the Maui County Engineer, Maui County Board of Water Works, and Territory of Hawaii Board of Agriculture and Forestry; and on the island of Hawaii by the City of Hilo Water Works, the Kohala Ditch Co. Ltd., and the Olaa Sugar Co. Ltd.

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

## DIVISION OF WORK

The stream-gaging work was done by the Water Resources Division of the Geological Survey under the direction of personnel shown in the preface.

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

## DEFINITION OF TERMS AND ABBREVIATIONS

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

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

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

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

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

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

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

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

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

#### DOWNSTREAM ORDER OF LISTING GAGING STATIONS

Beginning with the report for the year ending June 30, 1950, the order of listing gaging-station records was changed. Proceeding in a downstream direction along the main stem, all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. Tributary streams are indicated by indentation. This downstream order and the system of indentation show which gaging stations are on tributaries between any two stations on a main stem.

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

#### EXPLANATION OF DATA

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

for several stations the high-water discharge has been determined from rating developed by the use of models.

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

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

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

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (fiscal years)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the fiscal years for which figures are revised in that report. In listing the fiscal years only one number is given; for instance, 1933 stands for the fiscal year July 1, 1932, to June 30, 1933. If no daily, monthly, or annual figures of discharge are



concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given.

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

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

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

In the table of daily discharge, the figures for the maximum and the minimum day 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 in million gallons. The mean for the month is given both in terms of million gallons a day (line headed "mgd") and in cubic feet per second (line headed "cfs"). The line headed "Ac-ft" gives the runoff for the month in acre-feet.

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

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

#### ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

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

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

## PUBLICATIONS

The following table lists, by years and numbers, the papers on the surface-water supply of Hawaii published during the period 1903-55 and, used in conjunction with the list of stations maintained, which is given in Water-Supply Paper 795, provides a convenient index for finding the data for any station. Except as indicated, the year or years covered by each report begin July 1 and end on June 30. The data for any particular station will be found in the reports covering the years during which that station was maintained, unless, owing to undeveloped rating curves, publication was postponed. Occasionally data are revised and republished in later papers. Discharge measurements made during any year at points other than regular gaging stations are included in the data published for that year.

Numbers of water-supply papers containing data on the surface water supply of Hawaii, 1903-55

Year	WSP	Year	WSP	Year	WSP	Year	WSP	Year	WSP
1903	*77	1919-20	516	1928-29	695	1937-38	865	1946-47	1095
1909-11†	318	1920-21	535	1929-30	710	1938-39	885	1947-48	1125
1912†	336	1921-22	555	1930-31	725	1939-40	905	1948-49	1155
1913†	373	1922-23	575	1931-32	740	1940-41	935	1949-50	1185
1915-15	430	1923-24	595	1932-33	755	1941-42	965	1950-51	1219
1915-16	445	1924-25	615	1933-34	770	1942-43	985	1951-52	1249
1916-17	465	1925-26	635	1934-35	795	1943-44	1015	1952-53	1289
1917-18	485	1926-27	655	1935-36	815	1944-45	1045	1953-54	1349
1918-19	515	1927-28	675	1936-37	835	1945-46	1065	1954-55	1399

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

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

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

## RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table lists the gaging stations in the Territory of Hawaii at which records of discharge were collected during the fiscal year July 1954 to June 1955 by agencies other than the Geological Survey. The records for these stations are not contained in the publications of the Geological Survey, and, except as indicated, have not been published elsewhere.

Records of discharge collected by agencies other than the Geological Survey

ISLAND OF KAUAI			
Stream	Location	Period	Operated by
East Lawai storm ditch..	Near Government Road, near Kalahao.	1924-55	McBryde Sugar Co.
Eleele ditch.....	.....do.....	1924-55	Do.
Hanalei ditch.....	Above Kalihiwai Reservoir, near Kilauea.	1925-55	Kilauea Sugar Plantation Co.
Hanamaulu ditch.....	Below intake, near Hanamaulu.....	1925-55	Lihue Plantation Co.
Hanapepe field ditch....	Below Hanapepe River intake, near Eleele.	1924-55	McBryde Sugar Co.
Hanapepe Stream.....	At tidewater, near Eleele.....	1924-55	Do.
Kamooloa ditch.....	Below Kauai Belt Road crossing, near Koloa.	1924-55	Do.
Kealia River.....	1 mile west of Kaneha Reservoir and 5½ miles northwest of Kealia.	1936-55	Lihue Plantation Co.
Koloa ditch.....	4½ miles north of Koloa and 6½ miles west of Lihue.	1927-55	Do.
Koula ditch.....	In Hanonui Valley, near Makaweli...	1949-55	Gay & Robinson.
Lawai Stream.....	½ mile above cannery, near Kalahao.	1924-55	McBryde Sugar Co.
Lihue lower ditch.....	Below intake, near Lihue.....	1925-55	Lihue Plantation Co.
Olokele ditch.....	At powerhouse, near Makaweli.....	1926-55	Gay & Robinson.
Wahiawa main stream.....	Above Alexander Reservoir, near Kalahao.	1924-55	McBryde Sugar Co.
Wahiawa Stream, East Branch.	.....do.....	1929-55	Do.
West Lawai ditch.....	Near camp 12, near Kalahao.....	1924-55	Do.

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

## ISLAND OF OAHU

Stream	Location	Period	Operated by
Alewa Heights Spring....	Below reservoir 3.....	1932-55*	Board of Water Supply, City and County of Honolulu.
Booth Springs.....	In Pauoa Valley, at altitude 685 feet.	1929-55*	Do.
Helemano ditch.....	About 3 miles below upper Helemano Reservoir.	1933-55	Waialua Agricultural Co.
Hering Springs.....	In Makiki Valley, at altitude 970 feet.	1925-55*	Board of Water Supply, City and County of Honolulu.
Kahuawai Springs.....	In Pauoa Valley, at altitude 618 feet.	1925-55*	Do.
Kalihi tunnels.....	At diversion, at altitude 650 feet.	1926-55*	Do.
Kamananui ditch.....	In Kawaiolo Gulch about 500 yards above third siphon from Government Road.	1934-55	Waialua Agricultural Co.
Kipapa Stream.....	At altitude 300 feet.....	1917-55	Waiahole Water Co.
Makiki Springs.....	In Makiki Valley, at altitude 350 feet.	1926-55*	Board of Water Supply, City and County of Honolulu.
Manoa tunnels.....	Upper Manoa Valley.....	1925-55*	Do.
Nuuanu tunnels.....	At Lower Luakaha.....	1926-55*	Do.
Nuuanu tunnel 3.....	At overflow, in upper Nuuanu Valley	1931-55*	Do.
Palolo tunnel.....	Upper Palolo Valley.....	1926-55*	Do.
Wahiawa Reservoir Outlet	About 1,200 feet below dam.....	1912-55*	Wahiawa Water Co.
Waiahole tunnel.....	At adit 8.....	1916-55	Waiahole Water Co.
Waiaua Stream.....	At altitude 750 feet.....	1917-55	Do.
Waikahala Stream.....	.....do.....	1917-55	Do.
Waimalu Stream.....	At altitude 555 feet, near Aiea.....	1947-55	Do.

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

## ISLAND OF MAUI (WEST MAUI)

Everett ditch.....	Below intake, near Wailuku.....	1935-55	Wailuku Sugar Co.
Honokohau tunnel.....	At outlet of tunnel, at Mahinahina weir.	1917-55	Pioneer Mill Co.
Iao-Waikapu ditch.....	At lower end of tunnels, near Wailuku.	1923-55	Wailuku Sugar Co.
Kahoma tunnel.....	2,000 feet upstream from outlet, above Lahaina.	1920-55	Pioneer Mill Co.
Kama ditch.....	Below intake, near Wailuku.....	1933-55	Wailuku Sugar Co.
Kanaha ditch.....	At intake in Kanaha Gulch, above Lahainaluna.	1921-55	Pioneer Mill Co.
Kauaula tunnel.....	At outlet, above Lahaina.....	1920-55	Do.
K-3 flume.....	Above Lahainaluna.....	1931-55	Do.
Lanipupoko ditch.....	At outlet, above Lahaina.....	1921-55	Do.
Maniania ditch.....	Below intake, near Wailuku.....	1923-55	Wailuku Sugar Co.
North Waiehu Stream.....	Near end of Waiehu Camp road, near Wailuku.	1922-55	Do.
South Waikapu ditch.....	Above second lateral, near reservoir 1, near Waikapu.	1935-55	Do.
Spreeckels ditch.....	Below intake, near Waihee.....	1931-55	Do.
Ukumehame ditch.....	At outlet in Ukumehame Gulch, near Olowalu.	1931-55	Pioneer Mill Co.
Waihee ditch.....	Below intake, near Waihee.....	1931-55	Wailuku Sugar Co.

## ISLAND OF MAUI (EAST MAUI)

Hanawi Stream.....	Below Government Road, near Nahiku.	1927-32, 1947-55	East Maui Irrigation Co.
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## ISLAND OF HAWAII

Hionamoa Gulch.....	Below all development tunnels, near Pahala.	1926-55	Hawaiian Agricultural Co.
Honokaape ditch.....	At Kukuihaele Village.....	1923-55	Hawaiian Irrigation Co.
Keaiwa Gulch.....	Below all development tunnels, near Pahala.	1926-55	Hawaiian Agricultural Co.
Kohala ditch.....	At Awini weir in Honokane, near Niuli.	1917-55†	Kohala Ditch Co.
Do.....	At Niuli weir, near Niuli.....	1917-55†	Do.
Lalakea ditch.....	At altitude 1,900 ft, near Waipio..	1905-55	Hawaiian Irrigation Co.
Lower Hamakua ditch.....	At main weir near Kukuihaele.....	1921-55†	Do.
Moaula Gulch.....	Below all development tunnels, near Pahala.	1929-55	Hawaiian Agricultural Co.
Noguchi tunnel 19.....	5.3 miles from Pahala, at altitude 3,500 feet.	1926-55	Do.
Pololu Inlet 1.....	At Pololu, near Niuli.....	1929-55	Kohala Ditch Co.
Pololu Inlet 2.....	In Waikalae Gulch at Pololu, near Niuli.	1929-55	Do.
Pololu Inlet 3.....	In Opaeilau Gulch, above Kohala ditch, near Niuli.	1937-55	Do.
Pololu Inlet 5.....	In Niuli Gulch, above Kohala ditch, near Niuli.	1937-55	Do.
Pololu Inlet 6.....	In Waikane Gulch, above Kohala ditch, near Niuli.	1937-55	Do.
Puwaiole Stream.....	Above Kohala ditch, near Halawa....	1937-55	Do.
Waipuka Stream.....	Above Kohala ditch, near Niuli.....	1929-55	Do.
Waipuni Stream.....	Above Kohala ditch, near Halawa....	1933-55	Do.
Waipunalau Stream.....	.....do.....	1929-55	Do.

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

## ISLAND OF KAUAI

## Kawaikoi Stream near Waimea

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

Drainage area.--4.1 sq mi.

Records available.--April 1909 to December 1916, July 1919 to June 1955.

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.--36 years (1919-55), 21.6 mgd (33.4 cfs).

Extremes.--Maximum discharge during year, 4,080 mgd (6,310 cfs) Feb. 6 (gage height, 12.12 ft), from rating curve extended above 300 mgd as explained below; minimum, 2.2 mgd (3.4 cfs) Nov. 26, 27.

1909-16, 1919-55: 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 determinations at gage heights 12.12 and 13.43 ft; minimum, 0.74 mgd (1.15 cfs) Sept. 21, 22, 1953.

Remarks.--Records good.

Revisions (fiscal years).--WSP 555: 1920-21. WSP 1185: 1914-17(M), 1920-38(M), 1940-43(M), 1947(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.9	1.60	3.3	50
2.0	2.5	3.6	81
2.1	3.7	4.0	141
2.4	9.4	4.5	241
2.7	18.5	5.0	355
3.0	31	6.0	670

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	36	9.2	4.7	2.85	15.4	23.5	22	*7.8	18.4	28.5	9.4	4.7
2	82	7.6	4.3	2.85	8.8	78	24	7.6	14.4	13.1	12.1	4.5
3	62	7.0	4.2	6.5	4.8	44	14.7	8.1	13.8	10.4	6.9	5.0
4	105	11.0	4.0	9.6	4.0	110	13.8	11.9	36.5	9.2	14.1	5.0
5	28.5	29	4.7	6.2	3.6	522	11.4	8.7	36	8.5	10.2	4.3
6	15.0	14.5	6.2	4.3	3.35	390	9.9	*634	16.8	8.5	11.6	4.0
7	11.4	8.5	7.6	3.45	3.2	151	9.0	272	13.4	8.3	11.4	3.7
8	9.6	21	5.3	27	3.1	218	8.3	50	70	7.6	8.7	3.6
9	9.0	12.8	11.2	18.1	2.85	69	7.6	26	25.5	7.0	7.9	3.45
10	85	*14.8	8.7	30.5	2.75	68	7.2	26.5	28	6.4	7.9	3.35
11	280	17.5	4.8	63	2.75	51	174	25	53	6.2	12.1	3.2
12	89	10.6	4.0	15.5	2.6	95	591	135	93	6.1	22.5	3.1
13	107	6.8	7.0	7.4	2.6	33	33	52	27	5.9	17.2	3.1
14	27	5.7	4.7	5.7	3.8	*38	26.5	39	17.8	17.2	16.3	3.2
15	17.8	8.8	3.7	4.8	19.6	25	19.2	36	*215	61	12.5	*3.0
16	14.4	8.7	3.85	4.2	7.6	184	15.7	21.5	39.5	*47	10.2	2.85
17	35	6.1	12.2	7.8	4.2	30.5	13.1	55	27	72	7.9	2.75
18	107	5.5	22	32	3.2	21.5	11.4	75	25.5	28	6.8	19.4
19	22	7.2	15.0	8.7	2.75	17.8	10.2	34	17.8	42	8.3	51
20	18.2	8.5	6.4	5.3	2.5	15.0	13.3	34.5	14.7	17.4	7.4	45
21	14.4	25.5	4.5	7.0	2.4	13.1	311	20	12.5	28.5	7.2	13.6
22	40	9.0	3.5	5.5	2.5	59	23	44	25	36.5	6.1	6.4
23	17.4	7.0	3.85	4.3	2.5	28	16.0	96	38.5	30	8.5	12.5
24	14.1	20.5	3.45	3.7	2.4	14.7	13.1	26	74	47	8.3	13.8
25	10.6	10.9	6.8	3.85	2.3	11.6	11.4	97	35	33	8.7	6.3
26	9.4	6.4	6.2	3.45	2.3	10.2	33	33	18.5	15.7	26.5	6.8
27	8.7	5.9	4.0	3.2	50	9.9	23	27	15.0	28	11.2	6.9
28	9.4	21.5	3.5	3.0	453	67	11.9	19.6	16.4	28.5	10.0	4.8
29	22	12.2	*3.4	3.1	37	100	9.9	-	14.4	15.4	8.5	6.1
30	26.5	7.0	3.1	25	35.5	18.5	9.0	-----	11.9	11.6	5.9	7.0
31	16.3	5.3	-----	58	-----	65	8.3	-----	17.2	-----	5.0	-----
Total	1,329.7	352.0	186.85	385.85	691.15	2,580.3	1,504.9	1,922.2	1,079.5	684.5	389.4	262.40
Mean	42.9	11.4	6.23	12.4	23.0	83.2	48.5	68.6	34.8	22.8	12.6	8.75
mgd	66.4	17.6	9.64	19.2	35.6	129	75.0	106	53.8	35.3	19.5	13.5
cfs	4,080	1,080	573	1,180	2,120	7,920	4,620	5,900	3,310	2,100	1,200	805
Ac-ft												

Calendar year 1954 : Max 522 Min 2.3 Mean(mgd) 27.7 Mean(cfs) 42.9 Ac-ft 31,030  
Fiscal year 1954-55 : Max 634 Min 2.3 Mean(mgd) 31.1 Mean(cfs) 48.1 Ac-ft 34,890

Peak discharge (base, 1,300 mgd).--July 11 (4 p.m.) 2,110 mgd (3,260 cfs), 9.14 ft; Dec. 5 (7 a.m.) 1,400 mgd (2,170 cfs), 7.83 ft; Jan. 12 (11 a.m.) 1,700 mgd (2,630 cfs), 8.40 ft; Jan. 21 (4:30 a.m.) 1,700 mgd (2,630 cfs), 8.44 ft; Feb. 6 (6:30 p.m.) 4,080 mgd (6,310 cfs), 12.12 ft.

\* Discharge measurement made on this day.

## Mohihi Stream at altitude 3,500 ft, near Waimea

Location.--Lat 22°07'05", long 159°36'15", on left bank at upper trail crossing, 3.8 miles northeast of confluence of Waiahulu and Poomau streams and 12 miles northeast of Waimea.

Drainage area.--1.6 sq mi.

Records available.--June 1920 to October 1926, October 1936 to June 1955. April 1909 to December 1911 (fragmentary), July 1947 to June 1952, published as Mohihi Stream near Waimea; records 1909-11 at site 2 miles downstream not equivalent owing to inflow.

Gage.--Water-stage recorder. Altitude of gage is 3,500 ft (from topographic map).

Average discharge.--24 years (1920-26, 1937-55), 5.12 mgd (7.92 cfs).

Extremes.--Maximum discharge during year, 440 mgd (681 cfs) Feb. 6 (gage height, 5.06 ft), from rating curve extended above 21 mgd; minimum, 0.22 mgd (0.34 cfs) Nov. 27, 1920-26, 1936-55: Maximum discharge, 1,250 mgd (1,930 cfs) Aug. 15, 1950 (gage height, 7.23 ft), from rating curve extended above 21 mgd; minimum, 0.02 mgd (0.03 cfs) Sept. 22, 23, 1953.

Remarks.--Records good except those for period of doubtful gage-height record and those above 21 mgd, which are poor.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.8	0.18	1.8	7.6
.9	.35	2.1	13.9
1.0	.61	2.5	27
1.1	.98	3.0	53
1.3	2.1	3.5	96
1.5	3.8	4.0	166

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.75	1.71	0.71	0.52	3.25	7.3	8.2	*2.45	4.5	8.0	2.7	1.22
2	4.5	1.37	.64	.46	1.36	22	6.7	2.4	4.0	4.4	2.55	1.18
3	10.7	1.18	.61	.62	.89	12.6	5.1	*3.9	6.0	3.3	8.7	1.13
4	15.0	1.18	.64	1.37	.64	30	6.0	5.7	16	2.75	3.7	1.13
5	5.3	6.0	.74	1.18	.49	119	4.2	3.3	12	2.45	2.55	1.03
6	2.4	5.1	.85	.89	.41	108	3.2	45	5.6	2.3	2.15	.93
7	1.59	2.0	1.22	.74	.37	42	2.75	30	4.7	2.15	1.90	.89
8	1.27	1.90	1.05	3.15	.35	84	2.4	10	26	1.96	1.71	.85
9	1.22	2.25	1.70	3.25	.35	20	2.15	6.4	10	1.84	1.59	.82
10	10.3	1.59	1.22	5.5	.31	16.2	2.0	5.4	7.0	1.71	1.59	.78
11	40	*1.42	.78	13.6	.27	12.0	14.4	5.2	13	1.65	1.53	.78
12	18.2	1.47	.64	4.4	.26	27.5	103	20	22	1.59	1.78	.74
13	36	1.18	.68	1.74	.26	10.0	12.2	10	10	1.53	1.96	.74
14	8.0	.93	.78	1.18	.29	*9.0	8.9	9.0	5.6	2.2	1.90	.78
15	4.3	.93	.68	.89	.56	8.5	6.2	8.8	17	5.3	1.96	*.74
16	3.15	1.03	.61	.71	.82	27	4.9	6.0	10	*11.5	1.65	.71
17	4.1	.89	.81	.61	.52	9.2	4.1	10	*7.6	15.4	1.42	.68
18	21.5	.85	3.3	2.6	.37	5.7	3.6	17	6.6	4.9	1.37	.89
19	5.7	1.18	3.15	1.67	.29	4.5	3.15	11	5.1	8.3	1.53	7.4
20	4.1	1.22	1.34	.89	.27	3.7	4.1	9.0	4.2	4.3	1.71	13.3
21	3.3	5.1	.82	.78	.27	3.2	75	5.2	3.8	4.0	1.90	3.55
22	3.85	2.25	.64	.74	.26	15.9	9.9	9.2	9.0	7.8	1.47	1.84
23	3.5	1.32	.58	.58	.29	10.8	5.8	10	8.3	5.2	1.59	1.53
24	2.45	1.94	.52	.49	.29	4.3	4.6	10	13.2	7.4	1.71	3.3
25	1.96	1.59	.75	.46	.26	3.2	4.0	18	10.5	7.6	1.55	1.84
26	1.71	1.03	1.18	.41	.24	2.75	7.5	11	5.3	3.7	9.6	1.32
27	1.53	.89	.78	.35	10.3	2.55	8.6	6.4	4.1	2.85	5.4	1.27
28	1.42	1.25	.62	.33	142	24	4.0	5.4	3.8	8.0	2.85	1.08
29	2.4	2.04	*.74	.55	15.0	31.5	3.2	-	3.6	9.0	1.84	.98
30	3.05	1.18	.61	2.25	22	7.0	2.85	-----	3.2	4.4	1.42	1.22
31	2.75	.85	-----	10.4	-----	21.5	2.7	-----	5.8	-----	1.27	-----
Total	229.00	54.78	29.57	63.11	203.22	704.90	335.40	307.75	266.3	147.48	76.55	54.65
Mean:	7.39	1.77	0.986	2.04	6.77	22.7	10.8	11.0	8.59	4.92	2.47	1.82
mgd	11.4	2.74	1.53	3.16	10.5	35.1	16.7	17.0	13.3	7.61	3.82	2.82
cfs	703	168	91	194	624	2,160	1,030	944	817	453	235	168
Ac-ft												

Calendar year 1954: Max 142 Min 0.24 Mean(mgd) 6.27 Mean(cfs) 9.70 Ac-ft 7,020  
Fiscal year 1954-55: Max 142 Min 0.24 Mean(mgd) 6.77 Mean(cfs) 10.5 Ac-ft 7,590

Peak discharge (base, 200 mgd).--July 11 (2:30 p.m.) 214 mgd (331 cfs), 4.27 ft; Nov. 28 (8 a.m.) 332 mgd (514 cfs), 4.75 ft; Dec. 5 (7:30 a.m.) 318 mgd (492 cfs), 4.72 ft; Dec. 8 (3 a.m.) 235 mgd (364 cfs), 4.33 ft; Jan. 12 (11:30 a.m.) 224 mgd (347 cfs), 4.31 ft; Jan. 21 (5 a.m.) 346 mgd (535 cfs), 4.78 ft; Feb. 6 (6 p.m.) 440 mgd (681 cfs), 5.06 ft.

\* Discharge measurement made on this day.

Note.--Doubtful gage-height record Feb. 7 to Mar. 17; discharge estimated on basis of recorder graph and records for Kawaikoi Stream.

## Kokee ditch near Waimea

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

Records available.--September 1926 to June 1955.

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

Average discharge.--28 years (1927-55), 16.0 mgd (24.8 cfs).

Extremes.--1926-55: Maximum daily discharge, 68 mgd (105 cfs) Dec. 2, 1929, Mar. 4, 1933; no flow occasionally.

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. Flow regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	29.5	14.2	7.0	4.5	20	34	4.3	16.3	39	22.5	17.5	8.8
2	34	12.0	6.5	4.5	9.8	42	9.5	16.3	34	11.5	17.5	8.6
3	39	11.1	6.2	7.2	7.0	24.5	9.9	16.3	21	17.8	37	8.6
4	40	12.4	6.2	9.9	5.8	12.9	22	18.6	15.2	24	22.5	8.8
5	32.5	29	6.5	8.3	5.2	13.3	21	15.1	12.6	21	17.5	8.3
6	21	21.5	7.9	6.2	4.7	14.0	20	23.5	16.4	21	17.5	7.7
7	16.3	12.8	9.2	5.0	4.5	12.0	17.5	32.5	18.8	20	17.5	7.5
8	13.5	19.8	7.7	13.9	4.3	12.2	16.3	14.5	35	20	14.6	7.2
9	12.6	18.5	12.1	23.5	4.2	10.3	16.3	19.4	25	18.8	13.5	7.0
10	30	15.0	11.7	26.5	4.0	11.8	15.1	35	32.5	17.5	13.5	6.8
11	40	20.5	7.0	34	3.9	8.6	25.5	30.5	31	16.3	15.6	6.7
12	40	15.9	6.0	21.5	3.8	10.9	37.5	21	19.1	16.3	25	6.5
13	42	10.3	8.3	10.5	3.8	19.5	31.5	20	12.3	16.3	24	6.5
14	35.5	9.2	6.7	7.9	4.0	25	40	31.5	25	24	21	6.5
15	26.5	10.9	5.5	6.8	16.9	24	37	35	37	31.5	18.8	6.3
16	21	12.2	5.3	6.0	9.9	13.0	32.5	25	29.5	*39	15.1	6.2
17	20.5	9.4	10.4	5.9	5.6	4.7	28	30	31	32.5	12.8	5.8
18	40	8.4	22.5	28	4.5	6.7	28.5	30.5	25.5	24.5	11.8	12.3
19	29.5	9.8	18.8	12.4	3.9	7.9	24	12.7	14.0	40	13.0	35.5
20	25	10.5	9.2	7.4	3.8	12.8	24	17.8	18.7	28	12.0	35.5
21	21	24	6.5	7.9	3.65	18.8	26.5	22	28	32.5	11.8	20
22	29	13.0	5.5	7.4	3.55	23	16.4	29.5	31	31	10.5	11.1
23	25	9.9	5.5	5.8	3.8	12.8	24	22	16.6	16.3	12.2	13.5
24	20	21	5.0	5.2	3.65	6.2	26.5	13.7	8.6	22.5	12.8	18.8
25	16.3	14.6	7.0	5.2	3.4	5.3	16.3	20.5	10.3	32.5	11.8	10.5
26	14.6	9.2	8.3	4.9	3.3	5.6	17.1	13.5	10.1	25	25.5	9.2
27	13.5	8.3	5.8	4.5	6.4	16.5	13.0	17.0	18.7	24.5	17.5	10.5
28	13.7	18.9	5.5	4.3	26.5	20.5	11.3	31	34	34	16.3	8.1
29	23.5	16.3	*5.2	4.5	33.5	9.4	10.1	-	32.5	24	14.4	8.4
30	23.5	9.8	4.9	8.0	42	2.5	13.0	-----	25	21	10.3	10.1
31	24	7.7	-----	34	-----	8.5	16.3	-----	24	-----	9.4	-----
Total	812.5	436.1	239.9	341.6	259.35	449.2	648.9	630.9	731.6	725.8	510.2	327.3
Mean:												
mgd	26.2	14.1	8.00	11.0	8.64	14.5	20.9	22.5	23.6	24.2	16.5	10.9
cfs	40.5	21.8	12.4	17.0	13.4	22.4	32.3	34.8	36.5	37.4	25.5	16.9
Ac-ft	2,490	1,340	736	1,050	796	1,380	1,990	1,940	2,250	2,230	1,570	1,000
Calendar year 1954: Max	44				Min 2.5	Mean(mgd)	16.4	Mean(cfs)	25.4	Ac-ft	18,390	
Fiscal year 1954-55: Max	42				Min 2.5	Mean(mgd)	16.7	Mean(cfs)	25.8	Ac-ft	18,770	

\* Discharge measurement made on this day.

## Waimea River at altitude 890 ft, near Waimea

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

Drainage area.--20.0 sq mi.

Records available.--February to October 1916, October 1917 to June 1918, May 1925 to June 1955. Prior to July 1, 1952, published as Waiahulu Stream near Waimea.

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

Average discharge.--27 years (1925-48, 1951-55), 30.1 mgd (46.6 cfs).

Extremes.--Maximum discharge during year, about 7,800 mgd (12,100 cfs) Feb. 6 (gage height, about 12.0 ft), from rating curve extended above 320 mgd; minimum, 7.5 mgd (11.6 cfs) Nov. 13, 14, 25, 26.  
1916, 1917-18, 1925-55: 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 good except those for periods of no gage-height record, which are poor. Kokee ditch diverts water above station for irrigation near Kekaha (see preceding page).

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1-11				July 12 to June 30			
2.0	8.9	3.5	130	2.0	7.0	4.0	222
2.3	19.1	4.0	222	2.3	17.0	4.5	350
2.6	34.5	4.5	350	2.5	27	5.0	530
5.0	65			3.0	65	6.3	1,180
				3.5	130		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	10.6	8.8	8.3	15.9	30	33	19.2	28	28.5	13.8	11.0
2	34	9.6	8.3	8.3	9.9	106	34	18.8	24	20	12.7	11.0
3	87	9.3	8.3	8.3	8.8	50	22	20.5	24	17.0	56	11.0
4	122	9.1	8.3	8.8	8.3	172	22	24	58	15.8	17.3	10.6
5	29	15.3	8.6	9.6	8.0	1,020	17	20.5	73	15.0	13.0	10.6
6	14.1	18.6	8.6	9.1	7.8	585	16	1,100	30	15.0	12.3	10.6
7	12.0	11.3	*8.9	8.8	7.8	384	15	510	24	14.6	12.0	10.6
8	11.4	10.3	9.9	16.2	7.8	600	14	100	130	13.8	11.6	10.6
9	11.1	12.7	10.3	21.5	7.8	120	13	51	56	13.0	11.3	10.6
10	77	10.3	10.6	17.4	7.8	*110	12	51	46	13.0	11.3	10.6
11	324	11.6	9.1	75	7.8	53	280	47	97	13.0	11.3	10.3
12	126	11.0	8.8	17.8	7.8	184	1,100	240	170	13.0	12.0	10.3
13	195	9.6	8.6	10.3	7.5	36	68	100	47	*12.7	12.3	10.3
14	35.5	9.1	8.6	8.8	7.5	40	39	73	31	13.4	12.0	*10.5
15	16.2	8.8	8.3	8.6	8.3	34	28	68	350	39	11.6	10.6
16	12.3	9.1	8.3	8.0	9.3	300	23	42	79	68	11.3	10.6
17	11.3	9.1	8.3	8.0	8.3	40	19	96	41	83	11.3	10.6
18	168	8.8	11.0	13.7	8.0	27	17	140	*36	20.5	11.3	13.1
19	23	8.8	12.3	11.3	7.8	22	14	68	22.5	45	11.3	36
20	*13.8	9.1	10.3	8.8	7.8	19	20	67	19.2	17.9	11.3	55
21	12.3	16.0	8.8	*8.3	7.8	16	580	34	17.9	16.9	11.6	15.9
22	30	12.7	8.3	8.3	7.8	110	36	57	43	31	11.3	12.0
23	16.5	9.6	8.3	8.3	8.0	58	24	170	62	21	11.3	11.3
24	11.3	9.6	8.3	8.0	7.8	19	20	55	133	31.5	11.3	12.0
25	10.6	10.6	8.3	8.0	7.5	15	17	170	71	36	11.3	12.0
26	9.9	9.3	8.8	8.0	7.5	13	45	69	30.5	16.2	26	11.3
27	9.6	8.8	9.6	7.8	134	12	35	47	25	14.6	15.4	11.0
28	8.6	9.1	9.3	7.8	1,150	140	*28	34	20	36	14.2	11.0
29	10.3	11.0	8.8	8.3	114	200	22	-	19.2	19.4	12.0	10.6
30	16.3	9.6	8.6	10.5	83	30	20.5	-----	18.4	17.9	11.3	10.6
31	16.5	8.8	-----	79	-----	120	20	-----	19.7	-----	11.0	-----
Total	1,499.6	327.2	271.3	448.9	1,697.4	4,665	2,653.5	3,492.0	1,843.4	731.7	433.7	402.2
Mean:												
mgd	48.4	10.6	9.04	14.5	56.6	150	85.6	125	59.5	24.4	14.0	13.4
cfs	74.9	16.4	14.0	22.4	87.6	232	132	193	92.1	37.8	21.7	20.7
Ac-ft	4,600	1,000	833	1,380	5,210	14,320	8,140	10,720	5,660	2,250	1,330	1,230
Calendar year 1954:	Max	1,150	Min	7.5	Mean(mgd)	46.0	Mean(cfs)	71.2	Ac-ft	51,520		
Fiscal year 1954-55:	Max	1,150	Min	7.5	Mean(mgd)	50.6	Mean(cfs)	78.3	Ac-ft	56,670		

Peak discharge (base, 1,200 mgd).--July 11 (4 p.m.) 2,000 mgd (3,090 cfs), 7.32 ft; Nov. 28 (7 a.m.) 2,400 mgd (3,710 cfs), 7.73 ft; Dec. 5 (4:30 a.m.) 2,100 mgd (3,250 cfs), 7.43 ft; Feb. 6 (time unknown) about 7,800 mgd (12,100 cfs).

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 8-10, Dec. 14 to Jan. 28, Feb. 6 to Mar. 18; discharge estimated on basis of records for nearby streams.

## Kekaha ditch at camp 1, near Waimea

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

Records available.--November 1907 to June 1955.

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

Average discharge.--36 years (1918-24, 1925-55), 35.6 mgd (55.1 cfs).

Extremes.--1907-55: Maximum daily discharge, 67 mgd (104 cfs) Jan. 6, Mar. 3, 6, 7, 17, 18, 24-26, 29-31, 1921; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are fair. Ditch diverts water from Waimea River 1 mile downstream from mouth of Waialae River. Flow regulated by headgates. Water used for irrigation in vicinity of Kekaha.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	48	39	28	26	51	39	28	46	51	48	51	36.5
2	52	39	28	26	36.5	46	26	46	51	46	48	46
3	52	34.5	28	26	30	46	28	46	51	46	51	39
4	51	32	30	28	28	41	42	46	46	51	51	46
5	50	43	36.5	32	26	39	51	46	46	51	48	36.5
6	49	48	34.5	30	26	39	51	43	46	48	48	32
7	39	46	39	30	25	41	51	48	51	46	46	32
8	35	41	34.5	39	25	41	51	51	51	39	41	30
9	34	48	39	46	25	41	48	48	51	41	39	30
10	35	36.5	41	48	24	41	46	51	51	41	39	30
11	50	39	30	48	24	39	46	48	48	39	41	30
12	45	46	28	51	24	44	51	51	48	39	44	28
13	52	36.5	30	46	24	41	51	51	48	*39	44	30
14	52	32	36.5	36.5	24	41	51	48	51	44	39	*30
15	52	32	30	32	25	39	51	51	51	51	39	32
16	50	36.5	28	28	32	30	51	51	51	51	36.5	32
17	46	32	32	28	26	28	51	51	51	51	34.5	36.5
18	52	41	51	41	25	28	51	48	48	43	34.5	34.5
19	52	51	48	39	24	28	51	46	46	48	46	48
20	52	44	36.5	28	24	28	51	48	46	51	46	51
21	51	51	30	28	24	28	45	51	51	51	51	51
22	46	51	28	30	24	28	46	48	51	51	41	41
23	51	46	26	44	25	28	46	46	46	51	36.5	41
24	44	44	26	34.5	24	28	46	46	46	51	41	51
25	39	44	30	30	23	28	46	46	46	51	39	44
26	36.5	34.5	39	28	24	28	46	46	46	51	51	36.5
27	34.5	32	32	26	30.5	28	46	46	46	51	51	34.5
28	34.5	36.5	32	25	28	28	*46	51	51	51	48	32
29	39	46	28	28	36.5	28	46	-	51	51	46	32
30	51	34.5	28	34.5	39	28	46	-----	51	51	36.5	36.5
31	51	30	-----	48	-----	28	46	-----	51	-----	36.5	-----
Total	1,425.5	1,246.5	987.5	1,064.5	826.5	1,068	1,432	1,344	1,517	1,423	1,344.0	1,109.5
Mean	46.0	40.2	32.9	34.3	27.6	34.5	46.2	48.0	48.9	47.4	43.4	37.0
cfs	71.2	62.2	50.9	53.1	42.7	53.4	71.5	74.3	75.7	73.3	67.1	57.2
Ac-ft	4,370	3,830	3,030	3,270	2,540	3,280	4,390	4,120	4,660	4,370	4,120	3,400
Calendar year 1954: Max	52			Min	23	Mean(mgd)	37.5	Mean(cfs)	58.0	Ac-ft	42,070	
Fiscal year 1954-55: Max	52			Min	23	Mean(mgd)	40.5	Mean(cfs)	62.7	Ac-ft	45,380	

\* Discharge measurement made on this day.

Note.--No gage-height record July 1-20; discharge estimated on basis of ditchman's notes.



## Waimea River below Kekaha ditch intake, near Waimea

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

Drainage area.--45.0 sq mi.

Records available.--July 1921 to June 1955.

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

Average discharge.--29 years (1925-47, 1948-55), 49.9 mgd (77.2 cfs).

Extremes.--Maximum discharge during year, 7,400 mgd (11,400 cfs) Feb. 6 (gage height, 16.54 ft), from rating curve extended above 500 mgd as explained below; no flow at times.

1921-55: Maximum discharge, 20,000 mgd (30,900 cfs) Aug. 17, 1950 (gage height, about 25 ft, from floodmarks), from rating curve extended above 500 mgd by test on model of station site; no flow at times.

Remarks.--Records fair except those below 20 mgd, which are poor. Kokee and Kekaha ditches divert practically all flow below medium stages for irrigation near Waimea and Kekaha.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

6.2	0	7.0	36
6.3	.1	7.2	70
6.4	.6	7.6	156
6.5	2.1	8.0	260
6.6	4.7	9.0	610
6.7	9.0	10.0	1,080
6.8	15.5	11.0	1,720
6.9	24.5	13.0	3,500

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	125	0.1	0.1	0.1	30.5	84	107	1.0	24.5	94	0.8	0
2	78	0	.1	.1	0	373	118	2.7	15.5	24.5	0	0
3	210	0	.1	.1	0	*112	70	80	26.5	16.1	107	0
4	298	0	.1	.1	0	364	99	112	204	0	7.2	0
5	92	149	.1	.1	0	1,230	9.2	16.8	290	0	0	0
6	3.8	92	.1	.1	0	1,500	.2	1,010	91	0	0	0
7	.6	1.2	.1	.1	0	583	0	811	51	0	0	0
8	.5	1.2	.1	45	0	1,080	0	164	305	.3	0	0
9	.5	8.1	6.5	40	0	262	0	45	185	0	0	0
10	155	.1	.3	67	0	179	0	12.2	*51	0	0	0
11	749	.1	.1	246	0	93	124	6.4	123	0	0	0
12	391	.1	.1	113	0	286	1,400	237	376	0	0	0
13	749	.1	.1	8.3	0	51	122	111	110	0	0	0
14	165	.1	.1	0	0	95	46	31	36	3.2	0	0
15	53	.1	.1	.1	0	82	12.2	24.5	427	69	0	0
16	8.1	.1	.1	0	0	575	4.2	18.3	129	181	0	0
17	4.7	.1	.1	0	0	128	.4	14.2	44	305	0	0
18	405	38	9.6	2.9	0	36	4.2	113	36	39.5	0	11.2
19	77	14.4	1.1	.2	0	15.5	.9	106	20	66	.2	122
20	6.4	.1	.1	0	0	8.6	34.5	51	9.9	3.5	7.2	149
21	7.0	133	.1	0	0	4.4	1,600	30	.8	.9	8.6	4.1
22	46	29.5	.1	0	0	221	181	49	93	65	0	0
23	18.6	6.7	.1	5.3	0	153	70	712	134	24.5	0	1.5
24	.2	7.1	.1	.1	0	20	51	156	185	79	0	31
25	0	1.2	.1	0	0	8.6	31	484	106	96	3.0	.1
26	0	.1	.1	0	0	4.7	32.5	268	31	6.7	127	0
27	0	.1	.1	0	142	2.4	107	134	12.4	1.6	26.5	0
28	0	.1	.1	0	3,220	65	18.7	52	2.1	53	1.2	0
29	0	.1	.1	0	373	422	8.1	-	2.0	189	0	0
30	6.2	.1	.1	0	353	86	2.1	-	.5	22	0	0
31	24.5	.1	-----	177	-----	510	2.0	-----	17.5	-----	0	-----
Total	3,672.1	482.0	19.1	705.8	4,118.5	8,634.2	4,255.2	4,852.1	3,138.7	1,339.8	288.7	318.9
Mean												
mgd	118	15.5	0.637	22.8	137	279	137	173	101	44.7	9.31	10.6
cfs	183	24.0	0.986	35.3	212	432	212	268	156	69.2	14.4	16.4
Ac-ft	11,270	1,480	59	2,170	12,640	26,500	13,060	14,890	9,630	4,110	886	979

Calendar year 1954. Max 3,220 Min 0 Mean(mgd) 87.0 Mean(cfs) 135 Ac-ft 97,500  
Fiscal year 1954-55. Max 3,220 Min 0 Mean(mgd) 87.2 Mean(cfs) 135 Ac-ft 97,670

Peak discharge (base, 5,000 mgd).--Nov. 28 (1 p.m.) 6,920 mgd (10,700 cfs), 16.13 ft; Jan. 21 (5 a.m.) 6,440 mgd (9,980 cfs), 15.66 ft; Feb. 6 (7 p.m.) 7,400 mgd (11,400 cfs), 16.54 ft.

\* Discharge measurement made on this day.

## Waimea River near Waimea

Location.--Lat 21°58'55", long 159°39'50", on right bank 1.2 miles upstream from confluence with Makaweli River and 1.8 miles north of Waimea.

Drainage area.--57.8 sq mi.

Records available.--July 1910 to October 1919, November 1943 to June 1955.

Gage.--Water-stage recorder. Altitude of gage is 25 ft (by hand levels from estuary at confluence with Makaweli River). Prior to Oct. 5, 1911, staff gage at site 1 mile downstream at different datum. Oct. 5, 1911, to June 30, 1918, staff gage at present site at different datum.

Average discharge.--11 years (1944-55), 76.3 mgd (118 cfs).

Extremes.--Maximum discharge during year, 7,850 mgd (12,100 cfs) Nov. 28 (gage height, 10.48 ft), from rating curve extended above 3,300 mgd; minimum, 0.39 mgd (0.60 cfs) Oct. 22, 23, 28.

1943-55: Maximum discharge, 24,000 mgd (37,100 cfs) Feb. 7, 1949 (gage height, 19.3 ft), from rating curve extended above 3,300 mgd on basis of slope-area determinations at gage heights 10.28, 13.6, and 18.7 ft; minimum, less than 0.01 mgd (0.02 cfs) Sept. 27, 1948.

Remarks.--Records good except those below 10 mgd and those for period of no gage-height record, which are poor. Several ditches divert most of low flow for irrigation of sugarcane.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

2.65	0.33	3.5	51
2.7	.70	4.0	145
2.8	2.0	4.5	298
2.9	4.4	5.0	535
3.0	8.0	6.0	1,200
3.1	13.0	7.0	2,150
3.3	28.5	8.2	3,750

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	47	16.4	1.65	1.00	40	122	133	16.4	45	84	14.3	1.10
2	32.5	11.5	1.50	1.10	4.1	379	155	16.4	39	48	2.8	2.0
3	108	10.0	1.50	1.20	1.20	133	77	80	40	34	79	1.65
4	144	8.5	2.0	1.35	.90	a450	133	113	171	16.4	27.5	2.6
5	60	75	3.05	1.50	.61	a900	45	42	272	8.0	4.4	1.85
6	8.9	82	3.3	1.10	.53	a1500	19.1	909	90	6.6	2.6	1.20
7	2.2	14.6	3.8	*1.48	.53	a400	12.0	938	58	6.9	3.05	1.10
8	1.65	10.5	3.55	2.5	.61	a750	8.0	204	256	10.0	2.2	1.10
9	1.65	16.2	3.3	34.5	.61	a230	6.2	79	180	9.5	1.85	1.10
10	52	10.0	9.9	19.8	.61	a170	*5.1	45	*65	7.3	1.35	1.10
11	608	9.5	2.8	111	.70	133	63	28.5	111	5.5	1.20	1.10
12	*239	12.0	2.0	64	.70	278	1,540	223	309	4.8	1.35	1.20
13	564	13.0	1.85	16.4	.70	90	151	141	125	4.4	1.65	*1.20
14	94	9.5	2.6	3.05	.78	100	65	51	58	4.8	1.50	1.50
15	35.5	9.0	2.8	.70	.78	113	39	58	361	35	1.65	1.65
16	14.4	9.5	1.85	.53	1.00	527	28.5	39	136	174	1.85	2.0
17	12.0	9.3	2.2	.53	1.35	162	14.4	42	58	253	1.65	2.4
18	223	6.7	8.3	.53	1.00	73	20.5	140	51	50	1.65	2.4
19	56	21	7.3	2.1	1.00	51	18.4	126	39	55	2.05	99
20	16.4	*6.2	5.5	.61	1.00	39	31	73	28.5	19.5	5.1	133
21	17.1	50	1.85	.46	1.10	28.5	1,870	45	18.4	*9.5	24.5	24.5
22	20.5	28	1.35	.39	*1.35	197	213	88	65	53	5.8	3.1
23	28.5	13.0	1.35	1.75	4.4	201	100	661	141	39	2.0	1.20
24	14.4	2.6	1.35	3.4	1.50	58	65	133	166	64	1.35	30.5
25	12.5	7.7	1.20	1.00	1.00	39	51	382	102	92	1.50	7.3
26	10.0	2.4	2.65	.53	.90	34	39	246	51	26	102	1.50
27	9.0	1.65	2.0	.46	47	26	114	111	34	15.7	36	1.10
28	9.0	1.85	2.2	.39	3,610	25	39	65	20.5	48	12.3	1.00
29	9.5	5.1	1.85	1.10	436	447	28.5	-	19.1	159	3.3	1.20
30	19.5	3.05	1.20	1.35	361	122	25	-----	15.0	46	1.65	1.35
31	31	2.0	-----	103	-----	477	19.8	-----	21.5	-----	1.20	-----
Total	2,501.20	477.75	87.75	378.81	4,522.96	8,254.5	5,128.5	5,095.3	3,146.0	1,388.9	350.30	333.00
Mean:												
mgd	80.7	15.4	2.92	12.2	151	266	165	182	101	46.3	11.3	11.1
cfs	125	23.8	4.52	18.9	234	412	255	282	156	71.6	17.5	17.2
Ac-ft	7,680	1,470	269	1,160	13,880	25,330	15,740	15,640	9,650	4,260	1,080	1,020
Calendar year 1954.	Max	3,610	Min	0.39	Mean(mgd)	83.7	Mean(cfs)	130	Ac-ft	93,740		
Fiscal year 1954-55.	Max	3,610	Min	0.39	Mean(mgd)	86.8	Mean(cfs)	134	Ac-ft	97,180		

Peak discharge (base, 5,600 mgd).--Nov. 28 (1:30 p.m.) 7,850 mgd (12,100 cfs), 10.48 ft; Jan. 21 (6 a.m.) 6,700 mgd (10,400 cfs), 9.77 ft; Feb. 6 (8 p.m.) 6,900 mgd (10,700 cfs) 9.88 ft.

\* Discharge measurement made on this day.

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

## Makaweli River near Waimea

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

Drainage area.--25.0 sq mi.

Records available.--October 1911 to June 1917, July 1943 to June 1955.

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

Average discharge.--16 years (1912-17, 1944-55), 57.2 mgd (88.5 cfs).

Extremes.--Maximum discharge during year, 3,050 mgd (4,720 cfs) Nov. 28 (gage height, 6.95 ft), from rating curve extended above 1,200 mgd as explained below; minimum, 4.4 mgd (6.9 cfs) Nov. 18-20.  
1943-55: Maximum discharge, 8,800 mgd (13,600 cfs) Jan. 19, 1952 (gage height, 11.19 ft), from rating curve extended above 150 mgd on basis of slope-area determination at gage height 9.46 ft; minimum, 2.05 mgd (3.15 cfs) July 19, 1951.

Remarks.--Records good prior to Nov. 28, poor thereafter. Olokele ditch diverts all low water from Olokele Stream 9 miles above station for irrigation near Makaweli.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	65	20.5	6.6	7.3	14.6	130	151	19	22	86	19.3	27
2	33	15.2	6.6	7.3	8.7	435	125	30	16.2	68	16.2	13.5
3	50	11.2	16.2	7.3	7.6	184	147	*158	23.5	39.5	68	15.1
4	70	10.4	14.4	7.3	7.3	242	211	154	103	12	19.0	15.4
5	25.5	*197	11.1	10.1	6.9	255	54	33	112	8.6	16.2	10.8
6	14.4	58	9.5	9.6	6.9	444	24	70	37	8.3	16.2	9.4
7	12.3	16.3	9.5	*11.8	6.9	222	22	160	29	8.0	15.0	8.0
8	11.6	36.5	8.3	39.5	6.9	393	19	45	147	9.0	12.8	8.7
9	12.7	18.0	91	18.0	6.3	122	14	25.5	106	8.6	11.7	8.7
10	94	9.5	12.8	28.5	6.0	85	*12	22	*47	8.3	12.6	8.7
11	333	22.5	7.9	85	5.7	48	12.6	20	73	8.0	11.2	8.7
12	*169	32.5	6.9	74	5.3	77	123	72	187	7.3	10.8	8.7
13	341	13.0	10.9	19.6	4.7	25	29.5	18.5	81	7.0	10.4	9.9
14	31	7.6	11.9	11.6	5.0	131	33.5	15	37	36	10.8	14.8
15	35	15.5	8.1	8.7	21	104	45	16	44	57	10.4	10.8
16	28	10.8	8.3	7.6	8.3	158	23.5	8.7	32	113	9.0	49
17	22.5	8.3	8.5	6.9	5.3	35	35.5	*16	22	252	8.3	12.5
18	121	116	17.4	10.6	4.4	19.0	69	33.5	25.5	39	31.5	45
19	27.5	35	13.6	7.9	4.4	16.2	26	34	19.0	24	48	95
20	38.5	19.4	7.9	6.6	4.4	33	90	25.5	16.2	16	154	131
21	23.5	220	6.9	9.1	5.0	*40	737	12.2	16.2	*12	52	21
22	35.5	94	6.6	10.8	*5.6	331	111	*110	64	34	12.2	12.2
23	20.5	17.4	6.6	29	9.3	150	55	302	49	40	13.5	*38.5
24	15.7	*30	6.3	9.6	6.6	50	44	124	25.5	75	12.2	72
25	13.5	11.9	40	7.9	12.1	22	32.5	210	19.0	66	50	13.5
26	17.7	7.9	11.2	6.6	6.9	16.2	29.5	90	13	24.5	129	10.8
27	12.3	9.5	7.6	6.3	173	16.2	35.5	37	8.3	30.5	80	10.4
28	10.8	23.5	10.0	6.6	1,400	21.5	22	25.5	8.4	53	37	7.3
29	19.7	11.5	8.7	8.5	*300	121	19.0	-	9.4	238	19.5	14
30	27	7.9	7.9	12.0	341	107	19	-----	14	47	13.0	12.0
31	30	7.3	-----	36.5	-----	506	19	-----	20	-----	15.3	-----
Total	1,791.2	1,112.1	399.2	528.1	2,406.1	4,537.1	2,389.1	1,886.4	1,426.2	1,435.6	922.9	723.4
Mean:	57.8	35.9	13.3	17.0	80.2	146	77.1	67.4	46.0	47.9	29.8	24.1
mgd	89.4	55.5	20.6	26.3	124	226	119	104	71.2	74.1	46.1	37.3
cfs	5,500	3,410	1,230	1,620	7,380	13,920	7,330	5,790	4,380	4,410	2,830	2,220
Ac-ft												

Calendar year 1954: Max 1,400 Min 4.4 Mean(mgd) 50.5 Mean(cfs) 78.1 Ac-ft 56,550

Fiscal year 1954-55: Max 1,400 Min 4.4 Mean(mgd) 53.6 Mean(cfs) 82.9 Ac-ft 60,020

Peak discharge (base, 1,300 mgd).--July 11 (3:30 p.m.) 1,440 mgd (2,230 cfs), 4.89 ft; Aug. 5 (4 p.m.) 1,320 mgd (2,040 cfs), 4.73 ft; Nov. 28 (9 a.m.) 3,050 mgd (4,720 cfs), 6.95 ft; Dec. 22 (6:30 p.m.) 2,360 mgd (3,650 cfs), 6.20 ft; Jan. 21 (4 a.m.) 2,870 mgd (4,440 cfs), 6.75 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 6-10, Jan. 30 to Feb. 2, Feb. 11-17, Mar. 26-31, Apr. 4-14, 20, 21; discharge estimated on basis of records for nearby streams.

## Hanapepe River below Manuahi Stream, near Eleele

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

Drainage area.--18.8 sq mi.

Records available.--May 1917 to January 1921, December 1926 to June 1955. Prior to July 1952, published as "at Koula, near Eleele." August 1910 to December 1916 at site half a mile upstream; records not equivalent due to inflow.

Gage.--Water-stage recorder. Altitude of gage is 150 ft (by barometer). Prior to Dec. 15, 1926, staff gage and Dec. 16, 1926, to June 30, 1951, water-stage recorder, at same site at datum 1.00 ft higher.

Average discharge.--31 years (1917-20, 1927-55), 54.6 mgd (84.5 cfs).

Extremes.--Maximum discharge during year, 3,830 mgd (5,930 cfs) Aug. 5, Nov. 28 (gage height, 7.95 ft); minimum, 4.7 mgd (7.3 cfs) Nov. 7, 8, 12, 13.  
1910-21, 1926-55: Maximum discharge, 10,400 mgd (16,100 cfs) Dec. 17, 1949 (gage height, 11.74 ft), from rating curve extended above 2,400 mgd by test on model of station site; minimum, 3.3 mgd (5.1 cfs) May 21, 1954.

Remarks.--Records good except those for period of no gage-height record, which are poor. Hanapepe ditch diverts water from river 3 miles above station for irrigation in vicinity of Makaweli.

Revisions (fiscal years).--WSP 740: 1931.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.4	3.4	2.0	132
.6	7.6	2.5	228
.8	14.5	3.0	355
1.1	32	3.5	520
1.4	57	4.0	710
1.7	90	5.0	1,260

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	76	77	7.3	6.2	6.8	90	119	8.2	9.1	50	16.6	17.5
2	41	57	7.0	20.5	5.8	453	90	13.1	8.5	36	9.8	10.4
3	46	50	11.6	15.7	5.3	202	95	110	15.2	20	37.5	12.1
4	69	45	12.4	6.9	5.1	258	195	86	3	10	10.0	8.0
5	24	<u>349</u>	10.2	11.1	5.1	299	72	24	29.5	7.0	8.5	6.9
6	8.7	120	10.3	*6.2	4.9	<u>494</u>	29.5	51	10.0	6.8	9.2	6.7
7	6.4	61	8.3	9.4	4.9	93	19.0	63	8.8	6.5	8.5	6.9
8	6.7	62	39.5	28.4	5.1	177	13.3	16.4	36	7.5	7.4	6.9
9	8.4	34.5	<u>109</u>	8.9	5.1	101	11.8	10.6	37.5	7.2	7.1	6.9
10	75	14.7	<u>12.1</u>	29	5.1	35	10.0	8.2	16.0	7.0	7.1	6.9
11	311	25	7.1	<u>141</u>	5.5	21.5	9.4	7.6	31	6.6	6.9	6.9
12	*215	12.7	11.1	81	5.8	18.5	11.0	16.1	<u>103</u>	6.2	6.9	6.9
13	<u>409</u>	12.2	20.5	49	4.9	14.5	*10.8	7.1	60	6.0	6.7	8.9
14	78	7.2	12.6	14.2	5.1	99	18.0	6.9	18.7	18	7.1	10.3
15	31	11.9	9.7	8.5	25	178	26.5	7.5	13.3	28	6.4	7.3
16	17.3	7.3	9.7	7.4	6.4	187	21	6.7	11.8	60	6.2	23.5
17	10.1	<u>6.0</u>	9.4	8.0	5.3	72	19.0	8.9	11.4	<u>160</u>	<u>6.0</u>	6.9
18	85	<u>158</u>	12.9	12.8	5.1	19.0	47	8.8	10.3	<u>22</u>	35.5	45
19	18.8	48	38.5	6.7	5.1	15.5	17.7	11.1	10.0	14	42	*101
20	24	29	9.0	<u>5.3</u>	5.1	12.9	234	8.5	9.4	9.5	<u>261</u>	<u>136</u>
21	16.3	305	6.4	6.8	5.1	11.4	610	6.9	9.1	8.0	90	19.7
22	55	154	<u>6.4</u>	6.2	*6.0	187	61	128	34	19	19.2	9.4
23	19.9	43	6.9	8.2	9.8	99	32.5	*183	*15.7	*22	19.6	*26.5
24	13.9	*61	6.7	7.1	6.2	25.5	19.2	<u>38.5</u>	12	36.5	10.8	45
25	7.9	21.5	48	6.7	6.2	15.3	14.5	67	10	46	49	8.8
26	8.6	10.2	9.9	5.5	5.5	11.4	11.2	40	8.0	27.5	93	8.2
27	6.2	18.1	8.9	5.3	194	10.0	11.1	18.4	6.5	97	89	7.1
28	5.8	48	9.3	5.8	<u>1,140</u>	107.0	8.5	11.8	8.5	55	26	7.1
29	28	19.1	7.9	5.5	*191	31.5	8.2	-	7.0	149	24	17.8
30	99	8.4	6.7	6.2	162	47	8.2	-----	9.0	53	14.1	8.2
31	111	6.7	-----	13.2	-----	264	8.5	-----	11	-----	10.2	-----
Total	1,932.0	1,850.5	485.2	552.8	1,852.3	3,552.0	1,661.9	971.3	621.3	1,001.3	951.3	599.7
Mean												
mgd	62.3	59.7	16.2	17.8	61.7	115	60.1	34.7	20.0	33.4	30.7	20.0
cfs	96.4	92.4	25.1	27.5	95.5	178	93.0	53.7	30.9	51.7	47.5	30.9
Ac-ft	5,930	5,680	1,490	1,700	5,680	10,900	5,710	2,980	1,910	3,070	2,920	1,840

Calendar year 1954: Max 1,140 Min 3.4 Mean(mgd) 44.0 Mean(cfs) 68.1 Ac-ft 49,290  
Fiscal year 1954-55: Max 1,140 Min 4.9 Mean(mgd) 44.5 Mean(cfs) 68.9 Ac-ft 49,810

Peak discharge (base, 2,300 mgd).--Aug. 5 (3:30 p.m.) 3,830 mgd (5,930 cfs), 7.95 ft; Nov. 28 (8 a.m.) 3,830 mgd (5,930 cfs), 7.95 ft; Jan. 21 (4:30 a.m.) 2,830 mgd (4,380 cfs), 7.05 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Mar. 24 to Apr. 23; discharge estimated on basis of records for nearby streams.

## South Fork Wailua River near Lihue

Location.--Lat 22°02'10", long 159°22'55", on right bank 0.3 mile upstream from Wailua Falls and 5 miles north of Lihue.

Drainage area.--22.4 sq mi.

Records available.--December 1911 to June 1955.

Gage.--Water-stage recorder. Altitude of gage is 230 ft (by barometer). Prior to Nov. 18, 1918, at site 0.3 mile upstream at different datum.

Average discharge.--33 years (1921-24, 1925-55), 65.3 mgd (101 cfs).

Extremes.--Maximum discharge during year, 6,020 mgd (9,310 cfs) Nov. 28 (gage height, 7.44 ft); minimum, 3.2 mgd (5.0 cfs) June 28, 29.

1911-55: Maximum discharge, 29,000 mgd (44,900 cfs) Jan. 16, 1920 (gage height, 11.25 ft), from rating curve extended above 9,000 mgd; minimum, 1.09 mgd (1.69 cfs) Sept. 21, 1953.

Remarks.--Records good. Several ditches divert about 20 mgd for irrigation of cane lands above station.

Revisions (fiscal years).--WSP 1249: 1941-47(M), 1948-51(P).

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7

Feb. 8 to June 30

0.8	2.6	3.0	211
1.0	4.7	4.0	615
1.5	16.4	5.0	1,400
2.0	47	6.0	2,790

0.8	3.2	2.0	47
1.0	5.2	2.5	111
1.2	8.4	3.0	225
1.4	13.3	3.5	395
1.7	25.5	4.0	640

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	25.5	125	12.5	3.55	73	69	120	7.4	31	5.8	62	5.1
2	*30.5	59	12.3	4.5	38	183	117	7.0	8.0	5.8	18.0	4.6
3	72	62	19.9	19.4	26.5	155	97	33.5	*13.3	181	25	4.5
4	73	95	45	16.4	10.2	377	254	43	73	31	8.0	4.3
5	51	583	50	9.0	7.9	364	113	168	71	8.6	6.0	4.1
6	26	214	37.5	4.6	16.0	675	10.5	858	38.5	10.2	5.8	4.2
7	5.4	138	25	3.85	14.4	191	15.7	783	23.5	*10.1	5.5	4.1
8	4.7	133	74	5.85	8.4	246	50	*36.0	32.5	6.0	5.5	4.1
9	4.8	73	109	4.6	4.6	174	41	72	57	5.9	6.6	3.9
10	22.5	10.2	13.6	71	*4.3	134	16.5	60	39.5	5.5	5.0	4.0
11	331	27.5	11.2	172	4.0	100	7.3	58	91	5.2	5.0	3.9
12	246	43	30.5	90	3.75	90	93	83	108	5.0	4.8	3.75
13	731	50	35.5	159	3.6	47	80	68	89	4.8	4.6	3.75
14	145	62	11.8	51	3.6	107	54	44	8.9	5.0	4.6	3.85
15	91	66	5.4	32	4.6	248	60	36.5	5.9	5.5	4.6	3.85
16	72	35	5.4	33	6.4	213	60	9.9	5.5	36.5	4.5	10.0
17	55	8.6	4.5	27.5	4.7	71	58	10.6	5.2	223	4.3	4.6
18	106	67	5.2	62	3.85	26	93	22.5	5.8	34	10.2	6.1
19	40	80	116	29.5	3.6	24.5	79	41	5.6	11.8	41	75
20	11.3	55	33	20	3.4	27.5	102	35.5	5.5	*6.1	220	98
21	11.6	462	6.0	26	3.3	37.5	677	26	5.5	5.2	116	5.4
22	26	288	4.2	31.5	3.3	252	134	46	57	5.0	41	*3.9
23	22	107	4.2	32	3.35	239	82	445	87	5.3	11.2	3.55
24	14.0	120	4.0	24.5	3.6	104	33.5	270	46	5.3	5.3	3.75
25	30.5	56	46	16.0	3.4	79	10.7	310	30.5	32.5	4.5	3.85
26	10.5	31.5	38	5.1	3.3	68	36	141	11.9	26	99	3.55
27	5.2	*60	28.5	4.3	182	59	40	68	10.2	180	191	3.4
28	5.2	127	5.4	4.1	*640	65	26	44	6.6	132	111	3.3
29	170	99	3.85	3.85	353	98	26.5	-	5.5	205	94	3.3
30	814	38.5	3.4	4.1	205	100	29.5	-----	5.6	106	41	3.75
31	280	9.7	-----	119	-----	218	17.6	-----	5.9	-----	7.4	-----
Total	3,533.7	3,365.0	796.85	1,087.20	2,645.05	4,841.5	2,639.8	3,950.9	989.4	1,309.1	1,172.4	293.45
Mean	114	109	26.6	35.1	88.2	158	85.2	141	31.9	43.6	37.8	9.78
mgd	176	169	41.2	54.3	136	241	132	218	49.4	67.5	58.5	15.1
cfs	10,840	10,330	2,450	3,340	8,120	14,860	8,100	12,120	3,040	4,020	3,600	901
Ac-ft												

Calendar year 1954: Max 1,640 Min 1.81 Mean(mgd) 66.0 Mean(cfs) 102 Ac-ft 73,950  
 Fiscal year 1954-55: Max 1,640 Min 3.3 Mean(mgd) 72.9 Mean(cfs) 113 Ac-ft 81,720

Peak discharge (base, 3,700 mgd)--July 13 (9 a.m.) 3,970 mgd (6,140 cfs), 6.55 ft; Aug. 5 (4:30 p.m.) 4,910 mgd (7,600 cfs), 6.96 ft; Nov. 28 (9 a.m.) 6,020 mgd (9,310 cfs), 7.44 ft; Feb. 6 (10 p.m.) 4,420 mgd (6,840 cfs), 6.83 ft.

\* Discharge measurement made on this day.

## North Wailua ditch near Lihue

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

Records available.--July 1932 to June 1955 in reports of Geological Survey. October 1925 to June 1932 in files of Lihue Plantation Co.

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

Average discharge.--23 years (1932-55), 12.1 mgd (18.7 cfs).

Extremes.--1932-55: Maximum daily discharge, 38 mgd (59 cfs) Dec. 21, 1933, Apr. 24, 1934; no flow at times.

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

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.3	10.2	9.3	11.6	12.3	8.8	11.0	9.1	9.0	14.9	11.3	11.2
2	12.2	9.5	8.8	11.9	11.9	9.6	10.5	9.9	9.1	17.6	11.6	11.0
3	11.9	9.3	8.8	11.9	11.6	9.1	11.3	10.9	9.6	16.6	11.9	11.6
4	12.2	9.3	8.8	12.2	11.6	9.3	11.9	10.5	10.2	13.4	11.0	11.0
5	11.6	6.9	8.5	11.9	11.6	9.1	10.7	10.8	9.3	12.8	11.0	11.0
6	11.3	5.1	8.5	11.6	11.3	9.1	9.9	11.6	9.3	12.8	11.3	10.5
7	12.5	10.5	8.2	11.9	11.3	8.8	9.9	11.3	9.3	11.9	11.0	10.7
8	14.0	10.5	9.4	10.2	11.6	8.6	9.3	9.3	10.2	11.6	11.0	10.5
9	14.9	9.9	9.1	8.5	11.4	8.0	9.1	10.2	*9.3	11.6	11.0	10.5
10	16.5	10.1	8.5	9.1	11.3	8.6	9.9	11.3	9.9	11.6	11.3	11.3
11	17.6	10.7	8.2	9.6	11.3	8.8	12.9	11.6	9.6	11.6	11.0	10.5
12	15.2	10.5	8.5	9.6	11.3	8.8	12.4	13.1	9.9	11.9	11.0	11.0
13	11.0	10.7	8.8	9.2	11.3	8.5	9.3	11.6	9.3	11.6	10.7	11.6
14	10.3	11.6	9.9	8.8	12.2	9.9	9.1	11.6	8.8	*14.5	11.2	12.2
15	11.6	12.2	11.7	8.5	12.4	10.0	9.6	11.6	9.6	13.8	10.5	11.0
16	11.6	11.6	11.6	8.5	11.3	9.1	9.1	11.0	9.1	14.2	10.5	12.5
17	11.4	11.3	11.9	8.8	11.0	8.8	9.6	11.9	11.0	14.2	10.5	11.3
18	12.2	10.3	12.2	8.8	11.3	8.5	9.9	11.9	11.3	12.8	12.9	12.2
19	11.5	8.5	12.5	8.5	11.3	8.5	8.6	11.6	11.0	12.2	13.7	12.6
20	11.9	8.8	11.6	8.5	11.3	9.8	9.1	11.3	11.0	11.6	14.5	12.2
21	11.6	9.9	10.7	8.8	11.0	10.5	10.2	11.0	11.0	12.2	9.6	11.0
22	11.9	9.3	10.1	8.8	11.0	10.4	8.8	12.8	11.2	12.2	9.3	10.7
23	11.3	8.2	10.5	8.5	11.0	8.2	8.5	10.7	8.4	12.8	11.6	12.5
24	11.3	8.2	10.2	8.5	11.4	9.6	8.5	9.6	8.5	13.7	11.9	12.0
25	11.0	8.2	9.6	8.5	11.9	10.7	8.5	9.6	8.5	13.1	13.2	11.3
26	11.6	9.9	9.1	10.5	11.3	10.5	8.7	8.8	8.5	13.6	13.1	11.3
27	11.0	10.5	9.3	11.3	*14.3	10.8	8.2	8.5	8.5	14.7	13.4	10.7
28	11.8	9.6	9.1	11.3	11.1	12.3	8.5	8.5	8.8	13.4	13.1	11.3
29	13.7	8.5	8.8	11.3	.44	12.0	8.8	-	10.1	14.2	13.1	12.0
30	12.5	8.5	10.7	12.2	4.0	12.8	8.8	-----	12.6	12.8	11.9	11.3
31	10.5	8.5	-----	14.3	-----	12.7	9.2	-----	14.0	-----	11.6	-----
Total	380.7	296.8	292.9	313.6	328.04	300.2	300.0	301.6	305.9	395.9	380.7	340.7
Mean:	12.3	9.57	9.76	10.1	10.9	9.68	9.68	10.8	9.87	13.2	11.6	11.4
mgd	19.0	14.8	15.1	15.6	16.9	15.0	15.0	16.7	15.3	20.4	17.9	17.6
cfs	1,170	911	899	962	1,010	921	921	926	939	1,210	1,110	1,050
Ac-ft												

Calendar year 1954: Max 24.5 Min 0.22 Mean(mgd) 11.1 Mean(cfs) 17.2 Ac-ft 12,480

Fiscal year 1954-55: Max 17.6 Min 0.44 Mean(mgd) 10.7 Mean(cfs) 16.6 Ac-ft 12,050

\* Discharge measurement made on this day.

## Stable storm ditch near Lihue

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

Records available.--December 1936 to June 1955.

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

Average discharge.--18 years (1937-55), 7.43 mgd (11.5 cfs).

Extremes.--1936-55: 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 Waialua River for irrigation of sugarcane in vicinity of Lihue. Flow regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.08	0.23	0	17.7	17.4	0.15	0.08	0.23	0.15	0.08	0.23	0.15
2	.15	.23	0	18.3	.23	.23	.08	.23	.15	.08	.08	.08
3	.08	.15	0	21.5	.23	.23	.08	.23	.15	.08	.08	.08
4	.15	.08	0	22	.15	.31	.08	.23	.23	0	.08	0
5	.15	.95	0	21.5	.15	.15	.06	.31	.15	.08	.08	0
6	.15	.23	0	18.3	.15	.40	0	1.95	.15	.08	.08	10.7
7	.15	.23	0	19.8	.15	.23	.08	.40	.15	0	0	18.3
8	21	.23	0	25.5	9.9	.15	0	.23	.23	0	0	15.1
9	29.5	.15	0	21.5	13.2	.08	0	.15	.23	0	0	14.0
10	9.4	.15	0	28	13.0	.08	0	.15	.23	0	0	17.7
11	.23	.15	0	10.1	12.4	0	0	.15	.23	0	0	13.5
12	.08	.15	0	.23	12.2	.08	.08	.15	.23	7.9	10.0	15.4
13	.21	.15	0	.23	11.9	0	.08	.04	.23	10.4	13.0	21.5
14	0	.08	0	.15	13.5	.08	.08	0	.23	*17.1	14.5	24
15	0	.04	0	.15	25.5	.08	.08	0	.23	.21	12.2	15.4
16	0	0	0	.08	21.5	0	.08	0	.15	8.8	11.7	25
17	0	0	0	.15	14.6	0	.08	0	.15	.23	11.4	17.4
18	0	0	0	.15	12.7	0	.08	0	.08	.15	21.5	*21.5
19	0	0	0	.15	11.9	0	.08	0	.08	.08	.26	.26
20	.08	0	0	.15	11.4	0	.08	0	.08	.08	12.4	8.1
21	.15	.08	0	.15	11.1	0	.40	0	.08	.23	.23	.15
22	.23	.23	0	.08	10.9	.31	.08	.10	.08	.23	.23	.15
23	.23	.23	17.6	.08	11.4	.15	.08	.08	.08	.23	.23	.08
24	.23	.23	21.5	.08	12.9	.08	.08	.15	.08	.23	.23	.15
25	.23	.23	8.8	.08	15.9	.08	0	.15	0	.23	.23	.15
26	.15	.23	.08	9.8	11.4	0	0	.15	0	.23	.23	.15
27	.15	.15	0	13.8	25.5	0	0	.23	.08	.23	.23	.15
28	.15	.15	0	13.2	41	0	0	.23	.08	.23	.31	13.4
29	.23	.08	14.5	13.2	11.3	0	0	-	0	.23	.23	21
30	.36	0	18.0	17.0	.23	.23	0	-----	0	.23	.23	16.8
31	.23	0	-----	33	-----	.15	0	-----	.08	-----	.15	-----
Total	63.75	4.81	80.48	326.11	353.79	3.25	1.82	5.54	4.07	68.44	135.86	316.09
Mean:												
mgd	2.06	0.155	2.68	10.5	11.8	0.105	0.059	0.198	0.131	2.28	4.38	10.5
cfs	3.19	0.240	4.15	16.2	18.3	0.162	0.091	0.306	0.203	3.53	6.78	16.2
Ac-ft	196	15	247	1,000	1,090	10	5.6	17	12	210	417	970
Calendar year 1954: Max	41			Min	0		Mean(mgd)	7.97		Mean(cfs)	12.3	Ac-ft 9,920
Fiscal year 1954-55: Max	41			Min	0		Mean(mgd)	3.74		Mean(cfs)	5.79	Ac-ft 4,190

\* Discharge measurement made on this day.

## North Fork Wailua River at altitude 650 ft, near Lihue

Location.--Lat 22°03'50", long 159°26'20", on right bank 0.5 mile downstream from intake of Stable storm ditch and 7.8 miles northwest of Lihue.

Drainage area.--6.6 sq mi.

Records available.--September 1914 to June 1955.

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

Average discharge.--34 years (1921-55), 47.4 mgd (73.3 cfs).

Extremes.--Maximum discharge during year, 2,640 mgd (4,080 cfs) Aug. 5 (gage height, 9.90 ft), from rating curve extended above 280 mgd by test on model of station site; minimum, 1.04 mgd (1.61 cfs) Nov. 26, 27.

1914-55: Maximum discharge, 4,020 mgd (6,220 cfs) June 2, 1943 (gage height, 9.96 ft, datum then in use), from rating curve extended above 600 mgd by test on model of station site; minimum, 0.22 mgd (0.34 cfs) Oct. 27, 1953.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Since 1925 Hanalei tunnel (see p. 34) has discharged into river, and North Wailua and Stable storm ditches have diverted water above station for irrigation in vicinity of Lihue.

Revisions (fiscal years).--WSP 555: 1921.

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 5

Aug. 6 to June 30

1.3	3.95	3.0	116	1.0	0.70	2.5	62
1.5	8.3	3.5	197	1.2	2.75	3.0	116
2.0	29.5	4.0	297	1.5	8.2	4.0	297
2.5	64			2.0	26	4.6	440

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	71	75	46	1.67	11.2	50	67	24.5	29	34.5	31	39
2	*56	53	34	3.65	17.6	113	47	54	25	48	33.5	26
3	50	49	42	2.45	15.0	70	94	127	28	128	45	29
4	62	45	34	1.57	13.6	175	*155	77	44	21	25.5	23.5
5	43	296	26.5	1.57	12.8	128	67	136	25.5	16.4	24.5	19.7
6	33.5	53	26.5	1.39	12.2	180	36	436	21.5	15.4	25	9.0
7	28.3	45	23.5	1.38	12.0	116	29	283	20	13.0	23.5	2.4
8	9.3	53	74	7.0	4.5	126	39.5	*82	43	12.5	20.5	2.15
9	5.0	45	64	1.21	1.21	66	23.5	47	25.5	12.2	21	2.05
10	60	49	25.5	7.2	1.21	66	20	31.5	46	12.0	18.5	2.5
11	143	45	21	45	1.21	47	78	30	*33.5	11.4	17.2	2.15
12	121	44	24	64	1.21	50	232	75	38	5.7	7.9	2.3
13	270	42	51.5	55	1.21	34.5	85	32.5	28.5	2.5	2.5	4.7
14	73	42	19.7	*31	1.30	111	51	31	18.9	4.5	2.65	7.1
15	56	43	20	23	15.5	136	65	26.5	42	8.7	2.55	1.91
16	52	41	19.3	20.5	3.4	81	52	20	21	36	1.55	14.8
17	44	41	20.5	26.5	1.12	44	62	32	17.6	89	1.55	1.91
18	70	62	32.5	34	1.12	34	91	32	14.7	28	21.5	7.3
19	43	60	44	20	1.12	29	41	26.5	13.3	22	11.4	12.5
20	59	58	20	18.5	1.12	24.5	55	23	12.8	*16.7	176	35.5
21	46	116	21	26	1.12	21	220	18.1	12.8	17.8	74	18.9
22	58	62	20.5	23	1.12	144	51	96	49	19.2	29	*15.4
23	40	53	10.5	21	1.12	70	38	165	19.7	23	24.5	33
24	40	71	1.79	18.1	1.19	35	31	194	16.1	34	26.5	39.5
25	35	49	42	18.9	1.87	26	26	169	13.0	36	76	19.7
26	44	45	37.5	6.2	1.12	22	35	62	12.2	41	68	20.0
27	33	*49	27	1.30	121	23.5	23	44	11.7	76	121	14.7
28	59	73	21	1.30	344	49	18.9	36	13.0	59	127	8.0
29	126	38	7.2	1.30	186	56	17.2	-	11.7	178	68	8.0
30	285	29	1.67	18.2	144	57	17.2	-----	21.5	59	44	1.79
31	96	25	-----	63	-----	121	24.5	-----	16.7	-----	36	-----
Total	2,211.3	1,851	838.66	565.88	932.17	2,305.5	1,874.8	2,410.6	745.2	1,080.5	1,206.80	424.46
Mean:												
mgd	71.3	59.7	28.0	18.3	31.1	74.4	60.5	86.1	24.0	36.0	38.9	14.1
cfs	110	92.4	43.3	28.3	48.1	115	93.6	133	37.1	55.7	60.2	21.8
Ac-ft	6,790	5,680	2,570	1,740	2,860	7,080	5,750	7,400	2,290	3,320	3,700	1,300

Calendar year 1954: Max 359 Min 0.57 Mean(mgd) 39.4 Mean(cfs) 61.0 Ac-ft 44,200  
Fiscal year 1954-55: Max 436 Min 1.12 Mean(mgd) 45.1 Mean(cfs) 69.8 Ac-ft 50,480

Peak discharge (base, 1,200 mgd).--July 13 (7 a.m.) 1,340 mgd (2,070 cfs), 7.30 ft; Aug. 5 (2 p.m.) 2,640 mgd (4,080 cfs), 9.90 ft; Nov. 28 (6:30 p.m.) 2,480 mgd (3,840 cfs), 9.64 ft; Dec. 6 (2 a.m.) 1,470 mgd (2,270 cfs), 7.55 ft; Feb. 6 (9 a.m.) 2,370 mgd (3,670 cfs), 9.42 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Aug. 6-27, May 16, 17; discharge estimated on basis of records for nearby streams.



## Kanaha ditch near Lihue

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

Records available.--August 1910 to October 1955 (discontinued).

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

Extremes.--1910-55: Maximum daily discharge, 25.6 mgd (39.6 cfs) Aug. 8, 1918; no flow at times.

Remarks.--Records poor. Ditch diverts water from North Fork Waiau River, since July 4, 1940, for domestic use only. Flow regulated by headgate.

## Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.21	0.21	0.43	0	0.31	0.58	0.21	0.55	0.12	0.05	0.31	1.39
2	.21	.64	.43	.02	.31	2.2	.21	.55	.12	.05	.31	1.98
3	.21	.94	.43	.05	.31	1.58	.12	.43	.12	.12	.43	1.98
4	.21	.94	.43	.01	.31	3.15	.12	.21	.12	.05	.43	1.78
5	.21	.92	.43	.03	.31	2.8	.12	.28	.12	.05	.43	1.58
6	.21	.21	.43	0	.31	3.05	.12	1.06	.12	.05	.43	.80
7	.42	.21	.43	.10	.31	2.4	.12	.43	.12	0	.43	.21
8	.55	.21	.43	.43	.31	2.15	.12	.21	.12	0	.43	.21
9	.55	.21	.31	.43	.21	.94	.12	.21	.12	0	.43	.21
10	.55	.21	.31	.21	.10	.80	.12	.21	.12	0	.43	.21
11	.31	.21	.31	.21	0	.17	.12	.21	.12	0	.43	.12
12	.21	.21	.31	.27	0	.34	.49	.21	.12	0	.31	.05
13	.28	.21	.21	.21	0	0	.43	.21	.12	0	.21	.31
14	.76	.21	.21	.05	0	1.01	.43	.21	.12	*.36	.21	.55
15	1.09	.21	.39	.05	.95	1.42	.43	.21	.12	.98	.12	.01
16	1.09	.21	.43	.05	.80	.80	.43	.21	.12	3.05	.31	.96
17	.94	.31	.43	.05	.21	.23	.43	.21	.12	3.5	.31	.04
18	1.09	.36	.43	.12	0	0	.43	.21	.12	3.05	.55	.84
19	.94	.43	.43	.12	0	0	.43	.21	.12	3.05	.55	1.09
20	1.09	.43	.31	.54	0	0	.55	.21	.12	1.82	.55	2.2
21	.94	.21	.31	.80	0	0	.43	.21	.12	1.09	.31	1.78
22	1.09	.21	.55	.80	0	2.35	.21	.21	.12	1.09	.21	1.58
23	.94	.21	.36	.80	0	1.80	.21	.21	.12	.80	.21	1.98
24	.94	.21	0	.80	0	.80	.21	.21	.12	.67	.21	2.2
25	.80	.21	.23	.80	.21	.67	.21	.21	.12	.55	.62	1.58
26	.94	.44	.21	.67	.43	.67	.50	.12	.12	.43	.67	1.58
27	.80	.55	.21	.43	1.15	.67	.55	.12	.12	1.17	.80	1.40
28	.80	.55	.21	.43	.72	.80	.55	.12	.05	1.58	.31	.72
29	1.09	.55	.10	.43	.74	.55	.55	-	.05	.80	.05	.55
30	.44	.43	0	.43	.55	.43	.55	-	.05	.43	.05	.29
31	.21	.43	-----	.43	-----	.31	.55	-----	.05	-----	.05	-----
Total	20.12	11.49	9.70	9.77	8.55	32.67	10.07	7.63	3.44	24.79	11.10	29.86
Mean	0.649	0.371	0.323	0.315	0.285	1.05	0.325	0.272	0.111	0.826	0.358	0.995
cfs	1.00	0.574	0.500	0.487	0.441	1.62	0.503	0.421	0.172	1.28	0.554	1.54
Ac-ft	62	35	30	30	26	100	31	23	11	76	34	92

Calendar year 1954: Max 4.5 Min 0 Mean(mgd) 0.704 Mean(cfs) 1.09 Ac-ft 788  
 Fiscal year 1954-55: Max 3.5 Min 0 Mean(mgd) 0.491 Mean(cfs) 0.780 Ac-ft 550

\* Discharge measurement made on this day.

## Discharge, in million gallons a day, 1955

Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.
1	0.43	1.00	0.94	0.21	11	0.94	0.94	0.31	0.28	21	0.80	0.12	0.55	0.05
2	1.28	.94	.94	.21	12	.80	.94	.21	.21	22	.80	.12	.67	.05
3	1.58	1.40	.80	.12	13	.80	.94	.21	.12	23	.67	.05	.67	0
4	1.58	1.09	.80	.12	14	.80	1.09	.31	.12	24	.67	.73	.43	0
5	1.01	.94	.80	.12	15	1.09	1.09	.43	.05	25	.67	1.24	.31	.05
6	1.58	1.09	.80	.05	16	1.24	1.09	.55	.12	26	.80	1.09	.21	.16
7	1.24	1.09	.57	.05	17	1.09	.90	.31	.05	27	.80	.94	.12	.21
8	1.24	1.09	.31	.05	18	1.09	.90	.21	.12	28	.80	.94	.25	.21
9	1.09	.94	.31	.05	19	1.09	.80	.21	.12	29	.94	1.09	.31	.31
10	1.09	.94	.21	.05	20	.94	.43	.31	.05	30	1.09	1.09	.43	.21
										31	1.09	1.09	-.	.06
Total											31.13	28.04	13.49	3.58
Mean, in million gallons a day											1.00	0.905	0.450	0.115
Mean, in cubic feet per second											1.55	1.40	0.696	0.178
Runoff in acre-feet											96	88	41	11

## East Branch of North Fork Wailua River near Lihue

Location.--Lat 22°04'10", long 159°25'05", on right bank 1,200 ft upstream from mouth and 7.5 miles northwest of Lihue.

Drainage area.--6.2 sq mi.

Records available.--July 1912 to June 1955.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (by barometer). Prior to Oct. 1, 1914, staff gage at site 725 ft downstream at different datum. Oct. 1, 1914, to May 10, 1934, water-stage recorder 75 ft upstream at same datum.

Average discharge.--35 years (1920-55), 30.1 mgd (46.6 cfs).

Extremes.--Maximum discharge during year, 1,860 mgd (2,880 cfs) Feb. 6 (gage height, 8.50 ft), from rating curve extended above 270 mgd by test on model of station site; minimum, 11.4 mgd (17.6 cfs) Nov. 23.

1912-55: Maximum discharge, 3,340 mgd (5,170 cfs) Dec. 24, 1927 (gage height, 10.57 ft), from rating curve extended above 500 mgd; minimum, 4.4 mgd (6.8 cfs) July 3, 13, 1926.

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

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.0	8.0	2.0	54
1.2	14.0	2.5	94
1.4	21.5	3.0	151
1.6	31	3.5	215
1.8	42	4.3	347

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	39.5	39	25	15.8	28.5	41	38.5	24	35.5	31	29	24.5
2	*28	32	21.5	15.5	19.7	85	31	22.5	33	40	30	21.5
3	24	30	24.5	17.7	17.3	54	34.5	32	31.5	92	34	21
4	30	29	21.5	16.6	16.2	162	65	33.5	39.5	28	24.5	20.5
5	22	126	19.7	17.3	15.1	114	35.5	127	30.5	22	22.5	18.9
6	18.5	55	21	16.2	14.4	190	29	291	28	21	22.5	18.1
7	17.0	44	20.5	15.8	14.0	*110	26	346	28	20	21.5	17.3
8	17.0	43	35	22	14.0	121	34	82	29	18.5	19.7	16.6
9	17.3	33	27	16.2	13.7	84	23.5	*85	26.5	17.7	19.3	15.8
10	31.5	37.5	20.5	25.5	13.4	61	21.5	44	38	17.3	20	15.8
11	65	39	18.5	43	13.0	45	61	42	*32	16.6	18.9	15.5
12	64	31	18.9	32.5	12.7	53	305	74	27.5	16.2	17.7	15.1
13	151	27	31	39	12.4	36	61	42	25	15.8	17.0	15.8
14	44	25.5	23.5	*26.5	13.4	44	47	42	23	*18.1	18.1	17.3
15	33.5	29	19.7	21	25.5	80	44	36	37	26	16.2	15.1
16	34	24.5	19.3	18.9	18.9	67	41	31	27	36	15.5	17.7
17	26.5	22.5	21.5	19.3	14.0	39	48	39.5	24	65	14.7	15.5
18	37	46	31	29	12.7	33.5	41	36	23	27.5	22	*21
19	24.5	47	33.5	18.1	12.4	30	32	31.5	21.5	23	22.5	34.5
20	31.5	43	21.5	16.6	12.1	26.5	33	32.5	21	19.3	62	33
21	23.5	115	23	18.9	11.8	24.5	223	26	20.5	18.9	38	18.1
22	31	59	21.5	17.7	11.8	100	47	59	44	18.9	22.5	15.8
23	22	42	20	15.5	11.8	54	36	116	24	21	22.5	19.1
24	22.5	56	18.5	14.7	12.4	35	33	271	19	26	22	22
25	20	36	32.5	15.1	13.4	29.5	29.5	171	18	33.5	26.5	15.8
26	21.5	31	20	14.0	12.1	28	33.5	61	17	24.5	38	18.9
27	18.9	*34	20	13.7	111	27.5	27	48	16	64	51	15.1
28	24	49	19.3	13.4	*292	40	24	42	17	47	94	17.0
29	62	31.5	17.0	13.4	88	45	22	-	16	56	39	19.6
30	251	26	15.8	17.1	63	32.5	21.5	-----	22	40	28.5	16.6
31	53	23.5	-----	88	-----	59	56	-----	18	-----	26.5	-----
Total	1,305.2	1,306.0	692.2	684.0	940.7	1,929.0	1,604.0	2,257.5	812.0	920.8	876.1	568.5
Mean	42.1	42.1	23.1	22.1	31.4	62.2	51.7	80.6	26.2	30.7	28.3	19.0
mgd	65.1	65.1	35.7	34.2	48.6	96.2	80.0	125	40.5	47.5	43.8	29.4
cfs	4,010	4,010	2,120	2,100	2,890	5,920	4,920	6,930	2,490	2,830	2,690	1,740
Ac-ft												

Calendar year 1954: Max 317 Min 8.0 Mean(mgd) 32.0 Mean(cfs) 49.5 Ac-ft 35,870  
Fiscal year 1954-55: Max 346 Min 11.8 Mean(mgd) 38.1 Mean(cfs) 58.9 Ac-ft 42,650

Peak discharge (base, 1,000 mgd).--Jan. 21 (6 a.m.) 1,120 mgd (1,730 cfs), 7.06 ft; Feb. 6 (10:30 p.m.) 1,860 mgd (2,880 cfs), 8.50 ft; Feb. 24 (12 p.m.) 1,120 mgd (1,730 cfs), 7.09 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Mar. 13-18, Mar. 22 to Apr. 7; discharge estimated on basis of records for nearby streams.

## Wailua ditch near Kapaa

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

Records available--November 1936 to June 1955 in reports of Geological Survey. April 1932 to November 1936 in files of East Kauai Water Co.

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

Average discharge--18 years (1937-55), 11.1 mgd (17.2 cfs).

Extremes--1936-55: Maximum daily discharge, 41 mgd (63 cfs) June 4, 1937; no flow at times.

Remarks--Records fair. Ditch diverts water from North Fork Wailua River to reservoir 2,000 ft above station and thence to fields for irrigation of sugarcane. Flow regulated by gates at reservoir.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	*5.6	0.12	7.9	12.3	2.15	0	0	0.42	0	0.30	1.90	13.2	
2	3.0	.12	*8.4	6.9	.60	0	0	.42	.18	.30	1.90	12.6	
3	2.1	.12	6.3	6.9	.60	0	0	.42	.42	.30	1.97	9.9	
4	3.9	.18	4.0	9.4	.54	0	0	.42	.42	3.35	3.9	7.4	
5	3.9	.18	4.0	17.4	*.54	0	0	.42	.42	11.7	3.15	7.9	
6	10.1	.06	3.95	22.5	.54	.18	0	.42	.42	15.4	3.1	10.4	
7	15.4	.12	2.4	21	.54	0	0	.42	.42	5.1	3.15	16.5	
8	13.2	.06	1.34	11.4	7.7	0	0	.42	.42	.30	3.15	21	
9	7.4	.12	2.6	6.9	13.2	0	0	.42	.42	.60	3.15	20	
10	5.6	.18	3.15	6.9	17.6	0	4.6	.48	.42	.84	6.9	14.9	
11	5.6	3.3	3.1	9.4	13.8	0	8.9	.42	.42	6.8	14.3	5.5	
12	2.35	5.7	3.1	12.6	4.8	0	3.3	.42	.42	14.3	15.4	3.8	
13	.24	4.4	3.8	14.4	.36	0	.30	.42	.42	11.6	8.6	14.3	
14	0	4.6	5.1	15.4	.30	0	.30	.42	.42	4.0	4.1	16.5	
15	0	4.7	10.5	9.4	.30	0	.30	.48	.42	1.20	4.2	11.0	
16	0	4.8	15.8	7.4	.30	0	.36	.42	.42	1.76	8.7	16.5	
17	3.35	5.7	17.6	7.4	.24	0	.36	.36	.42	1.76	15.4	14.3	
18	6.4	6.9	11.5	7.4	3.2	0	.36	.30	.42	3.2	17.6	7.9	
19	*7.2	7.9	6.9	7.4	7.4	0	.42	.30	.42	8.4	17.6	8.4	
20	8.9	6.9	9.2	*7.4	4.9	0	.42	.30	.42	12.6	12.2	8.4	
21	8.9	5.2	12.6	7.4	3.8	0	.42	.36	.42	12.6	5.0	8.4	
22	5.9	4.9	12.6	6.4	9.8	0	.42	.30	.42	7.1	5.1	15.4	
23	4.6	4.7	9.3	4.8	12.6	0	.42	.18	.42	*2.3	5.2	15.8	
24	4.7	4.9	6.0	4.9	10.4	0	.42	0	.42	2.3	9.4	*6.7	
25	4.7	5.0	6.0	6.9	7.9	0	.42	0	.42	6.8	13.8	5.3	
26	11.4	5.2	6.4	13.8	8.4	0	.42	0	.42	8.9	9.7	5.4	
27	20	5.0	*13.3	15.4	6.4	0	.48	0	.42	4.9	3.3	15.1	
28	22.5	4.8	16.5	15.4	.24	0	.54	0	.42	1.51	3.35	20	
29	7.3	4.7	20	9.3	.24	0	.54	-	.42	2.85	3.4	20	
30	.18	6.0	21	4.6	.18	0	.48	-----	.42	2.35	3.4	20	
31	.06	7.9	-----	5.2	-----	0	.48	-----	.38	-----	7.8	-----	
Total	194.48	114.46	254.34	313.9	139.57	0.18	24.66	8.94	12.32	155.42	219.82	372.5	
Mean	6.27	3.69	8.48	10.1	4.65	0.006	0.795	0.319	0.397	5.18	7.09	12.4	
cfs	9.70	5.71	13.1	15.6	7.19	0.009	1.23	0.494	0.614	8.01	11.0	19.2	
Ac-ft	597	351	781	963	428	0.6	76	27	38	477	675	1,140	
Calendar year 1954: Max	25			Min	0		Mean(mgd)	7.02		Mean(cfs)	10.9	Ac-ft	7,870
Fiscal year 1954-55: Max	22.5			Min	0		Mean(mgd)	4.96		Mean(cfs)	7.67	Ac-ft	5,550

\* Discharge measurement made on this day.

## North Fork Wailua River near Kapaa

Location.--Lat 22°02'55", long 159°22'25", on right bank 1.1 miles upstream from confluence with South Fork, 4.0 miles southwest of Kapaa, and 5.0 miles north of Lihue.

Drainage area.--18.7 sq mi.

Records available.--July 1952 to June 1955.

Gage.--Water-stage recorder. Altitude of gage is 30 ft (from topographic map).

Extremes.--Maximum discharge during year, 4,840 mgd (7,490 cfs) Feb. 6 (gage height, 9.12 ft), from rating curve extended above 930 mgd on basis of slope-area determination at gage height 19.88 ft; minimum, 4.5 mgd (7.0 cfs) Oct. 1.  
1952-55: Maximum discharge, that of Feb. 6, 1955; minimum, 1.37 mgd (2.12 cfs) Oct. 28, 1953.

Remarks.--Records good except those for period of no gage-height record, which are fair. Wailua ditch diverts water between this station and station at altitude 650 ft.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.1	2.9	2.5	91
1.2	4.6	3.0	171
1.4	9.7	3.5	285
1.6	17.0	4.0	430
2.0	40	5.3	1,020

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	109	159	74	4.5	58	132	113	59	98	12.4	77	78
2	94	119	*59	4.6	50	229	91	67	85	10.7	76	58
3	83	119	70	4.9	42	157	138	164	91	234	77	40
4	97	112	58	5.1	38.5	375	232	125	115	70	44	21
5	74	444	50	4.9	36	267	89	303	89	53	46	37
6	45	230	50	6.1	33	464	29	911	69	49	53	31
7	18.4	144	48	6.4	32.5	266	68	903	77	44	53	14.4
8	17.0	138	150	19.0	24	296	89	259	89	40	53	8.3
9	21	88	130	16.6	7.5	171	63	144	89	40	51	6.9
10	93	74	49	23.5	5.1	177	55	112	106	39	38	7.5
11	233	137	40	90	4.6	137	202	104	94	25	18.0	8.3
12	206	136	45	104	4.6	133	499	172	102	8.9	14.7	10.4
13	541	109	56	110	7.8	85	166	102	85	7.2	7.5	12.3
14	168	78	36	67	18.0	154	*130	91	65	11.7	22	16.2
15	119	85	37	33.5	46	234	136	85	117	27.5	17.5	13.0
16	104	69	36	25	34	202	120	71	68	78	15.4	43
17	91	58	37	45	29	97	126	86	62	184	8.9	11.0
18	123	135	60	76	27	79	144	91	58	69	19.7	14.0
19	66	120	72	45	18.0	70	91	76	*45	56	30	34
20	73	107	37	*36	18.0	46	84	77	42	36	218	71
21	70	361	38	41	18.4	12.7	559	*59	28.5	33	124	45
22	88	213	37	39	13.1	255	177	124	81	37	68	37
23	63	127	30.5	40	5.3	169	98	370	111	50	54	45
24	69	161	15.0	35.5	4.6	85	85	510	98	*69	53	*61
25	66	112	69	37	5.3	70	77	451	57	83	92	31
26	63	91	64	27	5.3	62	83	188	44	62	123	37
27	25.5	104	47	14.5	221	62	59	135	42	142	183	22.5
28	43	150	35	7.7	917	93	16.3	119	41	128	240	10.4
29	226	104	16.2	6.9	417	112	53	-	45	252	135	9.5
30	*727	76	4.9	8.0	*278	94	52	-----	51	111	98	8.9
31	238	58	-----	178	-----	192	90	-----	38.5	-----	79	-----
Total	4,053.9	4,216	1,550.6	1,161.7	2,418.6	4,977.7	4,014.3	5,958	2,283.0	2,062.4	2,188.7	842.6
Mean:												
mgd	131	136	51.7	37.5	80.6	161	129	213	73.6	68.7	70.6	28.1
cfs	203	210	80.0	58.0	125	249	200	330	114	106	109	43.5
Ac-ft	12,440	12,940	4,760	3,570	7,420	15,280	12,320	18,280	7,010	6,330	6,720	2,590

Calendar year 1954: Max 1,000 Min 2.15 Mean(mgd) 81.1 Mean(cfs) 125 Ac-ft 90,860  
Fiscal year 1954-55: Max 917 Min 4.5 Mean(mgd) 97.9 Mean(cfs) 151 Ac-ft 109,700

Peak discharge (base, 1,100 mgd).--July 13 (8 a.m.) 1,860 mgd (2,880 cfs), 6.52 ft; July 30 (5 a.m.) 1,540 mgd (2,380 cfs), 6.09 ft; Aug. 5 (4 p.m.) 3,660 mgd (5,660 cfs), 8.16 ft; Nov. 28 (8 a.m.) 2,930 mgd (4,530 cfs), 7.61 ft; Dec. 6 (3 a.m.) 2,120 mgd (3,280 cfs), 6.75 ft; Dec. 22 (5:30 p.m.) 1,350 mgd (2,060 cfs), 5.82 ft; Jan. 21 (8 a.m.) 1,880 mgd (2,880 cfs), 6.50 ft; Feb. 6 (10 p.m.) 4,840 mgd (7,490 cfs), 9.12 ft; Feb. 24 (11 p.m.) 1,700 mgd (2,630 cfs), 6.34 ft.

\* Discharge measurement made on this day.  
Note.--No gage-height record Sept. 4-21; discharge estimated on basis of records for nearby streams.

## Makaleha ditch near Kealia

Location.--Lat 22°06'55", long 159°22'05", 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 1955 in reports of Geological Survey. July 1925 to November 1936 in files of East Kauai Water Co.

Gage.--Water-stage recorder and Parshall flume. Prior to December 1936, water-stage recorder at site 150 ft downstream at different datum.

Average discharge.--18 years (1937-55), 3.98 mgd (6.16 cfs).

Extremes.--1936-55: Maximum daily discharge, 17.9 mgd (27.7 cfs) Oct. 31, 1954; minimum daily, 0.02 mgd (0.03 cfs) Nov. 28, 1942, Sept. 24-26, 1944, Aug. 31, 1947, Dec. 28, 1952, Sept. 17-21, 1953.

Remarks.--Records good. Ditch diverts water from Makaleha Stream for irrigation of sugarcane. Diversion is regulated by headgates.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.0	0.75	7.4	5.4	10.3	1.34	0.28	0.12	3.05	0.12	7.4	8.3
2	5.9	.49	5.6	7.2	.84	1.24	.22	.12	4.2	.10	8.3	6.4
3	5.7	.59	7.4	8.8	.53	.90	.20	.17	4.3	.36	9.3	7.2
4	5.8	5.0	6.9	7.4	.46	2.6	.25	.12	1.98	2.8	7.4	6.9
5	5.5	13.1	5.8	7.8	3.35	2.2	.22	.67	.20	5.8	6.4	5.9
6	5.2	5.8	7.4	6.4	5.4	3.6	.17	2.45	.14	6.9	7.5	5.9
7	5.0	.92	7.8	7.5	5.2	1.76	.14	5.7	.30	5.8	6.9	6.0
8	6.0	.79	9.8	9.3	5.8	1.45	.12	2.4	.20	5.4	6.4	5.5
9	6.9	.72	10.4	7.4	5.4	1.06	.10	1.10	.17	5.6	6.0	5.2
10	*12.3	.72	3.95	12.4	5.8	.78	.10	.64	.17	5.2	6.4	6.0
11	12.6	4.4	.12	14.8	5.7	.53	.24	.43	.14	5.3	6.0	6.0
12	6.6	8.8	.12	10.4	5.2	.49	6.2	.36	.12	5.0	6.0	6.4
13	1.55	7.1	.17	9.3	5.2	.39	2.05	.28	.10	5.0	5.7	7.4
14	1.15	7.8	4.3	11.4	7.8	.36	.99	.25	.10	7.4	7.0	9.3
15	.84	8.8	6.4	6.8	14.2	.36	.64	.22	.67	8.3	5.8	6.4
16	3.75	7.8	6.9	5.9	13.6	.64	.49	.17	.39	10.4	5.4	7.8
17	6.9	7.4	7.2	8.7	7.8	.57	.49	.17	.41	10.4	5.5	7.4
18	11.4	12.0	9.3	13.6	6.0	.39	.42	.16	.22	9.3	9.0	10.6
19	6.9	7.5	9.3	6.9	5.5	.28	.36	.14	.17	5.2	9.8	13.6
20	9.8	.24	6.0	6.0	5.3	.22	.42	.14	.12	3.45	12.6	15.6
21	7.4	1.12	7.3	8.4	5.1	.17	5.6	.12	.12	3.45	11.4	8.3
22	10.0	.84	9.9	6.9	5.0	.66	1.80	.19	.67	3.5	7.4	6.9
23	6.6	.57	10.4	6.0	5.0	.88	.88	.97	.53	3.5	7.4	9.8
24	7.4	3.1	8.1	5.4	6.2	.55	.53	.85	.98	3.5	7.8	11.0
25	6.4	4.8	12.8	5.9	7.4	.36	.42	.79	.43	3.5	9.3	8.3
26	7.8	4.5	7.8	5.4	5.4	.25	.36	.49	.25	3.45	12.0	11.7
27	6.0	4.6	9.4	5.4	6.2	.22	.22	.36	.20	9.8	10.9	7.4
28	8.8	4.8	8.5	5.2	8.1	.31	.17	.31	.20	11.4	12.0	9.8
29	7.2	4.6	6.4	5.5	8.6	.36	.14	-	.17	11.9	10.9	11.0
30	4.6	5.8	5.8	8.5	2.95	.25	.12	-----	.14	10.9	8.3	8.8
31	1.50	6.0	-----	17.9	-----	.33	.17	-----	.17	-----	8.8	-----
Total	199.49	141.25	208.66	253.9	1,791.3	25.50	24.31	19.89	21.31	172.73	251.0	244.9
Mean	6.44	4.56	6.96	8.19	5.97	0.823	0.784	0.710	0.687	5.76	8.10	8.16
mgd	9.96	7.06	10.8	12.7	9.24	1.27	1.21	1.10	1.06	8.91	12.5	12.6
cfs	612	433	640	779	550	78	75	61	65	530	770	752
Ac-ft												
Calendar year 1954: Max	17.9			Min	0.12	Mean(mgd)	5.41	Mean(cfs)	8.37	Ac-ft	6,060	
Fiscal year 1954-55: Max	17.9			Min	0.10	Mean(mgd)	4.77	Mean(cfs)	7.38	Ac-ft	5,340	

\* Discharge measurement made on this day.

## Kapahi ditch near Kealia

Location.--Lat 22°06'00", long 159°22'30", on right bank 500 ft downstream from intake and 4.0 miles west of Kealia.

Records available.--April 1909 to May 1914, May 1915 to June 1955.

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

Average discharge.--37 years (1917-20, 1921-55), 5.17 mgd (8.00 cfs).

Extremes.--1909-14, 1915-55: Maximum daily discharge, 89.2 mgd (138 cfs) Feb. 6, 1913; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.0	0.16	5.0	2.95	0.16	0.07	0.13	0.23	5.6	4.7	0.19	6.2
2	3.2	2.2	3.0	3.75	1.0	.10	.13	.23	7.1	1.83	5.4	5.0
3	.58	2.55	.91	3.75	.10	.07	.13	.23	5.5	.17	4.9	a.16
4	.13	3.35	.44	3.25	.86	.16	.13	.23	2.2	6.1	6.1	a.16
5	2.05	3.2	.19	3.7	.34	.13	9.4	2.6	1.44	6.2	5.8	a.16
6	3.9	.73	.19	3.25	2.0	.28	11.8	.44	.50	6.6	6.2	a3.35
7	3.15	.27	.80	3.45	2.95	1.58	3.85	.86	4.2	4.9	4.6	4.6
8	2.95	.10	2.2	4.4	3.05	1.68	.19	.16	2.95	4.2	.19	4.3
9	2.0	9.2	3.45	3.45	2.75	.94	.16	.16	3.3	4.2	3.3	4.2
10	2.3	5.2	2.75	3.8	2.95	1.12	5.6	.19	7.9	4.2	4.9	4.5
11	.13	1.44	1.90	7.0	2.65	1.19	13.2	.65	9.1	4.5	5.0	3.7
12	.95	1.15	1.73	6.0	2.65	.10	3.35	.02	3.8	4.6	5.1	3.05
13	.11	1.47	1.55	5.3	1.25	.10	.07	.07	.27	4.3	4.7	3.05
14	.36	.19	5.5	6.0	.10	.50	.07	.27	8.3	4.0	1.98	3.7
15	.35	.23	3.6	3.9	.90	2.7	.07	.23	4.3	4.2	.23	3.05
16	.50	2.35	3.6	3.35	.13	4.9	.04	1.00	2.65	3.8	3.7	3.05
17	1.64	2.7	3.8	3.7	.83	1.54	.04	7.4	3.05	1.99	4.5	2.95
18	1.34	3.15	4.6	6.1	2.45	.07	.07	3.6	3.05	6.6	6.5	3.6
19	3.55	3.15	4.7	4.2	2.65	.07	.02	.31	3.05	7.9	8.4	4.9
20	4.4	2.6	3.7	3.45	1.21	.04	.04	.31	3.05	7.8	3.85	5.0
21	4.0	.34	5.1	3.8	2.05	.36	.36	10.1	4.0	7.2	.19	3.8
22	2.65	3.23	9.3	3.45	2.05	1.50	.04	9.6	3.2	4.9	.19	3.15
23	2.05	3.65	2.85	3.05	2.55	17.9	.10	.54	.27	3.6	4.4	3.45
24	1.72	4.3	3.05	2.95	2.65	16.9	.16	.40	.23	1.16	6.1	1.56
25	.04	3.25	2.05	3.05	3.15	4.4	.19	.13	.19	8.4	6.2	.16
26	3.4	2.4	1.07	2.75	2.75	.10	1.13	.07	5.8	7.4	4.5	.16
27	3.35	1.98	5.2	2.85	1.31	.10	.31	.07	6.5	9.1	1.92	2.65
28	4.2	.31	4.7	2.65	.12	.07	.75	.07	1.52	11.6	.31	3.35
29	1.92	.19	3.7	2.55	.34	.94	.45	-	1.40	10.9	.94	4.2
30	.24	4.8	3.25	3.7	.10	2.35	.35	-----	4.5	2.1	5.2	3.45
31	.07	5.0	-----	2.6	-----	1.80	.23	-----	4.7	-----	6.2	-----
Total	65.23	71.84	93.88	118.15	45.40	63.76	52.56	40.17	113.62	159.15	120.79	94.61
Mean:	2.10	2.32	3.13	3.61	1.51	2.06	1.70	1.43	3.67	5.30	3.90	3.15
mgd	3.25	3.59	4.84	5.89	2.34	3.19	2.63	2.21	5.66	8.20	6.03	4.87
cfs	200	220	288	363	139	196	161	123	349	488	371	290
Ac-ft												

Calendar year 1954: Max 17.9 Min 0.01 Mean(mgd) 2.77 Mean(cfs) 4.29 Ac-ft 3,110  
 Fiscal year 1954-55: Max 17.9 Min 0.02 Mean(mgd) 2.85 Mean(cfs) 4.41 Ac-ft 3,190

a No gage-height record; discharge estimated on basis of ditch tender's notes and records for Kapaa River.

## Kapaa River at Kapahi ditch intake, near Kapaa

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

Drainage area.--3.3 sq mi.

Records available.--December 1936 to June 1955.

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

Average discharge.--18 years (1937-55), 12.7 mgd (19.6 cfs).

Extremes.--Maximum discharge during year, 2,110 mgd (3,260 cfs) Feb. 5 (gage height, 3.72 ft), from rating curve extended above 330 mgd by logarithmic plotting; no flow many times.

1936-55: Maximum discharge, 3,570 mgd (5,520 cfs) Feb. 7, 1949 (gage height, 4.65 ft), from rating curve extended above 330 mgd as explained above; no flow at times.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

-0.03	0	.5	18.9
0.0	.10	.6	28.5
.1	.74	.8	54
.2	2.55	1.0	90
.3	6.1	1.2	140
.4	11.5	1.7	320

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.5	15.0	0	0	12.0	20	17.9	11.8	4.1	12.2	5.2	0.32
2	7.3	9.7	.80	.71	10.9	50	13.6	12.6	.79	13.0	2.15	0
3	7.1	10.3	3.7	.75	9.1	27.5	14.5	18.9	2.1	82	5.6	0
4	12.5	7.3	3.1	7.4	103	28	13.6	12.5	4.5	0	2.35	0
5	3.55	68	2.85	0	29	4.5	58	6.1	181	12.9	0	4.1
6	0	33	3.1	0	.86	95	10	223	10.9	.26	.08	.78
7	0	25.5	2.55	0	0	46	6.3	301	13.5	.34	1.12	0
8	.10	24	3.55	2.0	0	45	11.5	42	11.6	.74	4.8	0
9	1.03	5.0	3.2	0	0	18.9	9.7	21	9.7	.86	1.54	0
10	9.0	17.3	2.5	3.7	0	21	3.8	16.5	17.4	.65	.38	0
11	27.5	16.7	5.6	3.85	0	15.7	60	18.1	8.0	.20	0	0
12	31.5	6.6	6.1	0	0	23	314	48	10.5	0	0	0
13	82	4.4	11.7	0	1.10	14.3	34	18.9	14.3	.35	0	0
14	17.1	5.2	2.75	.48	2.55	18.2	23.5	26	3.0	1.47	3.95	.14
15	10.9	6.6	0	0	12.4	35.5	25	20	37	8.5	4.4	0
16	12.9	3.1	0	0	8.3	33	19.8	13.4	13.6	13.3	.72	0
17	2.3	2.15	0	1.23	2.55	14.3	27.5	14.2	10.9	34	0	0
18	7.3	12.6	.64	6.8	.59	12.2	27.5	16.5	9.1	1.73	6.9	1.60
19	.86	11.2	1.42	0	0	10.9	16.5	14.5	8.0	.03	1.30	7.6
20	7.8	23.5	0	0	1.08	10.3	18.7	17.0	7.5	0	13.6	6.1
21	.43	86	.20	0	2.05	9.1	193	3.0	6.6	.74	11.5	0
22	4.7	34.5	9.7	0	.31	72	21	19.8	28	3.1	5.7	0
23	1.79	17.3	2.7	0	0	10.7	15.7	69	18.9	8.4	1.33	.17
24	2.05	20.5	.59	0	0	0	13.6	95	27.5	16.5	0	2.75
25	3.4	10.9	11.3	0	0	7.9	12.9	51	12.9	13.4	2.1	2.85
26	.26	8.2	2.8	0	0	10.3	22	17.3	4.7	6.2	8.0	4.1
27	0	12.9	.64	0	.89	12.3	13.6	17.3	3.95	34.5	16.8	.43
28	15.0	28	.09	0	*208	22.5	10.8	13.6	11.8	7.3	39	0
29	69	11.5	0	0	80	23.5	10.9	-	9.7	7.5	9.7	0
30	241	1.31	0	31	37	11.7	13.6	-----	8.3	10.7	1.52	0
31	22.5	0	-----	56	-----	28	18.8	-----	14.3	-----	1.16	-----
Total	611.37	539.26	81.58	106.79	486.69	881.7	1,019.80	1,334.0	362.04	282.45	148.93	33.27
Mean:	19.7	17.4	2.72	3.44	16.2	28.4	32.9	47.6	11.7	9.42	4.80	1.11
cfs	30.5	26.9	4.21	5.32	25.1	43.9	50.9	73.6	18.1	14.6	7.43	1.72
Ac-ft	1,880	1,650	250	328	1,490	2,710	3,130	4,090	1,110	867	457	102
Calendar year 1954:	Max 241	Min 0	Mean(mgd) 11.9	Mean(cfs) 18.4	Ac-ft 13,320							
Fiscal year 1954-55:	Max 314	Min 0	Mean(mgd) 16.1	Mean(cfs) 24.9	Ac-ft 18,060							

Peak discharge (base, 1,400 mgd).--July 30 (4:30 a.m.) 1,970 mgd (3,050 cfs), 3.57 ft; Feb. 5 (10 p.m.) 2,110 mgd (3,260 cfs), 3.72 ft.

\* Discharge measurement made on this day.

## Anahola ditch wasteway near Kealia

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

Records available.--December 1936 to June 1955.

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

Average discharge.--18 years (1937-55), 3.21 mgd (4.97 cfs).

Extremes.--1936-55: Maximum daily discharge, 48 mgd (74 cfs) Feb. 7, 1949; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.12	7.2	0.34	0.06	5.0	9.4	7.4	3.55	5.9	6.8	4.2	f5.5
2	3.25	5.4	.28	.12	5.0	14.9	4.8	3.3	5.2	7.9	7.8	3.65
3	7.0	5.4	.18	.12	3.65	15.1	7.1	3.15	4.8	13.9	9.4	.94
4	13.8	3.2	.02	.06	2.8	26.5	15.5	.26	6.5	4.0	4.4	.26
5	5.4	f15	.02	.06	2.5	30	5.6	.52	7.6	3.5	4.0	.26
6	2.45	f18	.02	0	2.35	29.5	4.4	.77	4.2	4.2	4.4	.26
7	.18	10.2	.02	0	2.0	17.0	3.85	35	*6.3	3.15	3.65	.26
8	.18	12.2	.02	0	2.35	20.5	6.1	19.5	5.9	3.0	3.15	.26
9	.18	7.4	0	0	1.85	*8.8	2.8	8.8	4.8	3.15	1.33	.26
10	.18	9.2	0	0	1.03	10.0	1.13	6.7	15.8	2.8	.26	.26
11	.18	10.0	0	.02	.06	7.2	12.5	15.2	7.1	.80	.26	.26
12	16.2	5.7	0	.02	.06	8.9	f30	25.5	5.0	.26	.26	.26
13	23	2.65	0	0	.06	5.6	a6.7	7.8	6.2	.26	.26	.26
14	7.8	2.65	0	0	.06	7.0	f12	9.0	3.85	.26	.26	.26
15	5.9	3.3	0	0	.12	16.5	11.2	8.4	22.5	.26	.26	.26
16	4.5	2.8	0	0	0	21	10.0	5.9	8.1	.26	.26	.18
17	.26	3.0	0	0	0	7.6	12.8	9.4	6.6	.26	.26	.18
18	.26	6.2	0	0	0	6.1	14.0	6.7	4.9	4.2	.26	.18
19	.12	4.0	0	0	0	5.0	6.7	.43	4.0	3.65	.26	.18
20	2.15	f6.3	0	0	0	4.6	5.9	.43	3.65	3.15	.26	.18
21	3.3	f10	.02	.02	0	4.2	34.5	.43	3.65	3.15	.07	.06
22	.73	7.2	.02	.02	0	f11	8.5	9.2	15.6	3.75	.12	.06
23	.06	8.5	.02	.02	0	a6.1	6.3	30.5	21	5.1	.18	.06
24	.06	12.6	0	.02	0	f5.6	5.2	31.5	19.4	5.6	.18	.06
25	.06	7.4	0	.06	0	4.8	4.6	21.5	6.5	8.5	.26	.06
26	.06	5.6	0	0	0	4.2	5.8	10.0	4.8	7.7	.26	.06
27	.02	6.7	.02	0	a20	4.2	*4.6	11.4	4.2	25	7.4	.06
28	.06	9.9	.06	0	a40	9.4	3.65	7.2	5.0	9.4	f7.5	.06
29	.06	5.6	.06	0	f36	14.5	3.3	-	4.2	9.1	a5.9	.12
30	31	2.55	.06	.18	16.6	6.3	3.3	-----	5.4	7.0	a5.6	.12
31	11.3	.26	-----	.06	-----	16.4	4.6	-----	6.7	-----	a5.2	-----
Total	162.26	216.11	1.14	0.84	141.49	357.9	264.83	292.04	235.35	150.06	77.86	14.83
Mean:												
mgd	5.23	6.97	0.038	0.027	4.72	11.5	8.54	10.4	7.59	5.00	2.51	0.494
cfs	8.09	10.8	0.059	0.042	7.30	17.8	13.2	16.1	11.7	7.74	3.88	0.764
Ac-ft	498	653	3.5	2.6	434	1,100	813	896	722	461	239	46
Calendar year 1954:	Max	40		Min	0	Mean(mgd)	3.66	Mean(cfs)	5.66	Ac-ft	4,100	
Fiscal year 1954-55:	Max	40		Min	0	Mean(mgd)	5.25	Mean(cfs)	8.12	Ac-ft	5,880	

\* Discharge measurement made on this day.

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

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



## Anahola ditch above Kaneha Reservoir, near Kealia

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

Records available.--December 1921 to June 1955. May 1915 to December 1921 at site 0.3 mile upstream; records not equivalent owing to diversion.

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

Average discharge.--32 years (1921-25, 1927-55), 3.24 mgd (5.01 cfs).

Extremes.--1921-55: Maximum daily discharge, 40 mgd (62 cfs) Nov. 12, 1947; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.6	0.09	5.6	2.25	7.2	0.06	0.06	0.09	0.09	0	0.09	0.06
2	5.5	.09	3.45	3.85	.06	.06	.06	.09	.06	0	.09	.06
3	.01	.09	4.2	4.9	.06	.06	.06	4.2	.09	0	.09	2.85
4	.04	5.0	3.2	4.0	.06	.12	.09	6.9	.09	0	.09	3.2
5	.02	13.0	2.9	3.6	.06	.12	.06	15.0	.12	0	.06	2.65
6	1.54	.06	3.65	2.8	.04	.12	.06	21	.09	0	.06	2.8
7	3.35	.06	4.4	3.4	.04	.09	.06	13.0	.09	0	.06	2.45
8	*3.3	.09	3.95	6.1	.04	.09	.34	.12	.09	.06	.06	2.25
9	3.4	.09	12.6	3.05	.04	.06	.97	.09	.06	.09	1.56	2.2
10	15.3	.06	3.15	7.9	1.13	.06	2.05	.09	.06	.09	3.2	2.25
11	23	.06	2.8	*18.4	2.2	.06	4.4	.06	.06	1.65	2.55	2.1
12	3.85	1.31	2.65	6.6	1.73	.06	.28	.12	.06	2.1	3.1	1.82
13	.09	2.5	5.1	9.5	1.73	.06	.06	.09	.06	2.1	3.2	2.1
14	.06	2.45	3.2	4.9	2.8	.06	.06	.09	.06	2.2	3.1	3.05
15	.04	3.35	2.55	3.0	14.6	1.49	.09	.09	.22	5.7	2.25	2.2
16	2.2	2.9	4.7	2.45	7.0	.12	.12	.09	.06	12.5	2.1	2.25
17	4.6	3.2	3.55	3.6	3.1	.06	.12	.09	.06	13.6	1.91	1.82
18	14.5	8.6	5.1	14.1	2.25	.06	.12	3.45	.06	1.10	5.5	3.6
19	5.1	5.0	6.9	3.35	2.1	.06	.12	5.3	.06	.02	5.6	12.0
20	7.8	8.1	2.8	2.8	1.91	.06	.16	6.3	.06	.02	16.5	10.2
21	1.34	14.0	4.8	5.4	1.73	.06	.55	4.3	.06	.02	7.0	3.0
22	10.8	9.8	3.7	2.75	1.73	.12	.12	2.8	.19	.04	3.35	2.35
23	5.1	3.85	4.0	2.25	2.5	.06	.16	.34	.16	.04	4.5	2.8
24	5.1	.06	2.8	2.1	2.25	.06	.12	.25	.18	.06	3.75	5.0
25	4.0	.04	11.6	3.0	2.9	.06	.12	.12	.06	.06	5.9	2.55
26	4.3	.04	3.8	2.0	1.91	.06	.12	.09	.09	.06	9.1	6.2
27	3.4	.04	3.9	1.91	8.8	.06	.12	.12	.09	.06	6.6	2.8
28	10.7	.06	3.35	1.73	.91	.04	.09	.12	.09	.06	.09	4.1
29	10.3	.06	2.65	1.64	1.70	.06	.09	-	.09	.06	.09	5.4
30	.12	1.73	2.35	16.5	.09	.04	.12	-----	.09	.09	.09	3.65
31	.06	3.65	-----	35.5	-----	.06	.09	-----	.09	-----	.06	-----
Total	161.52	89.43	129.60	185.13	72.67	3.61	11.04	84.40	2.79	41.78	91.72	99.76
Mean	5.21	2.88	4.32	5.97	2.42	1.016	0.356	3.01	0.090	1.39	2.96	3.33
mgd	8.06	4.46	6.68	9.24	3.74	0.179	0.551	4.66	0.139	2.15	4.58	5.15
cfs	496	274	398	568	223	11	34	259	8.6	128	281	306
Ac-ft												
Calendar year 1954: Max	35.5			Min 0.01		Mean(mgd)	3.46		Mean(cfs)	5.35	Ac-ft	3,870
Fiscal year 1954-55: Max	35.5			Min 0		Mean(mgd)	2.67		Mean(cfs)	4.13	Ac-ft	2,990

\* Discharge measurement made on this day.

## Anahola River near Kealia

Location.--Lat 22°08'55", long 159°21'20", on right bank just upstream from intake of Lower Anahola ditch, 4.5 miles northwest of Kealia.

Drainage area.--5.5 sq mi.

Records available.--August to November 1910, December 1910 to November 1912 (fragmentary), December 1912 to June 1955.

Gage.--Water-stage recorder and concrete dam and orifice control. Datum of gage is 295.11 ft above mean sea level (Highway Department benchmark). Aug. 22 to Nov. 2, 1910, water-stage recorder, Dec. 15, 1910, to Dec. 29, 1912, staff gage, and Dec. 30, 1912, to May 3, 1934, water-stage recorder, at site an eighth of a mile upstream at different datum.

Average discharge.--36 years (1919-55), 13.2 mgd (20.4 cfs).

Extremes.--Maximum discharge during year, 1,380 mgd (2,140 cfs) Jan. 21 (gage height, 5.53 ft), from rating curve extended above 230 mgd; minimum, 2.45 mgd (3.79 cfs) Oct. 30.  
1910, 1912-55: Maximum discharge, 7,940 mgd (12,300 cfs) Apr. 1, 1948 (gage height, 11.06 ft), from rating curve extended above 230 mgd; minimum, 1.28 mgd (1.98 cfs) Oct. 27, 1953.

Remarks.--Records good. Anahola ditch diverts water 3 miles above station for irrigation in vicinity of Kealia (see preceding page).

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)  
(Shifting-control method used Nov. 2-27)

July 1-29, Feb. 6 to June 30

July 30 to Feb. 5

0.9	2.8	2.0	34	0.9	2.25	2.0	38
1.0	3.55	2.3	62	1.0	2.9	2.3	65
1.2	5.3	2.6	99	1.2	4.5	2.5	88
1.4	7.8	3.0	170	1.4	6.8	3.0	170
1.6	14.8	3.5	295	1.6	12.5	3.3	240
1.8	25.5			1.8	25		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.3	16.3	8.7	3.15	24	25	9.2	7.3	15.8	9.4	5.7	6.1
2	10.1	12.9	6.4	3.65	13.9	28	8.4	7.3	13.5	8.4	6.8	4.8
3	8.4	10.9	6.8	5.6	9.5	21.5	7.5	7.3	12.7	28.5	8.3	4.6
4	14.4	10.1	6.0	3.8	7.7	41	15.0	9.6	13.4	8.2	5.4	4.4
5	7.6	53	5.6	3.5	6.5	62	8.4	51	15.5	7.5	5.0	4.2
6	6.6	24.5	5.5	3.2	5.7	78	7.1	72	9.9	8.6	5.0	4.4
7	6.1	18.3	5.8	3.4	5.3	28	7.0	194	*10.7	6.9	4.8	4.1
8	*6.1	16.3	6.0	4.2	5.8	41	9.5	45	9.2	6.4	4.4	3.85
9	5.8	12.5	13.4	3.6	5.0	*21.5	6.5	26	8.9	6.4	4.4	3.7
10	12.4	15.1	5.2	4.6	5.1	18.9	6.0	20.5	15.1	6.0	4.7	3.6
11	28.5	15.8	4.6	*10.5	4.8	15.8	49	21	9.9	5.7	4.3	3.55
12	42	10.5	4.5	6.8	4.4	16.3	175	40	8.2	5.5	4.2	3.4
13	39	8.4	5.5	5.3	4.4	13.0	22	17.8	8.0	5.3	4.2	3.4
14	18.8	8.2	4.4	4.4	4.9	12.5	17.2	16.8	7.3	5.3	4.4	3.45
15	12.7	7.7	4.1	3.4	14.2	18.2	17.0	16.8	30.5	6.7	4.1	3.4
16	10.7	7.5	4.3	3.05	8.3	74	15.3	13.1	16.0	12.0	3.8	3.4
17	8.4	8.2	4.2	3.5	5.5	18.9	16.7	14.3	9.2	19.0	3.7	3.25
18	14.1	10.9	4.5	11.1	4.7	14.8	15.7	14.3	8.4	7.0	4.4	3.8
19	8.2	8.4	5.2	4.1	4.4	12.5	12.1	11.1	7.8	5.8	5.7	7.3
20	14.2	12.6	3.9	3.3	4.2	10.1	10.6	11.9	7.5	5.3	6.0	10.4
21	8.2	62	4.4	4.5	4.1	9.2	217	9.2	7.3	5.3	5.6	4.6
22	10.7	18.4	4.3	3.3	3.9	48	26.5	30.5	27	*5.1	4.1	*3.7
23	7.6	13.9	3.8	2.9	5.2	22	18.9	81	40	8.2	4.2	3.6
24	7.5	13.0	3.6	2.8	5.2	13.9	15.8	147	42	6.8	3.95	4.2
25	6.9	10.1	6.5	2.9	5.5	11.3	13.4	54	19.3	8.9	4.8	3.45
26	6.8	8.4	4.0	2.65	*4.4	9.5	12.5	24	13.5	7.3	5.8	4.9
27	6.4	8.2	4.0	2.7	152	8.9	*10.1	22.5	11.5	28.5	21.5	3.8
28	9.0	9.8	4.1	2.55	*21.4	10.1	8.9	18.3	11.5	13.4	8.1	3.55
29	76	7.7	3.4	2.5	193	18.3	9.2	-	9.9	7.6	3.9	3.95
30	134	7.1	3.3	29.5	47	9.2	7.9	-	10.3	7.0	7.8	3.6
31	23.5	*6.8	-----	38	-----	12.4	7.7	-----	11.9	-----	6.3	-----
Total	582.0	451.5	156.0	248.45	787.1	743.8	782.1	1,003.6	441.7	270.0	254.25	128.45
Mean	18.8	14.6	5.20	8.01	26.2	24.0	25.2	35.8	14.2	9.00	8.20	4.8
cfs	29.1	22.6	8.05	12.4	40.5	37.1	39.0	55.4	22.0	13.9	12.7	6.62
Ac-ft	1,790	1,390	479	762	2,420	2,280	2,400	3,080	1,360	829	780	394

Calendar year 1954: Max 257 Min 2.15 Mean(mgd) 14.3 Mean(cfs) 22.1 Ac-ft 16,050  
Fiscal year 1954-55: Max 217 Min 2.5 Mean(mgd) 16.0 Mean(cfs) 24.8 Ac-ft 17,960

Peak discharge (base, 900 mgd).--Nov. 27 (6 p.m.) 1,300 mgd (2,010 cfs), 5.35 ft; Jan. 21 (7 a.m.) 1,380 mgd (2,140 cfs), 5.53 ft; May 28 (8 a.m.) 1,070 mgd (1,660 cfs), 5.10 ft.

\* Discharge measurement made on this day.

## Lower Anahola ditch near Kealia

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

Records available.--December 1936 to June 1955 in reports of Geological Survey. July 1925 to December 1936 in files of East Kauai Water Co.

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

Average discharge.--18 years (1937-55), 2.53 mgd (3.91 cfs).

Extremes.--1936-55: Maximum daily discharge, 12.0 mgd (18.6 cfs) June 1, 1938; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.6	0	7.5	4.3	7.5			0	0	7.0	0	6.6
2	3.85	0	7.0	4.4	7.5			0	0	7.0	0	7.5
3	.03	0	7.0	6.0	7.5			0	0	7.5	0	7.7
4	.03	5.7	7.0	5.1	7.0			2.95	0	7.0	2.25	6.1
5	1.70	2.9	6.6	4.6	7.0			6.6	0	7.0	5.8	5.7
6	5.7	0	6.2	4.3	6.6			8.5	0	7.0	5.8	5.7
7	3.9	0	6.6	5.3	6.6			2.7	0	7.0	5.9	5.6
8	3.9	0	3.9	6.2	6.6			0	0	7.0	5.9	5.3
9	4.6	0	0	4.7	6.2			0	5.4	7.0	5.7	5.1
10	6.6	0	0	5.1	6.1			0	7.5	6.6	3.5	5.1
11	7.5	0	0	*5.9	5.0			0	7.5	6.6	0	5.0
12	3.55	4.0	0	6.2	4.5			0	7.5	6.2	3.1	4.7
13	.04	4.7	2.5	5.5	4.4			0	7.5	6.2	5.0	4.7
14	.04	4.5	5.6	5.5	4.4			0	7.0	6.2	5.0	4.7
15	3.15	4.7	5.1	4.6	5.6			0	8.5	6.2	5.0	4.7
16	6.0	4.7	5.1	4.2	5.6			0	7.5	6.6	4.8	4.4
17	4.6	1.60	5.2	4.4	5.1			4.8	7.5	6.6	4.7	4.1
18	.06	3.65	5.4	6.6	4.6			7.5	4.4	4.2	4.8	4.6
19	.04	4.8	5.6	5.1	4.4			7.0	0	0	5.1	4.7
20	.03	4.7	5.1	4.4	4.3			7.0	0	0	5.0	5.1
21	5.3	6.0	5.1	4.7	4.4			7.0	0	0	5.0	4.7
22	7.5	6.1	5.4	4.3	4.3			7.0	0	0	4.7	4.4
23	6.6	1.93	5.1	3.9	4.6			3.4	0	0	4.6	4.1
24	4.1	5.7	4.9	3.7	5.0			0	0	0	4.6	4.4
25	0	5.4	6.0	4.0	4.7			0	0	0	4.7	4.0
26	0	0	6.1	3.6	4.4			0	0	3.4	4.7	4.2
27	0	0	5.6	3.55	5.1			0	0	6.6	6.0	4.0
28	4.7	0	5.6	3.45	0			0	0	6.6	8.3	3.8
29	2.3	0	4.7	4.1	0			0	0	3.75	6.6	3.9
30	0	5.4	4.5	7.5	0			-----	3.15	0	6.6	3.5
31	0	7.0	-----	7.5	-----			-----	7.0	-----	6.6	-----
Total	90.42	83.48	144.4	149.70	149.0	0	0	64.45	80.45	139.25	139.75	148.1
Mean:	2.92	2.69	4.81	4.83	4.97	0	0	2.30	2.60	4.64	4.51	4.94
mgd	4.52	4.16	7.44	7.47	7.69	0	0	3.56	4.02	7.18	6.98	7.64
cfs	277	256	443	459	457	0	0	198	247	427	429	455
Ac-ft												

Calendar year 1954: Max 7.5 Min 0 Mean(mgd) 3.21 Mean(cfs) 4.97 Ac-ft 3,600  
 Fiscal year 1954-55: Max 8.5 Min 0 Mean(mgd) 3.26 Mean(cfs) 5.04 Ac-ft 3,650

\* Discharge measurement made on this day.

## Kalihiiwai ditch near Kilauea

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

Records available.--June 1934 to June 1955.

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

Average discharge.--20 years (1934-42, 1943-55), 2.59 mgd (4.01 cfs).

Extremes.--1934-55: Maximum daily discharge, 29.5 mgd (45.6 cfs) July 16, 1937; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	a5.4	0.70	2.75	2.55	6.4	0.70	0.29	0.14	2.85	4.4	3.6	4.3
2	a4.1	.58	2.35	2.95	3.7	.76	.25	.08	2.65	8.4	3.15	3.7
3	a5.5	.52	2.65	3.35	2.85	.64	.25	0	2.55	12.6	3.9	3.7
4	a4.4	.47	2.55	3.05	2.45	.70	.29	.11	2.6	5.0	3.05	3.25
5	a3.0	.60	2.35	3.05	2.25	.76	.29	.08	2.75	4.2	3.05	3.05
6	a2.7	.37	2.45	2.95	2.15	.82	.25	.11	2.35	3.8	3.8	2.75
7	a2.6	.25	2.55	2.75	2.05	.64	.21	.21	2.75	3.25	3.25	2.55
8	a2.6	.21	3.2	2.85	2.05	.52	.21	.21	2.65	3.05	3.05	2.6
9	a2.6	.21	4.4	2.75	1.96	.47	.25	.14	2.65	2.95	2.85	3.05
10	a4.6	.17	2.55	3.05	1.87	.42	.25	1.34	3.15	2.65	2.75	2.65
11												
12	a9.0	.17	2.35	3.9	1.78	.37	.31	3.7	2.95	2.55	2.85	2.45
13	a11	.17	2.45	1.30	1.62	.33	.29	5.2	2.95	2.45	2.75	2.35
14	a10	2.15	2.85	1.02	1.54	.33	.25	3.6	3.15	2.45	2.65	2.15
15	a5.0	3.35	2.45	1.16	1.70	.33	.25	3.25	2.75	2.55	2.95	2.35
16	a4.4	3.7	2.35	1.62	3.45	.37	.25	3.15	3.05	*3.45	2.55	2.05
17	3.9	3.35	2.65	1.70	2.65	.56	.29	2.95	3.05	5.8	2.35	2.25
18	3.85	3.15	2.35	2.15	2.05	.35	.25	3.25	2.95	8.1	2.25	1.87
19	5.8	4.9	2.55	2.4	1.96	.37	.25	3.6	3.05	4.2	2.9	2.9
20	4.0	4.3	2.85	1.62	1.87	.42	.25	3.05	2.85	3.15	3.15	5.0
21	4.3	5.6	2.35	1.87	1.87	.37	.25	2.95	2.85	2.75	12.9	5.3
22	3.7	4.7	2.25	2.15	1.87	.33	.53	2.75	2.65	2.75	5.0	2.65
23	5.0	.70	2.15	1.62	1.78	.37	.25	3.6	4.0	2.65	3.6	2.25
24	4.0	.58	2.05	1.46	1.70	.33	.25	8.2	9.7	3.35	3.6	2.6
25	3.8	.58	2.05	1.46	1.87	.29	.25	5.3	11.2	4.5	4.1	3.15
26	3.25	.52	3.75	1.58	1.96	.25	.25	4.9	5.1	5.3	6.0	2.25
27	3.35	.47	2.65	1.62	1.78	.25	.29	3.6	4.3	7.1	5.8	3.25
28	3.25	.42	2.65	1.62	13.2	.25	.21	3.6	3.8	29	9.1	2.35
29	3.25	.42	2.65	*1.59	22	.25	.17	3.15	2.8	10.9	18.0	2.25
30	6.1	.37	2.55	1.62	3.75	.25	.17	-	3.4	5.7	8.0	2.25
31	1.35	.42	2.45	3.75	.95	.25	.14	-----	3.6	4.3	5.9	2.05
32	.76	1.30	-----	12.9	-----	.29	.14	-----	4.2	-----	4.9	-----
Total	154.56	45.40	78.20	79.41	99.08	13.32	7.83	72.22	111.30	163.30	143.95	85.32
Mean:												
mgd	4.34	1.46	2.61	2.56	3.30	0.430	0.253	2.58	3.59	5.44	4.64	2.84
cfs	6.71	2.26	4.04	3.96	5.11	0.665	0.391	3.99	5.55	8.42	7.18	4.39
Ac-ft	413	139	240	244	304	41	24	222	342	501	442	262
Calendar year 1954: Max	22			Min 0		Mean(mgd)	2.30	Mean(cfs)	3.56	Ac-ft	2,580	
Fiscal year 1954-55: Max	29			Min 0		Mean(mgd)	2.83	Mean(cfs)	4.38	Ac-ft	3,170	

\* Discharge measurement made on this day.

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

## Ka Loko ditch near Kilauea

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

Records available.--August 1932 to June 1955.

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

Average discharge.--22 years (1933-55), 3.61 mgd (5.59 cfs).

Extremes.--1932-55: Maximum daily discharge, 63 mgd (98 cfs) Dec. 10, 1935; minimum daily, 0.46 mgd (0.71 cfs) Nov. 21, 22, 1949.

Remarks.--Records good. Ditch diverts water from Moloaa and Puu Ka Ele Streams, 0.5 mile southeast and 1.5 miles southwest of station, respectively. Water used for irrigation in vicinity of Kilauea. Flow regulated by wasteway gates.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.0	1.39	5.2	1.71	7.1	6.7	4.4	2.85	4.7	3.35	2.85	2.05
2	4.3	1.16	3.35	2.0	3.25	11.8	3.55	2.65	4.3	3.15	2.95	1.80
3	3.7	1.09	3.9	2.7	2.65	7.8	3.25	2.9	4.0	7.4	3.55	1.89
4	4.4	3.35	3.15	2.25	2.35	11.2	8.6	3.15	*4.6	3.15	2.55	1.71
5	2.85	5.1	2.95	1.89	2.15	11.7	3.9	6.6	5.4	2.95	2.45	1.63
6	2.55	2.8	2.95	1.71	2.05	18.7	3.35	9.5	3.55	3.25	2.55	1.63
7	2.45	1.54	3.25	1.81	1.98	8.1	3.05	8.2	4.1	2.65	2.35	1.54
8	2.45	1.39	3.25	2.2	1.98	11.3	4.5	1.39	3.45	2.55	2.15	1.54
9	2.45	1.16	5.6	1.71	1.98	6.2	2.95	1.80	3.25	2.45	2.05	1.54
10	4.7	1.31	2.65	1.98	2.15	4.9	2.85	3.25	5.1	2.35	2.15	1.54
11	11.8	1.39	2.55	3.95	1.80	3.05	8.5	3.35	3.45	2.35	1.98	1.47
12	14.2	2.3	2.55	2.45	1.71	2.45	16.3	4.4	3.05	2.25	1.98	1.39
13	13.2	3.8	3.05	2.2	1.71	1.63	5.5	3.05	3.15	2.25	1.98	1.39
14	5.2	3.8	2.35	1.80	2.05	3.15	4.1	2.85	2.75	2.25	2.15	1.47
15	4.3	3.8	2.25	1.63	6.0	4.4	4.7	2.95	8.4	3.2	1.89	1.39
16	4.1	3.55	2.55	1.47	4.1	9.9	4.5	2.85	5.1	5.6	1.80	1.39
17	3.55	3.8	2.35	1.69	2.25	4.5	3.25	3.05	3.35	7.7	1.71	1.31
18	6.4	5.2	2.55	5.3	1.89	3.8	2.8	3.55	3.05	2.75	2.35	2.0
19	3.55	4.3	2.75	1.89	1.80	3.55	3.1	2.95	2.75	2.25	2.95	4.0
20	4.7	7.1	2.05	1.63	1.71	3.35	3.0	2.06	2.65	2.05	3.75	4.9
21	2.5	18.0	2.05	3.1	1.63	3.15	10.0	1.98	2.65	2.05	2.45	1.89
22	3.7	7.4	2.95	1.80	1.54	5.3	1.63	4.4	9.6	2.15	1.89	1.47
23	2.8	5.9	2.55	1.54	1.54	2.2	1.23	8.3	15.5	2.65	2.15	1.54
24	2.4	5.8	2.05	1.47	1.71	1.09	1.09	5.1	12.2	3.55	2.15	1.80
25	2.95	4.9	4.5	1.54	1.98	1.02	1.02	3.3	4.4	3.9	2.65	1.39
26	2.95	4.0	2.15	1.39	1.63	.95	3.2	1.63	3.7	3.8	2.85	2.15
27	2.85	4.6	2.05	1.39	17.2	.95	3.9	1.39	3.35	21.5	6.8	1.39
28	4.4	5.9	1.98	1.39	38.5	3.2	3.45	4.3	3.45	6.6	6.0	1.47
29	11.6	4.3	1.80	1.31	4.4	6.7	3.25	-	3.15	3.9	2.45	1.54
30	8.2	3.45	1.71	7.7	10.9	4.1	3.15	-----	4.7	3.55	2.25	1.47
31	1.80	3.25	-----	24.5	-----	5.6	3.15	-----	4.1	-----	1.98	-----
Total	152.00	126.83	85.04	91.10	173.29	178.24	131.02	103.74	146.95	119.55	81.76	53.69
Mean:												
mgd	4.90	4.09	2.83	2.94	5.78	5.75	4.23	3.70	4.74	3.98	2.64	1.79
cfs	7.58	6.33	4.38	4.55	8.94	8.90	6.54	5.72	7.33	6.16	4.08	2.77
Ac-ft	466	389	261	280	532	547	402	318	451	367	251	165

Calendar year 1954. Max 46 Min 0.68 Mean(mgd) 3.98 Mean(cfs) 6.16 Ac-ft 4,460

Fiscal year 1954-55: Max 44 Min 0.95 Mean(mgd) 3.95 Mean(cfs) 6.11 Ac-ft 4,430

\* Discharge measurement made on this day.

## Puu Ka Ele ditch near Kilauea

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

Records available.--August 1932 to June 1955.

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

Average discharge.--22 years (1933-55), 2.90 mgd (4.49 cfs).

Extremes.--1932-55: Maximum daily discharge, 21 mgd (32 cfs) Sept. 2, 1943; no flow at times each year.

Remarks.--Records fair. Ditch diverts water from Puu Ka Ele Stream 0.8 mile south of station. Water used for irrigation of sugarcane in vicinity of Kilauea. Flow regulated by wasteway gates.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.5	0	4.2	1.98	5.9	0.12	0	0	2.75	3.45	3.55	2.75
2	4.4	0	3.45	2.15	3.7	1.03	0	0	3.35	3.8	3.35	2.75
3	4.1	0	3.8	2.55	3.25	.27	0	0	4.0	7.4	3.35	2.75
4	4.3	0	3.35	2.45	2.95	.60	.12	0	4.7	3.55	3.15	2.45
5	3.45	1.24	3.15	2.15	2.75	1.48	0	.31	4.4	3.35	3.05	2.35
6	3.05	.21	3.05	2.05	2.65	1.78	0	.13	3.8	3.25	2.95	2.25
7	2.95	0	3.05	2.05	2.45	.75	0	.53	3.9	3.05	2.65	2.15
8	3.05	0	3.3	2.25	2.45	1.14	0	.02	3.7	2.95	2.75	2.15
9	2.95	0	4.6	2.15	2.35	.27	0	0	3.45	2.65	2.55	2.05
10	3.8	0	2.95	2.25	2.55	.09	0	0	4.1	2.75	2.55	2.05
11	7.8	0	2.75	3.25	2.25	0	.06	0	3.55	2.55	2.45	1.98
12	8.8	0	2.85	2.85	2.15	0	.25	0	3.45	2.45	2.35	1.98
13	6.8	0	2.95	2.35	2.15	0	0	0	3.35	2.45	2.35	1.98
14	4.7	0	2.65	2.25	2.25	0	0	1.44	3.15	2.45	2.45	1.98
15	4.6	0	2.65	2.15	4.1	0	0	3.25	4.7	*3.0	2.25	2.15
16	4.5	0	2.65	2.05	3.25	.86	0	3.05	4.0	3.85	2.15	1.98
17	4.1	3.1	2.55	2.15	2.45	0	0	3.35	3.45	5.5	2.05	1.98
18	6.0	5.3	2.45	3.8	2.25	0	0	3.3	3.25	2.85	2.45	1.89
19	4.3	4.9	2.75	2.35	2.15	0	0	2.95	3.15	2.65	3.05	2.75
20	5.2	7.4	2.35	2.25	2.15	0	0	2.95	3.05	2.55	5.1	4.0
21	4.0	5.6	2.25	3.15	2.05	0	.79	2.75	2.85	2.55	2.95	2.75
22	4.4	.59	2.45	2.35	1.98	.30	0	5.3	5.8	2.45	2.45	1.98
23	4.3	3.15	2.35	2.15	1.98	.03	0	6.6	3.7	2.75	2.25	1.98
24	3.8	5.5	2.25	2.05	2.05	0	0	10.7	.84	3.15	2.45	2.25
25	3.35	5.1	3.55	2.05	2.15	0	0	6.9	0	3.7	2.95	2.05
26	3.25	4.6	2.45	1.98	1.98	0	0	2.25	0	3.35	3.15	2.15
27	3.15	4.7	2.25	1.89	6.4	0	0	1.54	0	9.6	5.6	2.15
28	3.5	4.7	2.15	1.69	12.2	0	0	2.65	1.57	4.6	3.8	1.89
29	12.0	4.3	2.05	1.98	6.0	0	0	-	3.4	3.4	3.15	1.98
30	7.5	3.8	2.05	4.0	1.07	0	0	-----	4.6	4.1	2.75	2.05
31	.61	3.55	-----	11.5	-----	0	0	-----	4.3	-----	2.75	-----
Total	143.21	67.74	65.30	62.47	94.01	8.72	1.22	59.97	100.31	106.35	91.00	67.60
Mean:	4.62	2.19	2.84	2.66	3.13	0.281	0.039	2.14	3.24	3.54	2.94	2.25
cfs	7.15	3.39	4.39	4.12	4.84	0.435	0.060	3.31	5.01	5.48	4.55	3.48
Ac-ft	439	208	262	255	269	27	3.7	184	308	326	279	207
Calendar year 1954: Max	12.2		Min	0		Mean(mgd)	2.58	Mean(cfs)	3.99	Ac-ft	2,890	
Fiscal year 1954-55: Max	12.2		Min	0		Mean(mgd)	2.49	Mean(cfs)	3.65	Ac-ft	2,790	

\* Discharge measurement made on this day.

## Hanalei tunnel outlet near Lihue

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

Records available.--July 1932 to June 1955 in reports of Geological Survey. October 1925 to June 1932 in files of Lihue Plantation Co.

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

Average discharge.--23 years (1932-55), 20.7 mgd (32.0 cfs).

Extremes.--1932-55: Maximum daily discharge, 64 mgd (99 cfs) Apr. 11, 25, 26, 1942; no flow Aug. 27, 1938, Apr. 4-9, 1945, June 23, 1948.

Remarks.--Records good except those for period of no gage-height record, which is fair. Tunnel diverts water from Kaapoko Stream and Hanalei River and empties into North Branch of North Fork Waialua River, from which it is later diverted and used for irrigation in vicinity of Lihue and Kapaa. Flow regulated by spillway and headgates.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	30	27.5	8.2	6.0	6.8	3.9	4.8	2.5	1.60	2.4	2.0	1.66
2	27.5	23.5	7.2	6.6	6.3	7.0	3.95	3.95	1.60	3.45	2.0	1.25
3	25	23.5	8.0	6.6	5.7	4.2	5.5	6.9	1.42	4.9	2.15	1.25
4	31.5	23	8.0	6.4	5.7	10.0	8.1	4.3	1.90	1.80	1.60	1.25
5	24	28	6.9	6.3	5.7	9.0	3.95	5.0	1.60	1.60	1.60	1.25
6	21	10.9	7.2	6.3	5.7	10.1	*2.8	14.3	1.42	1.42	1.60	1.25
7	19.2	8.3	6.9	6.3	5.7	10.0	2.6	12.5	1.42	1.25	1.60	1.42
8	20	7.7	8.2	7.0	5.7	8.8	2.8	3.95	*2.3	1.25	1.25	1.09
9	22	5.7	8.3	6.6	5.4	4.2	2.4	2.35	1.58	1.25	1.42	1.09
10	32	7.2	6.3	8.0	*5.4	4.2	2.4	2.2	2.75	1.25	1.60	1.09
11	33	9.3	6.0	8.9	5.2	3.6	a5.7	2.8	2.0	1.25	1.42	.51
12	33	8.0	*6.3	8.7	5.2	3.85	11.4	4.1	2.0	1.25	1.42	.28
13	38	7.2	7.2	7.2	5.2	3.0	4.7	2.4	1.80	1.25	.78	.28
14	28	5.4	6.0	6.6	5.2	5.7	5.7	2.2	1.42	1.80	.51	.28
15	25.5	5.1	6.3	6.3	6.9	6.4	4.2	2.0	3.0	2.2	.93	.28
16	25	8.6	6.3	6.0	6.0	5.2	3.7	1.60	1.68	2.95	.93	.39
17	23.5	9.6	6.9	6.3	5.4	3.45	4.2	2.4	1.42	3.7	1.09	.28
18	29.5	15.4	7.2	7.2	5.4	3.2	5.4	2.4	1.25	1.80	1.71	.39
19	23	11.2	7.2	6.0	5.4	2.8	3.3	2.2	1.25	1.60	1.80	.64
20	26	11.2	6.3	5.7	5.4	2.4	3.45	2.2	1.25	1.32	6.8	.93
21	22.5	16.5	6.3	6.3	5.2	2.2	9.4	1.80	1.25	1.42	2.95	.39
22	27.5	11.2	6.2	6.5	5.4	8.4	3.0	4.5	2.8	1.09	1.80	.39
23	22	8.9	6.6	6.0	5.4	4.2	2.6	7.2	2.15	.28	1.60	.93
24	21.5	9.9	6.3	5.7	5.6	3.0	2.2	4.6	2.0	.28	1.60	1.09
25	20.5	8.3	8.3	5.7	6.3	2.8	2.2	4.4	1.80	1.42	2.95	1.09
26	22	7.5	6.9	5.7	5.7	2.6	2.45	2.6	1.60	1.25	2.6	1.09
27	19.6	8.0	6.6	5.5	12.0	2.8	2.2	2.2	1.60	2.7	4.8	.93
28	24.5	9.3	6.3	5.4	19.5	4.3	2.0	2.0	1.60	2.85	2.2	1.09
29	33	7.7	6.0	5.7	12.6	4.3	2.0	-	1.80	6.0	.78	1.25
30	35.5	7.2	5.7	8.0	10.2	4.7	2.0	-----	1.97	2.8	1.80	.93
31	29.5	6.6	-----	11.9	-----	6.2	2.4	-----	1.80	-----	1.60	-----
Total	814.8	357.4	206.1	207.2	201.3	156.50	121.50	111.55	54.83	59.58	58.89	26.04
Mean:	26.3	11.5	6.87	6.68	6.71	5.05	3.92	3.98	1.77	1.99	1.90	0.868
cfs	40.7	17.8	10.6	10.3	10.4	7.81	6.07	6.16	2.74	3.08	2.94	1.34
Ac-ft	2,500	1,100	632	636	618	480	373	342	168	183	181	80
Calendar year 1954:	Max 38		Min 0.30		Mean(mgd) 12.9		Mean(cfs) 20.0		Ac-ft 14,410			
Fiscal year 1954-55:	Max 38		Min 0.28		Mean(mgd) 6.51		Mean(cfs) 10.1		Ac-ft 7,290			

\* Discharge measurement made on this day.

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

## Hanalei River at altitude 625 ft, near Hanalei

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

Drainage area.--7.4 sq mi.

Records available.--January 1914 to January 1952, July 1952 to June 1955.

Gage.--Water-stage recorder. Altitude of gage is 625 ft (from topographic map). Prior to July 20, 1921, at site 300 ft downstream at same datum.

Average discharge.--36 years (1918-51, 1952-55), 46.7 mgd (72.3 cfs).

Extremes.--Maximum discharge during year, 4,200 mgd (6,500 cfs) Feb. 6 (gage height, 9.50 ft, from reconstructed gage-height graph), from rating curve extended above 70 mgd as explained below; minimum, 15.7 mgd (24.3 cfs) July 9.

1914-55: Maximum discharge, at least 9,200 mgd (14,200 cfs) Jan. 3, 1952 (gage height, at least 13.0 ft, from floodmark), from rating curve extended above 70 mgd on basis of slope-area determination at gage height 10.12 ft; minimum, 5.8 mgd (9.0 cfs) Apr. 28, May 1-3, 1926.

Remarks.--Records good except those for periods of fragmentary gage-height record and those above 70 mgd, which are fair. Since 1925 Hanalei tunnel has diverted water from Hanalei River and its tributary Kaapoko Stream at points about 2 miles above station, for irrigation in vicinity of Lihue.

Revisions (fiscal years).--WSP 1289: 1948(M).

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Aug. 5, Nov. 29 to Feb. 6				Aug. 6 to Nov. 28, Feb. 7 to June 30			
0.3	15.7	1.4	86	0.5	18.7	1.5	92
.4	19.7	2.0	154	.8	23.5	2.0	150
.5	24	2.5	225		34.5	2.5	225
.6	29	3.0	325	1.0	48	3.5	440
.8	40	4.0	570				
1.1	60	4.5	730				

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	49	37.5	46	26	47	79	89	48	41	68	52	57
2	34.5	26.5	36	33.5	32.5	149	69	73	39.5	120	60	44
3	28.5	24.5	44	33	28.5	96	96	139	38.5	121	68	48
4	51	24.5	44	30.5	27	220	160	96	47	48	48	44
5	27	254	34	31.5	25.5	236	*79	98	41	41	44	41
6	19.7	72	40	27.5	24.5	264	56	f699	34.5	39	44	38.5
7	17.3	56	36.5	27.5	24	215	49	371	40	35	41	38.5
8	17.3	57	57	36	24.5	200	58	104	*66	34	39.5	35
9	17.5	41	63	30.5	*23	96	46	64	51	33.5	39.5	34.5
10	56	48	33.5	55	23	96	43	56	74	32.5	41	37
11	104	64	*29.5	88	22.5	80	168	f76	60	31.5	39	34.5
12	99	50	29	67	21.5	81	396	f137	60	31.5	38	38
13	229	43	61	41	21.5	64	96	64	56	31.5	37	44
14	46	39.5	39.5	38.5	24	109	73	60	41	42	39	49
15	*33.5	50	36	30.5	41	135	86	56	121	59	34.5	36.5
16	33	36.5	38.5	28	29.5	113	68	44	56	81	33.5	54
17	29	32.5	47	30.5	22.5	64	81	63	48	124	32	*39
18	60	97	50	44	21.5	56	110	84	41	61	59	57
19	27	60	48	27.5	21	49	60	55	38	*49	57	75
20	34	69	34.5	26	20.5	46	62	54	36	40	228	68
21	24	164	32	31.5	20	46	247	41	34.5	44	84	41
22	44	85	29.5	30.5	19.6	198	64	118	76	44	48	37
23	24.5	56	33.5	27.5	20	90	52	186	59	53	48	54
24	23.5	85	29	25.5	21	56	46	161	57	75	53	53
25	20.5	48	59	26	24	49	43	115	59	67	98	58
26	26	40	34.5	23.5	20	46	53	64	35	55	89	39
27	20	44	32	23	151	50	43	56	34	133	163	34
28	33.5	64	29	23	379	87	38	48	38	93	f191	39.5
29	87	41	26.5	22.5	261	97	37	-	34.5	154	92	46
30	165	34.5	25.5	63	196	80	38.5	-----	48	81	66	37
31	52	32	-----	143	-----	132	65	-----	53	-----	60	-----
Total	1,532.3	1,876.0	1,181.5	1,189.0	1,636.6	3,379	2,671.5	3,210	1,537.5	1,921.5	2,066.0	1,331.0
Mean:												
mgd	49.4	60.5	39.4	38.4	54.6	109	86.2	115	49.6	64.0	66.6	44.4
cfs	76.4	93.6	61.0	59.4	84.5	169	133	178	76.7	99.0	103	68.7
Ac-ft	4,700	5,760	3,630	3,650	5,020	10,370	8,200	9,850	4,720	5,900	6,340	4,080
Calendar year 1955: Max	379											
Min	8.4											
Mean(mgd)	48.1											
Mean(cfs)	74.4											
Ac-ft	53,870											
Fiscal year 1954-55: Max	699											
Min	17.3											
Mean(mgd)	64.5											
Mean(cfs)	99.8											
Ac-ft	72,220											

Peak discharge (base, 2,000 mgd).--Aug. 5 (2 p.m.) 2,540 mgd (3,930 cfs), 7.83 ft; Nov. 28 (7:30 a.m.) 3,069 mgd (4,730 cfs), 8.44 ft; Feb. 6 (9:30 p.m.) 4,200 mgd (6,500 cfs), 9.50 ft.

\* Discharge measurement made on this day.

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



## Kalalau Stream near Hanalei

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

Drainage area.--1.6 sq mi.

Records available.--November 1931 to August 1955 (discontinued).

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

Average discharge.--23 years (1932-55), 4.62 mgd (7.15 cfs).

Extremes.--1954-55: Maximum discharge during year, 535 mgd (828 cfs) Feb. 6 (gage height, 4.30 ft), from rating curve extended above 18 mgd; minimum, 3.05 mgd (4.72 cfs) Nov. 26, 1955: Maximum discharge during period July to August, 7.5 mgd (11.6 cfs) July 15 (gage height, 1.28 ft); minimum daily, 4.2 mgd (6.5 cfs) Aug. 10-12.

1931-55: Maximum discharge, 665 mgd (1,030 cfs) Aug. 15, 1950 (gage height, 4.55 ft), from rating curve extended above 18 mgd; minimum, 1.73 mgd (2.68 cfs) June 2, 1945.

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

Rating table, July 1, 1954, to Aug. 12, 1955 (gage height, in feet, and discharge, in million gallons a day)

1.0	2.9	2.0	37
1.2	5.9	2.3	61
1.4	10.4	2.6	93
1.7	21		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.1	3.8	3.55	3.55	3.7	5.4	4.2	5.8	6.6	6.3	5.7	5.4
2	5.7	3.7	3.55	3.55	3.55	5.4	4.0	5.8	6.6	6.1	6.1	5.2
3	7.1	3.7	3.7	3.55	3.4	5.2	3.9	5.8	6.5	5.9	6.5	5.2
4	7.5	3.7	3.7	3.55	3.4	6.7	3.8	5.8	6.5	5.9	5.9	5.2
5	5.7	3.8	3.7	3.55	3.3	4.4	3.8	6.0	*6.5	5.9	5.7	5.2
6	4.9	3.8	3.7	3.55	3.3	4.0	3.8	8.0	6.5	5.9	5.7	5.2
7	4.4	3.8	3.7	3.55	3.3	15	3.7	38	6.3	5.9	5.7	5.2
8	3.95	3.8	3.8	3.7	3.3	15	3.7	22	6.5	5.7	5.6	5.2
9	3.8	3.8	3.7	3.55	3.3	10	3.7	8.0	5.9	5.6	5.6	5.2
10	4.9	3.8	3.7	3.55	3.3	7.0	3.6	7.5	5.9	5.6	5.6	5.2
11	12.5	3.8	3.55	3.8	3.3	6.6	34	7.2	8.0	5.6	5.6	5.2
12	9.4	3.7	3.55	3.7	3.3	6.0	70	16	11.0	5.6	5.7	5.0
13	10.0	3.7	3.55	3.55	3.3	5.6	17	30	8.2	5.6	5.7	5.0
14	7.1	3.7	3.55	3.55	3.3	5.3	10	10	7.3	5.7	5.7	5.0
15	5.7	*3.7	3.55	3.4	3.3	5.2	8.0	9.0	4.4	6.7	5.6	5.0
16	4.9	3.55	3.55	3.4	3.3	12	7.0	8.0	15.0	6.7	5.6	5.0
17	5.0	3.55	3.7	3.4	3.15	8.0	6.5	8.0	11.7	8.2	5.6	5.0
18	6.3	3.7	3.55	3.55	3.15	6.0	6.2	8.0	9.4	6.7	5.8	5.4
19	5.2	3.7	3.55	3.55	3.15	5.0	6.0	8.0	7.7	6.5	5.6	5.4
20	4.7	3.7	3.55	3.4	3.15	4.5	6.6	8.0	7.1	6.1	5.6	5.6
21	4.4	3.7	3.55	3.4	3.15	4.4	40	8.0	6.5	6.1	5.6	5.2
22	4.5	3.7	3.55	3.4	3.15	5.0	15	8.0	7.7	6.3	5.6	5.0
23	4.2	3.7	*3.55	3.4	3.15	4.2	10	11	25	6.3	5.4	5.0
24	4.1	3.7	3.55	3.4	3.15	4.0	8.0	8.0	17.2	6.5	5.4	5.0
25	3.95	3.7	3.55	3.4	3.15	3.9	7.0	11	10.9	6.5	5.4	5.0
26	3.8	3.7	3.55	3.4	3.15	3.8	6.5	8.0	8.6	6.3	5.4	5.0
27	3.8	3.7	3.55	3.3	6.0	3.7	6.4	6.6	7.3	6.1	5.4	5.0
28	3.8	3.7	3.55	3.3	4.1	5.0	6.2	6.6	6.9	5.9	5.6	5.0
29	3.8	3.55	3.55	3.55	9.9	6.0	6.0	-	6.7	5.9	5.4	5.0
30	4.3	3.55	3.55	4.1	6.3	5.0	6.0	-	6.3	5.7	5.4	5.0
31	3.95	3.55	4.1	4.1	-----	4.5	6.0	-----	6.3	-----	5.4	-----
Total	167.45	114.75	107.95	109.70	148.35	267.4	326.6	364.1	302.6	183.8	174.4	154.0
Mean:												
mgd	5.40	3.70	3.60	3.54	4.94	8.63	10.5	13.0	9.76	6.13	5.63	5.13
cfs	8.36	5.72	5.57	5.48	7.64	13.4	16.2	20.1	15.1	9.48	8.71	7.94
Ac-ft	514	352	331	337	455	821	1,000	1,120	929	564	535	473

Calendar year 1954: Max 50 Min 2.2 Mean(mgd) 5.02 Mean(cfs) 7.77 Ac-ft 5,620  
Fiscal year 1954-55: Max 80 Min 3.15 Mean(mgd) 6.63 Mean(cfs) 10.3 Ac-ft 7,430

Peak discharge (base, 70 mgd).--Nov. 28 (10 a.m.) 100 mgd (155 cfs), 2.63 ft; Dec. 5 (9:30 p.m.) 153 mgd (237 cfs), 2.99 ft; Jan. 12 (time and discharge unknown); Jan. 21 (time and discharge unknown); Feb. 6 (time unknown) 535 mgd (828 cfs), 4.30 ft; Mar. 15 (10 a.m.) 128 mgd (198 cfs), 2.87 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 7 to Mar. 5; discharge estimated on basis of records for nearby streams.

Discharge, in million gallons a day, 1955

Day	July	Aug.	Day	July	Aug.	Day	July	Aug.	Day	July	Aug.
1	5.0	a4.5	9	4.9	a4.4	17	5.4	-	25	a4.9	-
2	5.0	a4.5	10	4.9	a4.2	18	5.4	-	26	a4.7	-
3	5.0	a4.5	11	4.9	a4.2	19	5.2	-	27	a4.7	-
4	4.9	a4.5	12	4.9	*a4.2	20	5.0	-	28	a4.7	-
5	5.0	a4.4	13	5.0	-	21	5.0	-	29	a4.7	-
6	5.0	a4.4	14	5.2	-	22	4.9	-	30	a4.7	-
7	5.0	a4.4	15	6.3	-	23	4.9	-	31	a4.5	-
8	4.9	a4.4	16	5.4	-	24	4.9	-			

Total.....	154.9	-
Mean, million gallons a day.....	5.00	-
Mean, cubic feet per second.....	7.74	-
Runoff in acre-feet.....	475	-

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and pattern of normal recession.

## Discharge measurements at points other than gaging stations

Measurements of streamflow on the island of Kauai made at points other than regular gaging 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. Measurements believed to have been made under base-flow conditions are identified by an asterisk (\*) to the left of the discharge figure. 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 stream. The column headed, "Measured previously" shows the fiscal years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at points other than gaging stations on the island of Kauai during fiscal year July 1954 to June 1955

Stream	Tributary to	Location	Measured previously (fiscal years)	Date	Discharge	
					Million gallons a day	Cubic feet per second
Koale Stream	Waimea River	Lat 22°04'45", long 159°38'45", at altitude 890 ft, at site of former gaging station, 1/3 mile above confluence with Waimea River, near Waimea.	1916-18, 1920-21, 1954	Oct. 21	*10.3	*15.9
Waimea River	Pacific Ocean.	Lat 22°04'15", long 159°38'50", about 1,000 ft below confluence with Koale Stream, near Waimea.		Oct. 21	.653	1.01
Puulima ditch.	Taro patches.	Lat 21°58'30", long 159°38'55", at intake, 1,300 ft above station on Makaweli River, near Waimea.		Oct. 7	1.30	2.01
Wahiawa.....	Alexander Reservoir.	Lat 21°58'00", long 159°31'25", at McBryde Sugar Co. gaging station, 300 ft above Alexander Reservoir, near Elele.	1953-54	Aug. 29	8.53	13.2
Waiahi.....	South Fork Waillua River.	Lat 22°01'20", long 159°28'00", at upper powerhouse, near Lihue.		Sept. 13	51.7	80.0
Lihue upper ditch.	Canefields..	Lat 22°01'30", long 159°25'30", 1.5 miles below intake of Lihue Plantation Co. gaging station, 5 miles northwest of Lihue.	1954	Sept. 13	33.8	52.3
Kapaa River.	Pacific Ocean.	Lat 22°06'15", long 159°20'10", at Keahapana intake below Kealia Stream, near Kealia.	1912	Aug. 31 Jan. 27	*11.7 28.8	*18.1 44.6
Pohakuhonu Stream.	Kilauea River.	Lat 22°11'00", long 159°25'20", at old road crossing about 800 ft upstream from reservoir and 300 ft upstream from confluence with Halaulani Stream, near Kilauea.		Oct. 28	*1.53	*2.37
Hanalei ditch.	Kalihiwai Reservoir.	Lat 22°11'10", long 159°26'10", at Kalihiwai Reservoir, near Kilauea.		Oct. 28	7.11	11.0
Second Right Branch Kalalau.	Kalalau Stream.	Lat 22°10'00", long 159°38'30", at altitude 850 ft, below Twin Falls, several hundred feet upstream from confluence with main stream, near Hanalei.	1945-48	Aug. 15 Sept. 23 Mar. 6	*1.87 *1.71 2.97	*2.90 *2.65 4.59
Miloli.....	Pacific Ocean.	Lat 22°09'00", long 159°43'25", near Mana.	1946-48, 1951, 1954	Sept. 23	*1.64	*2.53

\* Base flow.

## Kaukonahua ditch near Wahiawa

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

Records available.--March 1947 to June 1955.

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

Average discharge.--8 years, 2.85 mgd (4.41 cfs).

Extremes.--1947-55: Maximum daily discharge, 10.1 mgd (15.6 cfs) Jan. 27, 1948; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.3	5.2	6.1	4.8	2.1	0.92	4.6	1.77	5.2	5.6	5.1	5.2
2	7.4	4.7	6.0	4.6	1.69	2.65	4.2	2.15	5.1	5.7	5.1	5.2
3	6.9	4.7	6.1	4.5	1.61	1.06	4.5	1.94	5.0	6.3	5.2	5.1
4	7.8	5.1	6.0	4.8	1.53	1.65	5.4	2.05	5.1	5.5	4.6	4.7
5	6.9	6.0	5.9	4.5	1.53	2.25	4.7	2.05	5.2	5.1	4.7	5.0
6	6.4	5.2	5.9	5.1	1.46	*2.45	4.3	.72	4.7	4.7	4.7	4.6
7	6.0	5.0	6.3	5.2	1.61	1.98	4.3	4.6	4.6	4.3	4.3	4.3
8	5.7	5.4	5.7	4.6	1.61	1.86	4.5	3.75	4.9	4.1	4.3	4.6
9	6.0	4.8	*5.7	5.0	1.77	1.25	4.1	5.5	4.6	3.85	4.7	4.2
10	5.6	4.8	5.6	5.0	1.61	1.12	4.1	5.4	5.4	3.6	4.5	4.8
11	6.8	6.6	5.5	3.5	1.46	.88	4.0	5.4	5.4	3.75	3.75	4.6
12	7.2	6.6	5.5	3.2	1.32	.83	3.85	6.0	6.5	3.5	3.6	4.8
13	6.3	6.5	6.0	2.9	1.25	.83	*4.9	5.4	5.5	3.3	3.75	4.8
14	5.4	6.6	5.7	3.0	1.46	3.05	4.5	5.2	4.8	3.1	3.3	4.8
15	5.2	6.8	5.5	2.8	2.45	1.33	4.5	5.2	5.2	4.7	3.2	5.0
16	6.0	6.8	5.4	2.6	2.6	3.15	4.3	5.4	5.2	4.7	4.0	5.6
17	5.8	6.6	5.5	2.4	2.05	1.18	4.2	5.2	4.7	6.0	3.75	4.7
18	6.6	7.4	6.1	2.4	1.69	.94	4.6	5.4	4.6	4.6	4.7	5.0
19	*5.2	6.9	6.0	2.3	1.61	.83	4.1	5.1	4.3	3.75	5.5	5.1
20	5.4	6.8	5.5	2.1	1.61	.78	4.0	5.0	4.2	3.2	6.4	4.3
21	5.1	7.2	5.4	2.3	1.46	.78	5.8	5.5	4.1	3.2	5.4	3.85
22	5.6	7.0	5.2	2.3	1.39	3.65	2.2	5.5	6.9	5.2	5.0	3.6
23	5.1	6.8	5.6	2.1	1.39	5.1	2.05	8.7	5.5	4.0	5.2	5.2
24	5.0	6.8	5.4	2.2	1.32	5.1	2.05	8.1	4.7	5.2	5.1	5.2
25	4.7	6.4	6.4	2.05	1.32	5.1	2.05	7.0	4.3	*3.45	6.1	5.0
26	5.0	6.5	5.7	1.77	1.89	4.8	1.94	5.9	4.0	5.4	5.9	4.6
27	4.5	6.6	5.4	*1.85	1.46	5.1	1.85	5.6	3.75	5.9	6.1	4.7
28	5.6	6.9	5.2	1.61	6.0	5.5	1.85	5.4	3.6	5.2	5.9	4.2
29	6.0	6.8	5.2	1.53	4.5	5.7	1.77	-	3.5	5.9	5.2	5.1
30	5.6	6.4	5.0	1.53	1.30	4.6	1.85	-----	3.5	5.9	5.4	4.6
31	5.2	6.3	-----	2.05	-----	4.7	1.85	-----	4.3	-----	5.2	-----
Total	182.3	192.2	170.5	96.59	56.05	81.12	112.91	134.23	148.35	136.70	149.65	142.35
Mean	5.88	6.20	5.68	3.12	1.87	2.62	3.64	4.79	4.56	4.83	4.83	4.74
mgd	9.10	9.59	8.79	4.83	2.89	4.05	5.63	7.41	7.41	7.06	7.47	7.33
cfs	559	590	523	296	172	249	347	412	455	420	459	437

Calendar year 1954: Max 14.5 Min 0.46 Mean(mgd) 3.48 Mean(cfs) 5.38 Ac-ft 3,900  
 Fiscal year 1954-55: Max 8.7 Min 0.72 Mean(mgd) 4.39 Mean(cfs) 6.79 Ac-ft 4,920

\* Discharge measurement made on this day.

## North Fork Kaukonahua Stream near Wahiawa

Location.--Lat 21°30'55", long 157°59'20", on left bank 3 miles northeast of Wahiawa and 8.6 miles north of Pearl City.

Drainage area.--4.9 sq mi.

Records available.--September 1946 to June 1955.

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

Average discharge.--8 years (1947-55), 21.9 mgd (33.9 cfs).

Extremes.--Maximum discharge during year, 2,400 mgd (3,710 cfs) Nov. 28 (gage height, 15.55 ft), from rating curve extended above 180 mgd on basis of slope-area determinations at gage heights 8.39 and 15.55 ft; minimum, 1.32 mgd (2.04 cfs) Nov. 25, 26, 1946-55; Maximum discharge, that of Nov. 28, 1954; no flow at times in 1953.

Remarks.--Records good except those for period of doubtful gage height record, which are fair. Poamoho tunnel diverts floodwater from Poamoho Stream into North Fork Kaukonahua Stream about 1 mile above station. Kaukonahua ditch diverts water 2.6 miles above station for domestic use in Wahiawa (see preceding page).

Revisions (fiscal years).--WSP 1289: 1947-52.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.5	1.45	1.6	37.5
.6	2.35	2.0	74
.8	5.0	3.0	218
1.0	9.1	5.0	558
1.3	20		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	25.5	34	11.0	2.25	11.8	23	25	15.8	12.5	25	8.5	7.8
2	55	13.9	8.2	1.99	3.15	124	18.8	39	10.9	33	6.4	6.5
3	41	15.0	12.1	1.72	2.6	22.5	23.5	40	9.4	102	11.2	7.0
4	38	19.2	15.6	3.55	2.25	67	97	42	10.6	18.8	4.4	3.95
5	28	65	7.5	2.4	2.1	79	25	103	14.8	8.6	5.6	4.7
6	17.4	49	8.2	6.6	2.1	98	15.0	41	7.5	6.8	5.2	3.15
7	12.1	29	21.5	11.6	2.6	63	14.6	352	*6.6	5.4	3.8	2.6
8	10.5	41	9.3	3.7	2.9	46	21.5	63	9.4	4.6	3.5	3.6
9	18.7	22.5	*17.1	4.8	4.1	30	10.6	23.5	9.5	4.2	5.1	3.15
10	39	26.5	5.4	50	3.8	27	8.6	16.6	21.5	3.8	4.8	6.9
11	78	29.5	4.2	43	2.6	18.7	7.7	16.7	16.0	3.8	2.7	4.7
12	86	30	3.65	16.7	1.90	20.5	6.8	51	39	3.95	2.45	8.2
13	59	16.7	19.3	10.8	1.63	16.2	52	21	19.9	3.5	2.6	6.5
14	22.5	20.5	6.9	16.0	2.75	109	17.9	12.8	8.8	3.25	2.15	6.7
15	23.5	33	6.2	8.9	32	38.5	15.8	14.3	15.8	16.3	1.90	8.9
16	44	34	3.95	5.9	36	133	17.2	18.0	23	8.9	1.90	39.5
17	43	23	5.1	4.8	7.7	28.5	11.6	14.6	7.3	34.5	3.5	6.0
18	65	91	50	4.6	3.5	21	20	20.5	5.7	6.4	20	6.6
19	*24	32.5	30	3.95	2.7	17.4	10.0	10.9	4.8	4.2	17.4	11.2
20	34	28.5	6.8	3.95	2.6	15.0	7.3	8.2	4.6	3.15	73	3.8
21	23	116	5.0	5.9	2.15	20.5	189	7.3	4.4	2.9	13.2	2.7
22	33	86	4.6	17.0	1.72	81	21	46	112	13.6	5.4	3.6
23	21	41	10.6	9.8	1.72	16.0	13.9	238	20.5	4.0	9.8	50
24	16.6	33	4.2	10.3	1.72	17.9	11.8	136	8.2	3.05	6.5	18.2
25	14.6	17.8	58	8.9	1.45	11.8	10.3	59	6.1	*2.45	66	9.6
26	24.5	29	17.4	4.1	6.9	8.2	9.7	26.5	5.0	24.5	41	4.7
27	11.8	34	5.7	*3.95	3.75	12.6	8.4	18.7	4.4	94	52	5.9
28	88	46	4.1	3.25	*44.5	19.7	7.5	15.3	3.95	11.2	36.5	4.5
29	92	27	3.5	2.9	d290	40	6.8	-	3.8	51	11.2	22.5
30	35	13.5	2.9	2.9	d44	43	7.8	-----	3.8	45	11.4	7.2
31	18.7	11.5	-----	14.8	-----	52	29.5	-----	5.0	-----	8.6	-----
Total	1,202.4	1,108.6	368.00	291.01	929.19	1,320.0	741.6	1,470.7	434.75	551.85	447.70	280.35
Mean:												
mgd	38.8	35.8	12.3	9.39	31.0	42.6	23.9	52.5	14.0	18.4	14.4	9.34
cfs	60.0	55.4	19.0	14.5	48.0	65.9	37.0	81.2	21.7	28.5	22.3	14.5
Ac-ft	3,690	3,400	1,130	893	2,850	4,050	2,280	4,510	1,330	1,690	1,370	860

Calendar year 1954: Max 445 Min 0.01 Mean(mgd) 19.7 Mean(cfs) 30.5 Ac-ft 22,050  
 Fiscal year 1954-55: Max 445 Min 1.45 Mean(mgd) 25.1 Mean(cfs) 38.6 Ac-ft 28,050

Peak discharge (base, 1,100 mgd).--Nov. 28 (7 p.m.) 2,400 mgd (3,710 cfs), 15.55 ft.

\* Discharge measurement made on this day.

d Doubtful gage-height record; discharge computed from reconstructed gage-height graph based on recorded range in stage and records for nearby streams.

## South Fork Kaukonahua Stream near Wahiawa

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

Drainage area.--1.9 sq mi.

Records available.--May 1944 to June 1955.

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

Average discharge.--11 years, 7.03 mgd (10.9 cfs).

Extremes.--Maximum discharge during year, 1,560 mgd (2,410 cfs) Nov. 28 (gage height, 8.55 ft), from rating curve extended above 14 mgd by test on model of station site; minimum, 0.41 mgd (0.64 cfs) Nov. 25.

1944-55: Maximum discharge, that of Nov. 28, 1954; minimum, 0.01 mgd (0.02 cfs) Feb. 21, 1945, Nov. 14, 15, 1953.

Remarks.--Records good.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.30	1.1	5.5
.6	.47	1.2	9.8
.7	.68	1.4	19.2
.8	.95	1.7	38
.9	1.33	2.0	64
1.0	2.3	3.0	191

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32	8.9	9.4	3.0	2.65	4.6	5.5	3.3	*5.9	*4.8	2.5	3.95
2	45	*8.1	7.6	2.75	1.33	49	4.7	13.1	5.1	4.9	*7.2	3.6
3	25.5	11.2	7.6	2.5	1.09	10.7	5.5	5.1	4.7	10.9	7.7	2.75
4	74	14.9	7.2	4.0	.95	29	23.5	3.0	5.5	2.75	2.5	1.73
5	19.2	19.7	7.6	4.3	.86	32	6.4	39	5.5	3.0	2.5	1.84
6	12.5	16.0	9.8	4.3	.80	52	4.7	10.3	3.6	2.05	5.1	1.50
7	9.8	18.0	15.6	8.0	.83	34.5	12.7	129	3.6	1.45	3.0	1.50
8	12.4	26.5	7.6	3.7	1.13	24.5	6.4	18.8	3.95	1.25	2.05	1.84
9	12.2	15.4	8.8	5.9	1.50	13.0	3.95	7.6	3.3	1.13	6.3	1.33
10	45	12.5	5.9	.40	.89	14.0	3.3	5.5	17.8	.98	3.95	1.50
11	28.5	9.9	5.1	30.5	.68	8.1	3.3	9.1	8.1	1.01	2.75	1.33
12	35	9.9	9.2	8.7	.61	9.4	2.75	32	13.1	1.05	2.3	1.09
13	18.7	8.1	7.2	21.5	.57	14.2	10.2	15.6	11.7	.92	2.5	1.25
14	13.4	9.4	4.7	15.9	.85	45	6.4	8.1	4.3	.92	1.56	1.01
15	13.8	24.5	5.5	8.1	12.1	20.5	5.1	8.9	17.4	16.8	1.33	.92
16	15.0	12.0	9.5	4.3	11.4	54	4.7	10.2	10.3	5.2	1.33	1.62
17	22	14.5	12.2	3.6	1.46	11.2	3.6	8.5	3.6	11.1	1.37	.98
18	37	67	36	3.95	.95	8.5	*6.3	14.3	3.0	4.7	9.8	8.9
19	14.3	24	22.5	3.0	.73	7.2	3.3	9.4	2.5	2.3	2.95	8.2
20	14.8	21	6.4	4.2	.70	5.9	2.5	5.9	2.3	1.45	10.7	1.56
21	10.2	23	10.7	6.3	.59	9.8	67	4.7	2.05	3.75	3.0	1.25
22	27.5	22.5	5.5	4.3	.53	36.5	5.5	30.5	37	10.1	3.0	1.13
23	14.8	30.5	5.5	2.75	*.49	8.1	3.6	97	7.5	3.3	12.0	8.0
24	12.0	23.5	4.7	3.0	.49	7.2	3.0	53	3.3	1.84	5.1	4.1
25	11.6	12.0	28	2.3	.43	5.1	2.5	19.0	2.5	1.84	21	3.0
26	14.9	24.5	8.6	1.73	1.72	4.3	2.3	10.2	2.05	33	8.5	2.3
27	8.9	22	4.3	1.63	.81	20	2.05	8.5	1.73	11.2	16.1	4.0
28	50	32	4.3	1.45	169	11.2	1.73	7.2	1.73	5.8	7.7	*1.73
29	26	14.9	4.3	1.33	.60	11.4	1.63	-	1.63	5.1	3.6	8.1
30	15.3	11.2	3.3	1.29	10.3	8.1	2.8	-----	1.56	6.8	3.3	3.3
31	10.2	9.8	-----	7.1	-----	8.1	6.6	-----	4.7	-----	2.5	-----
Total	702.5	577.4	284.6	215.38	286.44	577.1	223.51	586.8	201.00	161.39	165.19	83.31
Mean:	22.7	18.6	9.49	6.95	9.55	18.6	7.21	21.0	6.48	5.38	5.33	2.78
mgd	35.1	28.8	14.7	10.8	14.8	28.8	11.2	32.5	10.0	8.32	8.25	4.30
cfs	2,160	1,770	873	661	879	1,770	686	1,800	617	495	507	256
Ac-ft												

Calendar year 1954: Max 169 Min 0.06 Mean(mgd) 9.46 Mean(cfs) 14.6 Ac-ft 10,600  
Fiscal year 1954-55: Max 169 Min 0.43 Mean(mgd) 11.1 Mean(cfs) 17.2 Ac-ft 12,470

Peak discharge (base, 400 mgd).--Nov. 28 (6 p.m.) 1,560 mgd (2,410 cfs), 8.55 ft; Feb. 7 (1:30 p.m.) 432 mgd (668 cfs), 4.37 ft.

\* Discharge measurement made on this day.

## South Fork Kaukonahua Stream above Wahiawa Reservoir, near Wahiawa

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

Drainage area.--5.2 sq mi.

Records available.--October 1946 to June 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 844.51 ft above mean sea level, datum of 1929.

Average discharge.--8 years (1947-55), 16.0 mgd (24.8 cfs).

Extremes.--Maximum discharge during year, 2,840 mgd (4,390 cfs) Nov. 28 (gage height, 18.16 ft), from rating curve extended above 80 mgd; minimum, 1.30 mgd (2.01 cfs) Nov. 25, 26.

1946-55: Maximum discharge, that of Nov. 28, 1954; minimum, 0.27 mgd (0.42 cfs) Apr. 11-15, 26, 28, 1954.

Remarks.--Records good except those for periods of indefinite stage-discharge relation, which are fair.

Revisions (fiscal years).--WSP 1249: 1951(M), drainage area.

Rating table, fiscal year 1954-55, except periods of indefinite stage-discharge relation (gage height, in feet, and discharge, in million gallons a day)

0.4	0.90	1.3	20.5
.5	1.58	1.5	30.5
.6	2.55	1.7	43
.7	3.7	2.0	70
.8	5.3	3.0	193
.9	7.2	4.0	322
1.1	12.6	6.0	620

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	43	20	18.9	9.5	9.6	19.7	20	11.9	18.9	20.5	9.2	8.9
2	116	18.9	16.8	5.0	5.9	e114	18.4	22.5	16.4	16.4	9.5	8.8
3	61	20	16.8	4.7	5.1	27	17.2	11.5	14.9	20	23	8.8
4	138	23.5	16.0	5.6	5.0	42	37	10.6	15.6	10.9	9.5	7.0
5	46	48	16.0	9.3	4.8	91	18.0	28.5	18.0	9.8	8.8	7.0
6	30.5	26.5	18.9	6.2	5.0	111	15.3	37.5	12.6	8.8	*10.6	6.6
7	25.5	24	20	9.4	5.0	73	21.5	e284	11.8	7.7	10.4	6.4
8	26.5	46	10.8	6.3	5.1	72	16.0	47	*11.5	7.0	8.5	6.6
9	35	28.5	10.4	10.0	6.1	39	14.1	18.4	11.5	7.0	11.7	6.4
10	102	21	7.2	49	5.0	35	13.0	14.5	19.2	6.6	12.6	6.2
11	89	18.0	6.6	57	4.7	26.5	9.9	13.4	30	6.4	10.4	6.4
12	99	16.4	7.4	20	4.3	28	*5.8	49	52	8.4	11.5	6.1
13	46	14.1	11.6	26	4.3	27	13.5	32.5	27.5	6.4	11.2	6.2
14	32	16.8	6.6	22.5	4.7	107	12.0	16.0	14.9	6.4	9.8	6.1
15	30	32.5	7.0	15.3	11.0	34.5	7.8	17.2	17.6	24.5	8.2	5.7
16	35	19.8	10.5	10.6	25.5	141	8.9	19.1	26.5	18.1	7.5	6.4
17	43	18.0	13.7	9.8	6.9	33	6.6	14.9	11.8	29.5	7.2	6.1
18	98	105	54	9.5	5.1	26.5	8.8	26	10.4	18.4	13.9	11.0
19	32	38	32	8.5	4.7	23	6.4	20	9.8	12.6	9.3	19.8
20	30.5	32	10.6	8.0	5.0	20.5	5.1	16.0	9.5	9.0	14.1	8.0
21	24.5	37	11.9	12.7	4.7	21	e142	12.6	9.0	9.3	8.8	6.8
22	48	32.5	9.7	9.8	3.0	66	16.3	33.5	106	20.5	8.6	6.4
23	28.5	30	10.9	9.3	1.44	22.5	9.8	e250	34.5	14.1	18.8	11.1
24	26.5	46	14.1	*8.5	1.37	21	8.0	*e150	15.3	10.6	10.6	14.7
25	25.5	24	45	7.8	1.30	17.6	7.6	68	11.8	9.0	26	8.2
26	28.5	29	18.9	6.8	2.5	16.4	8.8	34	10.4	31.5	20	7.7
27	20.5	42	14.5	6.2	2.65	30.5	8.2	25.5	9.5	25	24.5	8.0
28	59	46	13.4	6.1	547	26	8.0	21	9.0	13.4	16.1	*7.9
29	44	33.5	13.0	5.7	282	34.5	7.7	-	8.5	10.6	10.1	10.6
30	29	22.5	12.3	5.9	33.5	24.5	8.0	-----	8.2	11.4	8.9	9.6
31	22	20.5	-----	9.3	-----	26.5	12.6	-----	10.8	-----	8.2	-----
Total	1,514.0	950.0	475.5	390.3	1,012.26	1,394.2	512.3	1,304.1	593.4	407.8	377.4	245.5
Mean	48.8	30.6	15.8	12.6	33.7	45.0	16.5	46.6	19.1	13.6	12.2	8.18
cfs	75.5	47.3	24.4	19.5	52.1	69.6	25.5	72.1	29.6	21.0	18.9	12.7
Ac-ft	4,650	2,920	1,460	1,200	3,110	4,280	1,570	4,000	1,820	1,250	1,160	753
Calendar year 1954: Max	547	Min	0.27	Mean(mgd)	19.4	Mean(cfs)	30.0	Ac-ft	21,780			
Fiscal year 1954-55: Max	547	Min	1.10	Mean(mgd)	25.1	Mean(cfs)	38.8	Ac-ft	28,170			

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge estimated on basis of records for South Fork Kaukonahua Stream near Wahiawa.

## Poamoho Stream near Wahiawa

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

Drainage area.--1.8 sq mi.

Records available.--January 1947 to June 1955.

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

Average discharge.--8 years, 3.29 mgd (5.09 cfs).

Extremes.--Maximum discharge during year, 860 mgd (1,330 cfs) Nov. 28 (gage height, 5.38 ft), from rating curve extended above 48 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Nov. 30, Dec. 1.  
1947-55: Maximum discharge, 916 mgd (1,420 cfs) Mar. 30, 1947 (gage height, 5.68 ft), from rating curve extended as explained above; no flow at times.

Remarks.--Records good. Poamoho tunnel diverts floodwater into North Fork Kaukonahua Stream about 175 ft above station.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0	0	0.7	3.6
.1	.03	.8	5.2
.2	.14	1.0	9.8
.3	.37	1.2	16.2
.4	.76	1.4	25.5
.5	1.44	1.7	48
.6	2.45	2.1	85

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.04	9.0	3.1	0.71	3.0	0.01	6.2	7.4	5.6	5.7	2.4	2.25
2	.05	4.2	2.45	.66	.94	2.9	4.8	11.6	4.8	24.5	2.25	1.91
3	.03	3.75	2.9	.62	.71	4.8	6.1	16.8	4.4	11.8	3.1	1.81
4	.06	4.4	4.1	.82	.66	20.5	23	16.3	4.8	4.0	1.62	1.53
5	.04	11.2	2.35	.71	.46	20.5	6.8	18.8	7.0	2.9	1.71	1.53
6	.03	7.2	2.55	1.47	.31	*28.5	4.3	8.2	3.6	2.45	1.62	1.28
7	1.07	5.6	2.9	1.80	.24	16.6	4.3	80	*3.35	2.1	1.35	1.13
8	1.91	6.8	2.85	1.00	.16	12.5	4.8	19.5	4.2	1.91	1.20	1.20
9	1.91	5.5	*2.55	2.05	.12	8.2	3.25	8.8	3.4	1.81	1.20	1.13
10	5.1	3.85	1.53	10.5	.14	8.5	2.9	6.8	7.3	1.62	1.20	1.22
11	11.2	6.2	1.28	9.8	.14	5.4	2.65	7.2	4.7	2.2	1.06	1.47
12	10.4	5.4	1.20	3.15	.11	7.2	*2.45	13.4	8.3	1.91	1.13	2.45
13	8.0	3.6	2.75	2.65	.08	5.2	8.0	8.0	4.4	1.53	1.00	2.15
14	3.75	3.0	1.71	5.5	.08	27.5	3.95	5.2	3.0	1.36	.94	2.15
15	3.95	4.6	1.62	2.1	.08	10.8	7.0	5.6	6.3	3.25	.82	1.83
16	6.8	4.3	1.20	1.20	.08	39	5.9	7.0	7.0	2.8	.82	3.85
17	4.7	4.0	1.44	.94	.07	5.0	5.0	5.6	2.9	5.1	1.13	2.15
18	10.2	9.0	3.45	.88	.06	6.4	9.1	8.0	2.45	3.1	5.0	1.53
19	*4.0	5.0	4.7	.82	.06	5.2	3.45	4.4	2.25	1.91	6.3	2.3
20	6.4	5.1	2.0	.71	.06	4.4	2.8	3.6	2.1	1.36	26	1.44
21	5.0	9.0	1.28	1.13	.05	6.2	36	3.35	2.0	1.36	4.3	1.06
22	3.25	7.7	1.13	3.2	.05	20.5	6.3	8.6	25.5	3.0	2.1	1.13
23	4.1	6.8	1.36	3.35	.07	5.6	4.0	50	7.2	1.71	3.2	2.8
24	3.25	6.2	1.06	*1.53	.11	4.4	3.35	38.5	3.45	1.28	1.71	2.85
25	2.9	4.0	6.6	1.36	.14	4.4	3.0	24.5	2.65	1.13	10.3	1.53
26	2.45	3.85	2.45	.88	.14	3.25	2.8	11.0	2.35	1.69	10.4	1.28
27	2.1	5.6	1.20	1.11	.14	4.4	2.55	7.7	2.1	6.7	11.7	*1.19
28	9.0	5.8	.94	.82	78	8.6	2.25	6.4	1.91	2.8	4.5	1.24
29	13.8	4.8	.94	.66	.93	17.2	2.1	-	1.81	8.2	3.75	1.76
30	10.1	3.25	.82	.66	.34	15.1	3.1	-----	1.81	5.9	3.55	1.56
31	4.5	2.8	-----	4.7	-----	13.7	17.0	-----	1.81	-----	2.8	-----
Total	140.09	171.50	66.41	65.29	87.53	346.46	199.20	412.25	144.44	117.08	120.17	52.71
Mean:												
mgd	4.52	5.53	2.21	2.11	2.92	11.2	6.43	14.7	4.66	3.90	3.88	1.76
cfs	6.99	8.56	3.42	3.26	4.52	17.3	9.95	22.7	7.21	6.03	6.00	2.72
Ac-ft	430	526	204	200	269	1,060	611	1,270	443	359	369	162

Calendar year 1954: Max 78 Min 0 Mean(mgd) 2.82 Mean(cfs) 4.05 Ac-ft 2,930  
Fiscal year 1954-55: Max 80 Min 0.01 Mean(mgd) 5.27 Mean(cfs) 8.15 Ac-ft 5,900

Peak discharge (base, 130 mgd).--Nov. 28 (6 p.m.) 860 mgd (1,330 cfs), 5.38 ft; Jan. 21 (9 a.m.) 132 mgd (204 cfs), 2.47 ft; Feb. 7 (2:30 p.m.) 390 mgd (603 cfs), 3.61 ft.  
\* Discharge measurement made on this day.

## Waialeale Stream at Waipahu

Location.--Lat 21°23'10", long 158°00'50", on left bank at Farrington Highway bridge, 0.3 mile south of Waipahu and 2.5 miles west of Pearl City.

Drainage area.--45.4 sq mi.

Records available.--June 1951 to March 1952 (fragmentary), April 1952 to June 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 2.67 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 7,220 mgd (11,200 cfs) Nov. 28 (gage height, 14.82 ft), from rating curve extended above 470 mgd on basis of slope-area determination at gage height 14.82 ft; minimum, 6.6 mgd (10.2 cfs) July 27.  
1951-55: Maximum discharge, that of Nov. 28, 1954; minimum recorded, 6.4 mgd (9.9 cfs) Sept. 28-30, 1953.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow is regulated by plantation operation.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.8	5.0	3.1	119
1.9	6.7	3.5	230
2.1	11.3	4.0	380
2.3	17.9	4.5	530
2.5	31	5.0	710
2.7	52	6.0	1,110

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.6	13.3	8.8	8.9	10.6	45	40	20.5	45	29.5	20.5	20.5
2	7.1	11.6	8.5	11.9	12.1	110	33	23	40	29.5	19.0	17.9
3	8.7	10.3	8.2	12.9	11.9	43	28	21.5	38	33.5	20.5	17.9
4	80	9.6	8.1	7.8	10.1	40	48	18.5	52	23.5	22	22.5
5	40	45	8.0	7.4	9.2	119	31	17.9	71	27	19.6	23.5
6	20	21	8.0	7.0	9.4	144	23.5	29.5	46	29	20	17.1
7	13	18	7.9	6.8	9.9	170	22	259	42	27	23	17.1
8	10	17	7.8	6.7	8.9	*155	24	*137	38	26.5	23.5	16.8
9	8.0	15	7.8	6.7	8.2	85	22	41	36.5	24	24	15.6
10	60	13	7.7	70	9.8	61	20.5	31	45	25	22	15.2
11	62	14	7.7	55	10.5	51	22	28	62	26	20	19.0
12	30	11	7.6	30	9.4	37.5	22.5	66	42	23.5	20	17.9
13	19	9.6	*7.6	15	9.4	33	22	52	36.5	22.5	20	15.6
14	14	9.0	7.6	30	9.4	82	21.5	35.5	38	22	21.5	16.0
15	11	9.0	7.6	18	9.4	*64	20.5	27	35.5	24	20.5	15.2
16	10	9.5	7.6	14	9.1	190	21.5	22	68	28	21.5	14.9
17	11	9.0	7.4	10	10.4	80	20	22.5	37.5	26.5	21.5	14.9
18	30	14	10.8	9.0	9.9	48	20	26.5	33.5	26	20.5	19.6
19	20	12	10.6	8.4	8.7	35.5	19.2	54	32	26.5	17.9	22.5
20	17	11	7.7	8.2	9.4	31	16.5	42	29.5	23	16.4	16.0
21	11	21	7.4	19	9.6	29	250	25	30	22	22	15.2
22	9.0	17	7.4	15	10.3	71	84	123	341	22.5	22.5	14.9
23	8.0	20	7.6	12	11.5	39.5	42	724	174	29.5	17.5	14.3
24	7.4	21	7.8	11	11.2	27	33	740	78	26	16.8	14.1
25	7.0	12	13.0	11	10.8	26	29	380	56	21.5	18.2	20
26	6.8	9.5	12.2	11	9.4	23	25	150	41	20	24	21.5
27	6.6	18	7.8	11	8.7	24.5	22	75	37.5	22	23	17.5
28	100	14	8.4	11	*1040	53	19.0	52	35.5	20.5	29	18.5
29	35	11	9.5	10.6	*500	52	19.6	-	29.5	19.6	23.5	17.1
30	14.1	10	9.1	12.0	80	60	21.5	-----	31	23.5	17.9	16.0
31	12.7	9.0	-----	13.2	-----	56	21.5	-----	31	-----	19.0	-----
Total	696.0	444.4	253.2	480.5	1,887.0	2,085.0	1,062.3	3,243.4	1,752.5	755.6	647.3	524.8
Mean:	22.5	14.3	8.44	15.5	62.9	67.3	34.3	116	56.5	25.2	20.9	17.5
mgd	34.8	22.1	13.1	24.0	97.3	104	53.1	179	87.4	39.0	32.3	27.1
cfs	2,140	1,360	777	1,470	5,790	6,400	3,260	9,950	5,380	2,320	1,990	1,610
Ac-ft												

Calendar year 1954: Max 1,040 Min 6.6 Mean(mgd) 22.1 Mean(cfs) 34.2 Ac-ft 24,760  
Fiscal year 1954-55: Max 1,040 Min 6.6 Mean(mgd) 37.9 Mean(cfs) 56.6 Ac-ft 42,450

Peak discharge (base, 700 mgd).--Nov. 28 (10 p.m.) 7,220 mgd (11,200 cfs), 14.82 ft; Jan. 21 (11:30 a.m.) 790 mgd (1,220 cfs), 5.15 ft; Feb. 7 (5 p.m.) 790 mgd (1,220 cfs), 5.16 ft; Feb. 24 (8 a.m.) 1,720 mgd (2,680 cfs), 7.28 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record July 4-29, Aug. 5 to Sept. 13, Oct. 5-28, Nov. 29 to Dec. 2, Dec. 7-9, 16, 17, Feb. 25 to Mar. 3; discharge estimated on basis of records for nearby streams.



## Pearl Harbor Springs at Waiawa, near Pearl City

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

Records available.--March 1931 to June 1934, July 1937 to June 1955.

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

Average discharge.--21 years (1931-34, 1937-55), 12.1 mgd (18.7 cfs), unadjusted for pumpage.

Extremes.--1931-34, 1937-55: Maximum daily discharge, 18.7 mgd (28.9 cfs) Feb. 27, 1949; minimum daily, 6.0 mgd (9.3 cfs) for several days in 1941 and 1947.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.9	11.6	9.1	7.6	9.1	13.9	14.8	14.8	15.6	16.4	16.0	16.0
2	8.5	8.5	9.8	8.5	10.9	13.9	14.8	14.8	15.6	16.4	16.0	16.0
3	11.3	8.2	8.8	10.9	9.1	13.9	14.8	14.8	15.6	16.4	*16.0	16.0
4	11.6	8.5	9.8	7.9	9.5	13.5	*14.8	14.3	15.6	15.6	16.0	16.0
5	11.6	8.2	12.0	7.6	8.8	13.1	14.8	14.8	15.6	14.8	16.0	16.0
6	9.1	8.5	12.0	7.9	12.7	13.5	14.8	14.8	15.6	16.4	16.0	16.0
7	8.8	11.3	8.8	7.6	12.7	13.5	14.8	14.8	15.6	16.4	16.0	16.0
8	9.8	11.6	8.5	8.2	9.5	13.5	14.8	14.8	15.6	16.4	16.0	15.6
9	8.5	9.8	8.5	10.9	8.8	13.5	14.8	14.8	16.0	16.4	16.0	15.6
10	11.6	9.1	*7.6	10.9	8.8	13.5	14.8	14.8	16.0	16.8	16.0	13.9
11	11.6	9.1	7.6	10.9	8.5	13.5	14.8	14.3	16.0	16.4	13.9	13.5
12	10.2	9.1	10.9	10.9	8.5	13.9	14.8	14.8	16.0	16.4	13.9	13.5
13	9.8	8.8	7.9	8.2	11.3	13.9	14.8	14.8	16.0	16.0	14.8	13.5
14	10.2	11.6	7.6	7.9	11.6	13.9	14.3	14.8	16.0	16.0	15.6	13.9
15	10.2	12.0	7.6	8.2	8.2	13.9	14.3	14.8	16.0	16.0	16.0	13.5
16	9.8	8.5	7.6	10.9	7.9	13.9	14.3	14.8	16.0	16.0	14.3	13.1
17	11.6	8.5	9.1	10.9	8.2	13.9	14.8	14.3	16.0	16.0	16.0	12.7
18	11.6	8.5	10.9	*7.9	8.5	13.9	14.8	14.8	16.0	16.4	14.3	13.1
19	10.2	9.8	10.9	7.9	8.5	13.9	14.3	14.8	16.0	16.4	15.6	13.1
20	9.1	9.8	9.1	7.9	12.0	14.3	14.3	14.8	16.0	16.4	16.0	13.9
21	8.8	11.6	8.2	8.2	12.3	14.3	14.3	14.8	16.0	16.0	16.0	14.8
22	8.5	11.6	7.6	7.6	8.5	14.3	14.8	14.8	16.0	15.6	16.0	12.7
23	8.5	8.8	7.2	10.9	8.2	14.3	14.8	15.6	16.0	16.0	16.0	*13.5
24	11.3	9.8	7.9	10.9	8.2	14.3	14.8	15.6	16.0	16.4	16.0	12.3
25	11.6	9.8	8.5	7.6	11.6	14.3	14.8	15.6	16.0	16.4	16.0	13.5
26	8.5	8.5	10.9	7.2	8.2	14.3	14.8	15.6	16.4	16.0	16.0	15.6
27	*8.2	9.8	7.6	7.2	11.3	14.3	14.8	15.6	16.4	14.3	16.0	13.5
28	8.2	12.0	7.9	*7.2	12.3	14.8	14.8	15.6	16.4	13.9	16.0	12.7
29	9.5	12.0	7.9	7.6	12.7	14.8	14.8	-	16.8	16.0	16.0	13.9
30	11.6	8.8	7.9	10.9	13.5	14.8	14.8	-----	16.8	15.6	16.0	13.9
31	11.6	9.8	-----	10.9	-----	14.8	14.8	-----	16.8	-----	16.0	-----
Total	309.3	303.5	265.7	275.8	299.9	434.1	455.8	417.7	496.4	481.0	486.4	427.3
Mean:												
mgd	9.98	9.79	8.86	8.90	10.0	14.0	14.7	14.9	16.0	16.0	15.7	14.2
cfs	15.4	15.1	13.7	13.8	15.5	21.7	22.7	23.1	24.8	24.8	24.3	22.0
Ac-ft	949	931	815	846	920	1,330	1,400	1,280	1,520	1,480	1,490	1,310
Calendar year 1954:	Max	14.8	Min	7.2	Mean(mgd)	10.7	Mean(cfs)	16.6	Ac-ft	11,970		
Fiscal year 1954-55:	Max	16.8	Min	7.2	Mean(mgd)	12.7	Mean(cfs)	19.6	Ac-ft	14,270		

\* Discharge measurement made on this day.

## Morikone pond outlet at Pearl City

Location.--Lat 21°23'30", long 157°59'10", on left bank of Waiawa Springs flow, 0.7 mile west of Pearl City, 1.5 miles east of Waipahu, and 9.8 miles northwest of Honolulu.

Records available.--August 1951 to June 1955.

Gage.--Water-stage recorder and submerged orifice control.

Extremes.--1951-55: Maximum daily discharge, 1.99 mgd (3.08 cfs) Oct. 31, 1951; no flow on Aug. 31, 1952.

Remarks.--Records poor. Surface runoff from floods not included in figures of discharge given below.

Revisions.--Revised figures of discharge, in million gallons a day, for the fiscal years 1952-53 (complete daily table for 1953), superseding those published in WSP 1249 and 1289, are given herewith. Records for fiscal year 1954 not previously published are given herein.

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1952		1952-Con.		1952-Con.		1952-Con.		1952-Con.	
May 8	0.44	May 19	0.58	May 30	0.49	June 10	0.54	June 21	0.40
9	.54	20	.61	31	.48	11	.58	22	.48
10	.94	21	.55	June 1	.51	12	.91	23	.58
11	1.03	22	.63	2	.65	13	.84	24	.34
12	.79	23	.55	3	.61	14	.77	25	.56
13	.66	24	.56	4	.62	15	.88	26	.34
14	.78	25	.56	5	.73	16	.99	27	.52
15	.72	26	.57	6	.46	17	1.39	28	.35
16	.68	27	.55	7	.20	18	1.67	29	.45
17	.67	28	.46	8	.78	19	1.70	30	.49
18	.65	29	.52	9	.83	20	1.34		

Month	Mgd-days	Maximum	Minimum	Mean		Runoff in
				(mgd)	(cfs)	acre-feet
May 1952.....	20.06	1.03	0.44	0.647	1.00	62
June.....	21.51	1.70	.20	.717	1.11	66

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.45	0.89	0.80	0.72	1.02	1.21	0.68	0.57	0.74	0.45	0.34	0.65
2	.40	.94	.80	.69	1.06	1.04	.66	.61	.44	.43	.41	.41
3	.32	1.03	.60	.70	.82	1.12	.65	.57	.44	.36	.62	.33
4	.35	1.04	.64	.62	.82	1.10	.67	.57	.32	.45	.41	.36
5	.48	1.09	.70	.63	.74	1.05	.58	.51	.65	.72	.26	.49
6	.38	.98	.56	.55	.62	1.00	.48	.63	.57	.74	.36	.46
7	.45	1.02	.65	.64	.95	.99	.64	.62	.54	.65	.42	.46
8	.42	.96	.57	.66	.91	.93	.58	.68	.49	.89	.22	.71
9	.64	.94	.57	.56	.88	1.01	.66	.60	.51	.85	.61	.67
10	.52	1.01	.51	.52	.90	.97	.65	.63	.51	.82	.56	.66
11	.56	1.35	.59	.60	.85	1.03	.69	.63	.60	.67	.53	.72
12	.59	.92	.24	.63	.78	.95	.57	.60	.51	.25	.37	.63
13	.67	.94	.31	.67	.76	.86	.61	.59	.73	.47	.47	.63
14	.66	.86	.35	.63	.91	.89	.63	.60	.58	.78	.43	.59
15	.83	.84	.33	.86	.84	.97	.58	.63	.56	.63	.44	.45
16	.72	.86	.35	1.13	.95	1.20	.56	.61	.53	.48	.51	.51
17	.72	.85	.35	.93	1.06	1.05	.72	.58	.58	.46	.62	.68
18	.62	.91	.42	.72	1.10	.82	.63	.58	.23	.34	.53	.52
19	.52	.90	.45	.76	1.01	.96	.56	.63	.21	.41	.37	.46
20	.51	.89	.45	.78	1.05	.84	.51	.40	.57	.55	.37	.51
21	.74	.82	.60	.76	.91	.72	.70	.32	.61	.64	.33	.59
22	.77	.81	.30	.68	.95	.50	.69	.47	.32	.68	.36	.52
23	.72	.82	.46	.91	.95	.85	.71	.47	.68	.75	.39	.46
24	.65	.82	.73	.89	.93	.71	.65	.32	.48	.58	.38	.23
25	.66	.78	.64	.92	.93	.51	.43	.60	.35	.71	.70	.43
26	.78	.79	.68	.97	.91	.78	.42	.74	.60	.69	.70	.52
27	.80	.71	.84	.92	.91	.69	.59	.74	.52	.63	.66	.60
28	.82	.96	.96	.97	.96	.48	.61	.80	.56	.65	.68	.57
29	.78	.77	.76	.98	1.09	.62	.61	—	.56	.66	.64	.52
30	.50	.58	.83	.93	1.21	.68	.63	-----	.57	.41	.64	.45
31	.90	0	-----	.94	-----	.67	.67	-----	.55	-----	.64	-----
Total	18.93	26.85	17.02	23.77	27.76	27.20	19.03	16.30	15.91	17.80	14.97	15.79
Mean:												
mgd	0.611	0.866	0.567	0.767	0.925	0.877	0.614	0.582	0.513	0.593	0.483	0.526
cfs	0.945	1.34	0.877	1.19	1.43	1.36	0.950	0.900	0.794	0.919	0.747	0.814
Ac-ft	58	82	52	73	85	83	58	50	49	55	46	48
Calendar year 1952: Max	1.78			Min	0	Mean(mgd)	0.803	Mean(cfs)	1.24	Ac-ft	901	
Fiscal year 1952-53: Max	1.35			Min	0	Mean(mgd)	0.661	Mean(cfs)	1.02	Ac-ft	739	

## Morikone pond outlet at Pearl City--Continued

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.21	0.52	0.50	0.91	0.77	0.58	0.68	0.82	1.04	0.94	0.87	0.78
2	.41	.82	.85	.82	.78	.51	.63	.75	1.10	.99	.87	.79
3	.45	.68	.51	.58	.79	.47	.63	.88	1.07	1.03	.77	.85
4	.39	.77	.53	.57	.84	.57	.65	.91	1.01	1.06	.77	.82
5	.26	.87	.49	.58	.88	.55	.68	.93	.94	1.02	.81	.84
6	.24	.84	.53	.72	.88	.57	.69	.79	.92	.88	.81	.84
7	.36	.63	.60	.73	.89	.73	.79	.75	.90	.87	.80	.81
8	.40	.54	.58	.72	.83	.75	.74	.79	.84	.88	.84	.74
9	.41	.53	.50	a.73	.84	.78	.76	.78	.83	.92	.92	.71
10	.39	.54	.43	a.58	.86	.71	.78	.78	.83	.89	.96	.76
11	.36	.50	.39	a.60	.70	.65	.79	.78	.92	.83	.91	.65
12	.40	.53	.39	a.49	.81	.54	.77	.79	.89	.88	.83	.70
13	.35	.52	.40	a.51	.70	.54	.78	.80	.85	.90	.79	.69
14	.37	.42	.48	a.48	.59	.51	.77	.81	.88	.88	.81	.67
15	.41	.41	.44	a.23	.68	.61	.71	.69	.93	.90	.91	.65
16	.37	.62	.35	a.55	.53	.56	.72	.65	.97	.94	.82	.71
17	.31	.57	.35	.67	.37	.80	.72	.64	1.02	.94	.83	.61
18	.48	.58	.27	.68	.51	.97	.88	.64	.90	.98	.89	.60
19	.61	.49	.53	.78	.70	.87	.62	.73	.83	.86	.82	.56
20	.41	.51	.49	.80	.87	1.02	.78	.80	.87	.87	.80	.73
21	.31	.70	.48	.83	.91	.84	.84	.79	.91	.87	.83	.73
22	.36	.48	.94	.98	.94	.71	.76	.78	.86	.83	.84	.68
23	.43	.96	.51	.96	.83	.57	.72	.68	.87	.80	.88	.71
24	.52	.65	.74	.99	.70	.61	.76	.63	.77	.80	.75	.73
25	.53	.73	.85	.94	.58	.37	.78	.86	.80	.69	.77	.55
26	.52	.60	.83	.89	.62	.26	.70	.97	.85	.76	.89	.50
27	.57	.54	.70	.82	.62	.41	.80	.97	.85	.84	.89	.64
28	.55	.57	.62	.61	.55	.41	.70	.98	.88	.89	.93	.55
29	.56	.56	.71	.58	.67	.43	.65	-	.85	1.20	.87	.58
30	.53	.56	1.09	.73	.66	.54	.83	-----	.91	.94	.87	.62
31	.51	.50	-----	.80	-----	.65	.86	-----	.94	-----	.83	-----
Total	12.96	19.19	16.32	21.92	21.90	19.09	23.17	22.17	28.03	26.88	26.20	20.80
Mean:												
mgd	0.418	0.619	0.544	0.707	0.730	0.616	0.747	0.792	0.904	0.896	0.845	0.693
cfs	0.647	0.958	0.842	1.09	1.13	0.953	1.16	1.23	1.4	1.39	1.31	1.07
Ac-ft	40	59	50	67	87	59	71	68	86	82	80	64
Calendar year 1953: Max		1.09		Min	0.21	Mean(mgd)	0.579	Mean(cfs)	0.896	Ac-ft	648	
Fiscal year 1953-54: Max		1.20		Min	0.21	Mean(mgd)	0.709	Mean(cfs)	1.10	Ac-ft	793	

a No gage-height record; discharge estimated on basis of probable increase or decrease in flow.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	.73	0.80	0.80	0.50	0.42	0.88	0.78	0.92	1.11	1.06	1.03	0.79
2	.45	.73	.74	.48	.39	.68	.86	.70	.91	.92	1.01	.81
3	.47	.77	.69	.52	.47	.75	.95	.59	1.03	1.12	.85	.90
4	.67	.74	.43	.50	.47	.80	.97	.72	1.15	1.05	.99	.93
5	.66	.80	.41	.40	.46	.80	1.05	.99	1.28	.93	.89	.95
6	.35	.74	.77	.43	.46	.86	1.0	.95	1.29	1.03	.88	.91
7	.70	.73	.76	.52	.58	.86	.88	.99	1.28	1.28	.85	.87
8	.66	.77	.78	.57	.56	.86	.76	.99	1.24	1.27	.79	.88
9	.57	.80	.77	.67	.57	.86	.71	.74	1.30	1.13	.84	.80
10	.42	.78	.86	.75	.64	.86	.82	.74	1.36	1.22	.90	.85
11	.68	.80	1.05	.72	.78	.86	.74	.74	1.24	1.21	.83	.84
12	.41	.80	.75	.76	.85	.90	.74	.81	1.30	1.05	.84	.76
13	.41	.80	.66	.75	.77	.90	.57	.70	1.25	1.13	.86	.68
14	.48	.78	.85	.70	.54	.90	.54	.76	1.28	1.17	.88	.68
15	.44	.88	.84	.65	.51	.90	.47	.58	1.22	1.11	.98	.84
16	.61	.83	.76	.61	.46	.90	.52	.64	1.28	1.09	.92	.68
17	.80	.66	.80	.46	.44	.90	.65	.81	1.29	1.04	.93	.68
18	.74	.87	.85	.45	.51	.86	.69	.77	1.30	1.10	.85	.78
19	.58	.83	.81	.45	.52	.85	.55	.82	1.26	1.17	.84	.73
20	.83	.75	.87	.61	.62	.91	.91	.95	1.3	1.20	.85	.78
21	.70	.64	.87	.62	.64	.90	1.0	.96	1.3	1.12	.85	.76
22	.53	.68	.84	.62	.64	1.00	1.0	1.1	1.3	1.10	.89	.76
23	.46	.79	.72	.55	.62	1.03	.59	1.2	1.3	1.01	.88	.79
24	.48	.77	.70	.58	.59	1.01	.57	1.2	1.30	1.01	.92	.83
25	.42	.78	.71	.58	.68	1.00	.80	1.2	1.28	.95	.87	.70
26	.46	.58	.74	.52	.65	1.01	.82	1.04	1.12	.76	.87	.88
27	.59	.69	.69	.51	.70	1.03	.88	.86	1.02	.82	.94	.59
28	.55	.71	.56	.51	.85	1.04	.72	1.04	1.01	.59	.92	.61
29	.82	.82	.64	.45	.87	1.06	.63	-	1.09	1.01	.98	.59
30	.86	.83	.47	.53	.87	.84	.58	-----	1.11	1.04	.84	.78
31	.84	.78	-----	.42	-----	.84	.51	-----	1.09	-----	.79	-----
Total	18.45	23.71	22.31	17.39	18.13	27.85	23.06	24.51	37.59	31.60	27.66	23.23
Mean:												
mgd	0.595	0.765	0.744	0.561	0.604	0.898	0.744	0.875	1.21	1.05	0.892	0.774
cfs	0.921	1.18	1.15	0.868	0.935	1.39	1.15	1.35	1.87	1.62	1.38	1.20
Ac-ft	57	73	68	53	56	85	71	75	115	97	85	71
Calendar year 1954: Max		1.20		Min	0.35	Mean(mgd)	0.754	Mean(cfs)	1.17	Ac-ft	843	
Fiscal year 1954-55: Max		1.36		Min	0.35	Mean(mgd)	0.810	Mean(cfs)	1.25	Ac-ft	906	

Note.--Stage-discharge relation indeterminate Nov. 28-30, Dec. 4-16, Jan. 6, 21, 22, Feb. 7, 22-25, Mar. 20-23; discharge estimated on basis of records for Pearl Harbor Springs at Waiawa.

## Waiawa Stream near Pearl City

Location.--Lat 21°23'55", long 157°58'55", 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.--25.4 sq mi.

Records available.--June 1952 to June 1955.

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

Extremes.--Maximum discharge during year, 10,900 mgd (16,900 cfs) Nov. 28 (gage height, 19.27 ft), from rating curve extended above 700 mgd on basis of slope-area determination at gage height 17.1 ft; minimum, 2.6 mgd (4.0 cfs) Nov. 4, June 29, 1952-55; Maximum discharge, that of Nov. 28, 1954; minimum, 1.86 mgd (2.88 cfs) Dec. 4, 1953.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Small quantity of water diverted occasionally for irrigation.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.6	2.6	4.0	280
1.8	5.4	5.0	490
2.0	9.2	6.0	700
2.2	14.9	7.0	940
2.5	29.5	8.0	1,270
3.0	75	9.0	1,870
3.5	155		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	29.5	10.7	4.6	3.6	3.95	45	22.5	5.9	20	4.9	6.0	4.0
2	36	8.2	3.9	3.6	3.5	53	16.8	9.3	13	4.8	4.4	3.6
3	40	6.0	3.65	3.35	3.1	29.5	11.2	10.2	11	10.3	22	3.4
4	112	6.0	3.5	3.1	2.85	17.6	17.4	8.6	15	8.7	9.8	3.3
5	49	7.0	3.35	3.1	3.2	59	11.4	7.5	20	6.2	6.2	3.2
6	23.5	22	3.2	3.1	3.2	222	7.9	25	13	5.2	*5.0	3.2
7	13.0	16.9	3.1	3.1	3.1	303	6.4	295	10	4.8	4.4	3.2
8	9.0	19.2	3.1	3.0	3.0	*197	5.5	93	8.0	4.3	4.2	3.2
9	7.7	16.5	3.0	3.0	3.1	61	4.8	25.5	7.5	4.0	3.6	3.2
10	67	11.2	*2.85	69	3.2	35	4.4	13.3	6.8	4.0	3.5	3.2
11	70	15.9	3.2	51	3.2	23	4.2	9.2	11.8	3.85	3.35	3.35
12	37.5	8.6	3.1	23	3.2	15.7	3.85	44	13.0	3.85	3.35	3.5
13	23.5	7.1	3.1	13.3	3.2	13.9	3.7	29.5	12.7	3.7	3.6	3.6
14	14.9	7.2	3.2	29.5	4.8	69	3.85	16.5	9.4	3.7	3.6	3.35
15	11.2	8.0	3.2	15.6	5.9	49	3.85	13.6	33	3.7	3.7	3.5
16	9.7	9.1	3.1	8.2	5.7	268	3.7	14.6	39.5	3.7	3.5	3.6
17	10.0	7.5	3.5	5.5	5.5	44	3.6	12.7	11.4	4.2	3.85	3.35
18	36	18.7	8.6	*4.4	6.2	21	3.6	19.2	7.5	6.4	4.0	3.5
19	21	13.6	2.1	4.2	5.0	13.9	3.5	94	6.2	5.7	4.8	3.6
20	19.2	12.3	7.7	3.5	4.0	10.4	3.5	53	5.4	4.9	6.0	3.5
21	12.0	29.5	4.4	5.9	3.5	10.9	248	25	5.0	4.4	7.7	3.35
22	9.0	15.1	3.6	5.4	3.5	53	37	66	127	4.2	5.5	3.5
23	8.2	22	3.7	4.4	3.85	22	14.5	1,470	95	3.85	4.5	3.5
24	6.9	24	3.6	3.6	4.0	13.3	9.2	*916	31.5	4.2	4.0	3.35
25	6.9	10.4	18.5	3.5	3.7	8.4	6.9	*297	13.4	3.7	8.0	3.2
26	5.3	6.9	10.2	3.6	3.6	6.8	5.9	110	9.0	3.7	15	3.35
27	4.3	21	6.2	3.5	3.35	5.7	5.0	45	7.3	32	11	3.2
28	155	16.8	4.8	3.2	1,710	14.3	4.4	30	6.4	17.3	13	3.35
29	*98	13.3	4.2	3.1	*790	22.5	4.2	-	5.9	7.3	8.5	3.2
30	44	7.9	3.7	3.2	98	34	4.0	-----	5.4	5.7	5.5	3.5
31	17.3	6.2	-----	3.2	-----	41	6.1	-----	5.0	-----	4.5	-----
Total	1,006.6	467.8	156.85	298.75	2,702.40	1,781.9	490.85	3,758.6	585.1	187.25	196.05	101.85
Mean:												
mgd	32.5	15.1	5.23	9.64	90.1	57.5	15.8	134	18.9	6.24	6.32	3.40
cfs	50.3	23.4	8.09	14.9	139	89.0	24.4	207	29.2	9.65	9.78	5.26
Ac-ft	3,090	1,440	481	917	8,290	5,470	1,510	11,530	1,800	575	602	313
Calendar year 1954:	Max	1,710	Min	2.5	Mean(mgd)	21.1	Mean(cfs)	32.6	Ac-ft	23,590		
Fiscal year 1954-55:	Max	1,710	Min	2.85	Mean(mgd)	32.1	Mean(cfs)	49.7	Ac-ft	36,020		

Peak discharge (base, 800 mgd).--Nov. 28 (8 p.m.) 10,900 mgd (16,900 cfs), 19.27 ft; Dec. 7 (1 p.m.) 2,250 mgd (3,480 cfs), 9.54 ft; Jan. 21 (11:30 a.m.) 1,800 mgd (2,790 cfs), 8.91 ft; Feb. 7 (2:30 p.m.) 1,660 mgd (2,570 cfs), 8.70 ft; Feb. 23 (8 p.m.) 4,570 mgd (7,070 cfs), 12.43 ft; Mar. 22 (8 p.m.) 965 mgd (1,340 cfs), 6.72 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 17, 18, Feb. 26 to Mar. 8, May 22 to June 7; discharge estimated on basis of recorded range in stage and records for nearby streams.

## 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.'s Waiau powerplant, 0.6 mile east of Pearl City and 8.8 miles northwest of Honolulu.

Records available.--October 1939 to December 1945, July 1952 to June 1955.

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, water-stage recorder at site 120 ft downstream at datum 2.27 ft lower.

Average discharge.--5 years (1940-41, 1944-45, 1952-55), 10.2 mgd (15.8 cfs).

Extremes.--1939-45, 1952-55: 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. Flow regulated by valves. Water used for cooling condensers of powerplant, and afterwards for irrigation of sugarcane.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.0	9.9	*10.2	7.7	8.5	8.8	8.8	9.4	9.9	9.9	10.1	9.4
2	10.0	9.9	9.6	7.7	7.7	*8.8	8.8	9.4	*9.9	9.9	12.8	9.4
3	10.2	8.7	9.4	8.2	8.2	9.3	8.8	8.8	9.9	9.9	11.7	9.4
4	10.1	10.2	9.3	9.6	9.4	8.8	8.8	8.8	9.9	9.9	12.1	10.5
5	10.7	10.3	7.7	7.7	9.1	8.8	8.8	8.8	9.9	9.9	12.2	9.4
6	10.5	10.3	8.2	7.7	7.7	8.8	8.8	8.8	9.9	9.9	12.4	10.4
7	10.6	9.9	9.2	7.7	7.7	10.4	8.8	8.8	9.9	9.9	9.4	10.4
8	10.1	8.2	9.0	7.7	8.9	9.6	8.8	8.8	9.9	9.9	9.9	9.6
9	10.5	10.3	8.9	7.7	8.9	10.2	8.8	8.8	9.9	9.9	10.4	9.4
10	10.6	10.2	9.2	7.7	8.8	10.4	8.8	8.8	9.9	9.9	9.4	9.4
11	8.2	10.2	8.5	7.7	8.6	9.4	8.8	8.8	9.9	9.9	11.6	9.4
12	10.1	10.5	7.7	7.7	8.7	9.4	8.8	8.8	9.9	9.9	13.5	9.4
13	10.8	9.6	8.5	7.7	7.7	9.4	8.8	8.8	9.9	9.4	13.1	9.4
14	10.8	9.9	9.6	7.7	7.7	10.4	8.8	9.6	9.9	9.9	10.1	9.4
15	11.0	8.2	9.3	*7.7	9.7	9.6	8.8	8.8	9.9	9.4	9.4	9.4
16	11.0	10.0	8.7	7.7	9.2	9.4	8.8	10.2	9.9	9.9	12.2	9.4
17	10.9	10.1	8.5	7.7	9.5	9.4	8.8	10.8	9.9	9.9	12.1	9.4
18	11.2	9.9	9.5	8.8	9.4	9.4	8.8	9.6	9.9	10.4	12.2	9.4
19	11.0	9.4	9.9	9.5	8.6	9.4	8.8	9.4	9.9	*12.3	10.3	9.4
20	11.0	9.6	9.4	8.9	10.3	9.4	8.8	8.8	9.9	12.1	11.5	9.4
21	11.2	9.2	7.7	8.9	10.3	9.4	9.4	9.4	9.9	11.8	9.4	10.4
22	10.6	8.2	7.7	8.8	10.1	9.4	9.4	8.8	9.9	9.9	9.4	*9.4
23	9.6	10.2	7.7	8.7	9.6	9.4	9.4	9.4	9.9	9.9	9.6	9.4
24	8.2	9.9	7.7	7.7	9.6	9.4	9.4	9.9	9.9	9.9	9.9	9.4
25	8.2	9.9	7.7	8.8	7.7	8.8	9.4	9.9	9.9	10.7	10.3	9.4
26	*10.1	10.1	7.7	9.0	9.4	8.8	9.4	9.4	9.9	12.0	10.7	9.4
27	9.6	10.2	8.2	8.9	7.7	8.8	9.4	9.4	9.9	11.9	10.0	9.4
28	10.0	9.4	7.7	8.9	8.2	8.8	9.4	9.9	9.9	10.6	9.4	11.4
29	9.9	8.2	8.2	8.1	8.8	9.4	9.4	-	9.9	11.3	9.4	11.8
30	9.9	10.1	7.7	7.7	10.5	9.4	9.4	-----	9.9	9.9	9.4	9.4
31	10.1	10.3	-----	7.7	-----	9.4	9.4	-----	9.9	-----	9.4	-----
Total	316.7	301.2	258.3	253.7	266.4	290.1	279.4	258.9	306.9	310.0	333.3	290.7
Mean:												
mgd	10.2	9.72	8.61	8.18	8.88	9.36	9.01	9.25	9.90	10.3	10.8	9.69
cfs	15.8	15.0	13.3	12.7	13.7	14.5	13.9	14.3	15.3	15.9	16.7	15.0
Ac-ft	972	924	793	779	818	890	857	795	942	951	1,020	892
Calendar year 1954:	Max	12.2	Min	7.7	Mean(mgd)	9.49	Mean(cfs)	14.7	Ac-ft	10,620		
Fiscal year 1954-55:	Max	13.5	Min	7.7	Mean(mgd)	9.50	Mean(cfs)	14.7	Ac-ft	10,630		

\* Discharge measurement made on this day.

## Waimalu Stream near Aiea

Location.--Lat 21°23'35" long 157°57'05", on right bank of stream just downstream from bridge on Moanalua Highway, 1.5 miles northwest of Aiea and 1.6 miles east of Pearl City.

Drainage area.--6.1 sq mi.

Records available.--January 1952 to June 1955.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 5 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,900 mgd (2,940 cfs) Nov. 28 (gage height, 8.03 ft); minimum, 0.27 mgd (0.42 cfs) Oct. 29, 30.  
1952-55: Maximum discharge, that of Nov. 28, 1954; minimum, 0.01 mgd (0.02 cfs) Jan. 18, 1952.

Remarks.--Records fair except those for period of doubtful or no gage-height record, which are poor. Small quantity of water diverted for irrigation.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.1	2.8	1.05	1.15	1.04	*7.8	3.95	0.71	3.35	1.14	0.60	0.55
2	9.1	1.67	.62	.95	.86	*12.7	2.35	.71	*2.35	1.14	.49	.49
3	12.5	.95	.62	.69	.95	8.0	*1.35	.71	1.78	1.22	*.66	.49
4	34	1.12	.95	.62	1.05	6.2	1.36	.71	2.65	1.22	.71	.49
5	14.4	9.7	.69	.48	.86	24.5	.98	.71	7.7	1.36	.76	.49
6	6.7	3.9	.62	.78	.77	92	.70	4.6	2.45	1.14	.82	.55
7	2.95	2.65	.62	.69	.62	115	.61	112	1.70	1.06	.76	.71
8	1.81	4.4	.77	.55	.69	*60	.57	31.5	1.54	a1.0	.76	.71
9	1.95	4.0	.95	.48	.86	20	.54	3.65	1.38	a1.0	.98	.71
10	25.5	2.1	.77	48	1.84	9.8	.54	1.62	1.68	a1.1	1.52	.66
11	21.5	1.67	.55	14.1	1.67	6.1	.50	1.06	2.25	a1.3	1.68	.60
12	18.4	2.15	.48	6.2	1.27	4.9	.54	55	3.1	a1.2	.87	.41
13	12.4	1.81	.62	4.0	.95	5.4	.54	15.3	2.8	a1.1	.71	.38
14	6.0	.86	.95	5.9	.86	32.5	.50	4.8	1.89	a.93	.60	.41
15	3.8	.77	1.05	*3.8	.69	19.4	.47	3.35	10.5	a1.1	.55	.49
16	2.95	1.44	.77	2.1	.55	69	.50	3.65	13.7	a1.0	.49	.41
17	3.7	1.95	.55	1.40	.68	13.2	.54	2.7	1.89	a1.1	.49	.44
18	12.8	1.97	.85	1.37	.62	6.3	.54	2.65	1.85	a1.2	.66	.44
19	5.8	4.0	4.8	1.15	.55	3.8	.54	15.1	1.70	a1.3	1.11	.44
20	4.8	2.95	1.27	.88	.48	2.55	.57	13.8	1.38	a1.2	1.25	*.41
21	2.4	6.2	1.11	.77	.36	4.2	*92	5.3	1.46	a1.1	1.24	.38
22	2.4	5.2	1.24	.62	.31	31	9.6	36	45	a1.0	.87	.44
23	2.25	7.4	.86	.62	.31	11.5	3.5	332	21	a.93	.76	.82
24	1.40	8.8	1.05	.55	1.11	4.4	2.35	194	3.45	a.87	.71	1.41
25	1.55	3.65	6.0	.49	.95	2.55	1.62	*53	1.89	.93	3.4	1.06
26	*1.06	3.1	2.6	.36	.77	2.25	1.38	15.4	1.30	1.49	2.05	.66
27	.48	9.0	1.15	.36	.69	2.2	.98	7.2	1.06	11.7	3.25	.44
28	82	5.9	1.05	.36	273	2.65	.76	4.6	1.14	2.05	2.45	.44
29	56	4.5	.95	.31	*237	4.1	.71	-	.98	.79	.76	.86
30	15.6	2.95	1.62	.36	*17.6	5.3	.76	-----	.98	.55	.60	.44
31	5.5	1.67	-----	.36	-----	7.0	.76	-----	1.06	-----	.49	-----
Total	357.80	110.23	36.98	100.42	549.96	596.30	132.61	922.03	146.96	44.22	33.05	17.23
Mean:												
mgd	11.5	3.56	1.23	3.24	18.3	19.2	4.28	32.9	4.74	1.47	1.07	0.574
cfs	17.8	5.51	1.90	5.01	28.3	29.7	6.62	50.9	7.33	2.27	1.66	0.888
Ac-ft	1,100	338	113	308	1,690	1,850	407	2,830	451	136	101	53

Calendar year 1954: Max 273 Min 0.17 Mean(mgd) 5.59 Mean(cfs) 8.65 Ac-ft 6,260  
Fiscal year 1954-55: Max 332 Min 0.31 Mean(mgd) 8.35 Mean(cfs) 12.9 Ac-ft 9,360

Peak discharge (base, 250 mgd).--Nov. 28 (7 p.m.) 1,900 mgd (2,940 cfs), 8.03 ft; Dec. 7 (12 m.) 790 mgd (1,220 cfs), 6.06 ft; Dec. 16 (2 a.m.) 335 mgd (518 cfs), 3.78 ft; Jan. 21 (11 a.m.) 630 mgd (975 cfs), 5.40 ft; Feb. 7 (1:30 p.m.) 512 mgd (792 cfs), 4.76 ft; Feb. 12 (5:30 a.m.) 570 mgd (882 cfs), 5.13 ft; Feb. 23 (6 p.m.) 980 mgd (1,520 cfs), 6.81 ft; Mar. 22 (7 p.m.) 337 mgd (521 cfs), 3.77 ft.

\* Discharge measurement made on this day.

a Doubtful or no gage-height record; discharge estimated on basis of records for Kalauao Stream.

## Pearl Harbor Springs at Kalauao, near Aiea

Location.--Lat 21°23'05", long 157°56'45", on left bank 900 ft downstream from Oahu Sugar Co.'s pump 6, 1.1 miles west of Aiea and 7.6 miles northwest of Honolulu.

Records available.--March 1931 to June 1955.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1.38 ft below mean sea level, datum of 1929.

Average discharge.--24 years, 15.9 mgd (24.6 cfs), unadjusted for pumpage.

Extremes.--1931-55: Maximum daily discharge, 25 mgd (39 cfs) Feb. 17-26, 1938; Feb. 23, 24, 1955; minimum daily, 7.2 mgd (11.1 cfs) Aug. 25, Sept. 2, 1947.

Remarks.--Records good except those for period of no gage-height record, which are fair. When water is needed for irrigation of sugarcane, Oahu Sugar Co.'s pump 6 diverts about 7 mgd as a high-lift pump or 9 mgd as a low-lift pump. Surface runoff from floods not included in figures of discharge given below.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.8	14.2	9.8	11.3	10.6	19.0	19.8	16.3	22	20.5	21.5	16.7
2	11.7	9.1	11.3	15.9	12.9	19.0	19.8	16.3	22	22.5	15.9	14.2
3	15.4	8.8	8.8	13.3	8.1	18.5	19.8	16.3	22	21	14.6	14.6
4	15.4	8.8	11.7	9.5	7.7	19.0	19.8	16.7	22	17.2	14.6	18.5
5	15.9	11.0	16.3	10.2	9.8	19.0	19.8	20.5	22.5	16.3	14.6	20.5
6	11.3	11.3	15.0	9.5	15.4	19.0	19.8	19.4	22	16.3	*15.4	15.0
7	9.8	16.3	8.8	9.1	12.9	19.0	19.8	15.9	22.5	17.2	22	15.0
8	10.6	15.4	10.6	11.0	8.8	19.0	19.8	19.8	22	22.5	18.5	14.2
9	10.6	10.6	11.0	15.9	8.8	19.0	19.8	19.8	22	22.5	18.5	14.6
10	15.9	9.8	11.7	16.3	8.1	19.0	19.8	19.8	22	22	15.9	17.2
11	15.9	10.2	13.3	16.3	8.1	19.0	19.8	19.8	22	17.2	14.6	21.5
12	a15.4	10.6	15.4	16.7	9.8	19.0	19.8	19.8	22	19.4	15.9	21
13	a15.9	11.7	11.0	12.5	15.0	19.0	19.8	19.8	22	16.7	15.4	17.6
14	a15.9	15.9	10.2	15.9	12.9	19.0	19.8	17.2	*22.5	18.5	17.2	15.0
15	a15.9	15.4	8.8	15.9	8.8	19.0	19.8	14.2	22.5	17.2	19.4	13.8
16	a15.9	11.7	8.8	15.9	9.1	19.4	19.8	15.9	21	19.8	14.6	15.4
17	a15.9	11.3	11.0	13.3	10.6	19.4	19.8	16.7	20.5	22.5	14.6	13.8
18	a15.9	12.9	13.8	8.8	11.3	19.4	19.8	19.8	22	19.0	14.2	16.7
19	a15.9	13.8	13.3	8.1	12.5	19.4	16.3	19.8	22	17.2	14.2	18.5
20	a15.9	12.1	9.5	8.1	16.7	19.4	19.8	20.5	21	19.0	17.6	16.7
21	a11.7	16.3	11.3	8.1	15.9	19.4	19.8	20.5	15.9	19.4	22	15.0
22	a10.6	15.0	10.2	9.8	12.5	19.4	19.8	21	19.8	18.0	19.8	14.6
23	a11.7	9.1	9.5	15.0	15.0	19.4	19.8	25	23	22	14.6	13.8
24	a15.9	9.1	11.0	12.9	14.2	19.8	20.5	25	22.5	21.5	14.2	*13.8
25	a13.3	8.8	15.9	9.1	15.4	19.8	19.8	22.5	22.5	16.7	14.2	15.9
26	a10.6	8.8	14.2	9.5	12.5	19.8	19.8	22	22.5	16.3	14.2	18.5
27	*10.6	11.7	9.5	7.4	16.7	19.8	15.9	22	22.5	15.9	14.6	13.8
28	11.3	16.7	11.0	11.3	18.0	19.8	19.8	22	22.5	15.9	21	13.8
29	13.8	15.9	13.3	11.7	19.0	19.8	19.8	-	19.4	18.0	20.5	14.6
30	13.3	10.2	8.4	15.4	19.4	19.8	19.8	-----	19.0	22	15.9	15.0
31	15.9	9.8	-----	14.2	-----	19.8	16.3	-----	17.6	-----	15.4	-----
Total	423.6	372.3	344.4	377.9	376.5	598.1	603.6	544.3	665.7	570.2	515.6	479.3
Mean:												
mgd	13.7	12.0	11.5	12.2	12.6	19.3	19.5	19.4	21.5	19.0	16.6	16.0
cfs	21.2	18.6	17.8	18.9	19.5	29.9	30.2	30.0	33.3	29.4	25.7	24.8
Ac-ft	1,300	1,140	1,060	1,160	1,160	1,840	1,850	1,670	2,040	1,750	1,580	1,470
Calendar year 1954: Max	19.8			Min 7.4		Mean(mgd)	14.2		Mean(cfs)	22.0	Ac-ft	15,960
Fiscal year 1954-55: Max	25			Min 7.4		Mean(mgd)	16.1		Mean(cfs)	24.9	Ac-ft	16,020

\* Discharge measurement made on this day.

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

## Kalaauo Stream at Aiea--Continued

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	1.66	0.78	0.68	1.45	2.45	3.65	1.35	3.0	1.21	1.14	1.21
2	2.45	1.28	.73	.68	.87	*2.5	2.55	1.35	2.45	1.07	1.14	1.28
3	4.7	.95	.64	.51	1.28	1.58	1.66	1.75	2.0	1.69	1.28	1.28
4	22	.83	.64	.55	1.14	1.07	1.58	1.58	3.8	1.58	1.28	1.28
5	6.5	5.0	.55	.83	.73	8.8	1.84	1.35	11.6	1.35	1.32	1.07
6	2.75	1.90	.55	.68	.55	45	1.75	1.58	2.85	1.28	1.28	1.21
7	1.66	1.84	.55	.64	.51	59	1.58	39	*2.35	1.48	1.14	1.14
8	1.14	2.55	.55	.68	.73	*20.5	1.28	18.0	1.84	1.21	1.28	1.07
9	1.01	3.45	.55	.68	.68	4.9	1.28	3.95	1.66	1.14	1.21	1.72
10	16.4	1.94	*.88	11.2	.55	2.35	1.35	2.1	1.78	1.21	1.21	1.01
11	12.6	3.75	.75	8.7	.78	1.56	1.21	1.50	2.35	1.58	1.21	1.01
12	13.0	2.85	.80	2.9	.78	1.01	*1.34	26	2.75	1.50	1.07	.95
13	6.8	1.40	.69	1.28	.64	1.07	.89	13.0	2.65	1.28	1.07	1.01
14	2.95	1.01	.64	.89	.55	19.0	1.28	4.8	2.0	1.21	1.14	.95
15	1.75	1.01	.64	*.89	.73	13.1	.89	3.9	8.1	1.07	1.01	1.07
16	1.92	1.62	.90	.68	.89	39.5	.83	4.1	10.3	1.28	1.35	1.14
17	2.3	1.14	1.01	.60	1.70	6.6	.83	4.5	2.65	1.14	1.21	1.21
18	6.9	1.56	.89	*.89	.98	2.85	.83	4.8	1.93	1.35	1.41	1.21
19	2.55	1.39	1.07	.78	.72	2.0	.83	12.1	1.28	1.50	1.28	.95
20	2.6	1.15	.78	.75	.64	1.58	.95	10.1	1.21	1.35	1.14	*1.28
21	*1.58	2.25	.78	.73	.60	3.9	*51	5.5	1.35	1.14	1.07	1.28
22	1.21	2.25	.60	.83	.83	22.5	6.6	28	26	1.14	1.21	1.07
23	1.07	5.1	1.47	.64	.73	8.9	3.0	144	17.0	1.07	1.21	1.07
24	.89	4.2	1.53	.66	.78	2.85	2.1	74	4.5	1.07	1.21	1.01
25	.68	1.55	3.1	1.60	.64	1.84	1.58	*33	2.1	1.14	1.28	1.14
26	.60	.95	1.44	1.08	.68	1.66	1.42	10.5	1.66	1.21	2.15	.95
27	.60	4.4	1.19	.95	.78	1.93	1.42	4.8	1.35	1.28	3.45	1.07
28	52	2.05	1.42	.95	116	2.65	1.21	3.35	1.21	1.93	3.25	1.21
29	53	2.3	1.28	.68	*85	9.5	1.07	-	1.21	1.42	2.0	1.21
30	8.7	1.28	1.10	.51	*6.9	7.9	1.07	-----	1.14	1.21	1.42	1.07
31	2.6	1.00	-----	1.27	-----	6.4	1.21	-----	1.14	-----	1.21	-----
Total	237.91	65.61	28.30	45.37	229.84	306.45	100.08	459.96	127.21	39.09	43.63	34.13
Mean	7.67	2.12	0.943	1.46	7.66	9.89	3.23	16.4	4.10	1.30	1.41	1.14
cfs	11.9	3.28	1.46	2.26	11.9	15.3	5.00	25.4	6.34	2.01	2.18	1.76
Ac-ft	730	201	87	139	705	940	307	1,410	390	120	134	105

Calendar year 1954: Max 116 Min 0.51 Mean(mgd) 3.30 Mean(cfs) 5.11 Ac-ft 3,700  
 Fiscal year 1954-55: Max 144 Min 0.51 Mean(mgd) 4.71 Mean(cfs) 7.29 Ac-ft 5,270

Peak discharge (base, 150 mgd).--July 28 (about 10 a.m.) 220 mgd (340 cfs), 4.31 ft; Nov. 28 (7:30 p.m.) 1,050 mgd (1,620 cfs), 7.29 ft; Dec. 7 (11 a.m.) 330 mgd (511 cfs), 4.88 ft; Jan. 21 (10 a.m.) 310 mgd (480 cfs), 4.85 ft; Feb. 7 (2 p.m.) 169 mgd (261 cfs), 3.96 ft; Feb. 12 (5 a.m.) 176 mgd (272 cfs), 3.99 ft; Feb. 23 (5:30 p.m.) 515 mgd (797 cfs), 5.71 ft.  
 \* Discharge measurement made on this day.



## Kalauao Stream at Aiea

Location--Lat 21°23'05", long 157°56'30", on left bank 600 ft upstream from Kamehameha Highway Bridge, 0.7 mile west of Aiea Sugar Mill and 2.3 miles east of Pearl City.

Drainage area--2.92 sq mi.

Records available--July 1953 to June 1955.

Gage--Water-stage recorder and concrete control. Datum of gage is 4.00 ft above mean sea level, datum of 1929.

Extremes--1953-54: Maximum discharge during period, 162 mgd (251 cfs) May 31 (gage height, 3.88 ft, from reconstructed gage-height graph); minimum, 0.47 mgd (0.73 cfs) Oct. 29, 30, Nov. 11, Dec. 3, 7.  
1954-55: Maximum discharge during fiscal year, 1,050 mgd (1,620 cfs) Nov. 28 (gage height, 7.29 ft), from rating curve extended above 240 mgd; minimum, 0.43 mgd (0.66 cfs) Sept. 22, Oct. 23, 29.

Remarks--Records fair.

Rating table, July 23, 1953, to June 30, 1955 (gage height, in feet, and discharge, in million gallons a day)  
(Shifting control method used Nov. 29 to Dec. 13, 1954)

1.3	0.37	2.1	14.6
1.4	.78	2.4	29.5
1.5	1.42	2.8	52
1.6	2.35	3.2	85
1.7	3.5	3.6	125
1.8	5.3	4.0	176
1.9	7.8		

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	-	0.60	0.64	0.82	0.55	0.64	21.5	0.68	7.0	0.68	1.35	5.3
2	-	.55	.60	1.27	.77	.68	4.2	.64	*7.2	.78	.83	2.15
3	-	.60	.55	.75	.64	.55	2.1	.70	2.2	.68	.73	2.15
4	-	.80	.72	.64	.84	.68	1.58	.60	1.42	.68	.64	1.62
5	-	.68	.75	.68	.60	.51	1.58	.68	2.85	.60	.69	.95
6	-	*.83	.78	.79	.60	.51	1.35	.68	1.93	1.08	.78	.73
7	-	1.95	.68	.68	.55	.60	1.21	.68	1.28	.73	1.14	1.21
8	-	1.07	.64	.86	.55	.60	.95	.78	1.14	.60	.89	1.82
9	-	.68	.82	.64	.55	.64	.68	.73	1.21	.74	.83	1.42
10	-	.83	.75	.60	*.53	.64	.64	.68	3.3	.64	.89	1.07
11	-	.73	.64	.60	.47	.55	.78	.64	3.15	.64	.89	.95
12	-	.68	.64	.60	.55	.51	.64	.77	2.2	.64	1.01	.83
13	-	.79	.55	.55	.64	.51	.60	.55	1.66	.68	1.15	.73
14	-	*.78	.64	.55	.51	1.18	.60	.60	1.14	.73	.89	.68
15	-	.68	.73	.68	.51	.95	.82	.60	1.01	.64	.78	.73
16	-	.60	.60	.83	.64	.78	.73	1.28	.89	.64	.64	.68
17	-	.83	.51	.60	.88	.73	.68	.83	1.30	.64	.64	.78
18	-	.77	*.65	.55	.64	1.05	.78	.64	1.75	.64	.64	.64
19	-	.83	.60	.55	.64	1.32	.80	.64	1.14	.64	1.34	.68
20	-	.89	.55	*.51	.69	1.79	.64	.60	.89	.64	1.65	1.01
21	-	.73	.60	.51	.55	3.3	.85	.60	.83	.55	1.87	1.78
22	-	.85	.64	.51	.55	7.6	.68	.64	.83	*.58	1.07	.95
23	0.73	.68	.68	.51	.55	2.5	.64	1.28	1.01	.78	.78	.68
24	.68	1.07	.68	.51	.68	1.07	.64	3.15	.78	.64	1.25	.98
25	.68	1.09	.68	.51	.68	.83	.64	3.05	.64	.60	*1.04	2.4
26	.55	.83	.78	.51	.55	.73	.68	3.1	.60	.91	.73	1.32
27	.60	.64	.64	.51	.60	1.28	.64	1.93	.55	.68	.68	.94
28	.60	.64	.78	.51	.55	*1.14	.64	2.2	.55	.64	1.27	1.28
29	.60	.64	.73	.51	.51	.83	.94	-	.64	41	1.14	1.21
30	.60	.60	.70	.51	.64	.73	.73	-----	.60	*4.0	2.9	1.84
31	.64	.64	-----	.51	-----	.68	.73	-----	.64	-----	24	-----
Total	-	24.58	19.95	19.34	17.81	36.11	50.67	29.95	52.93	64.32	55.12	39.51
Mean:	-	0.793	0.665	0.624	0.594	1.16	1.63	1.07	1.71	2.14	1.78	1.32
mgd	-	1.23	1.03	0.965	0.919	1.79	2.52	1.66	2.65	3.31	2.75	2.04
Ac-ft	-	75	61	59	55	111	156	92	162	197	169	121
Calendar year	. Max			Min		Mean(mgd)		Mean(cfs)		Ac-ft		
Fiscal year	: Max			Min		Mean(mgd)		Mean(cfs)		Ac-ft		

Peak discharge (base, 150 mgd)--Apr. 29 (2:30 p.m.) 156 mgd (241 cfs), 3.84 ft; May 31 (about 4:30 a.m.) 162 mgd (251 cfs), 3.88 ft.

\* Discharge measurement made on this day.

## Halawa Stream near Aiea

Location.--Lat 21°22'25", long 157°55'45", on right bank 0.7 mile southeast of Aiea Post Office and 6.2 miles northeast of Honolulu Post Office.

Drainage area.--8.54 sq mi.

Records available.--April 1953 to June 1955.

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

Extremes.--1953: Maximum discharge during period April to June, 88 mgd (136 cfs) May 4 (gage height, 3.06 ft); minimum, 0.59 mgd (0.91 cfs) June 25.

1953-54: Maximum discharge during fiscal year, 368 mgd (569 cfs) Jan. 1 (gage height, 4.92 ft); minimum, 0.24 mgd (0.37 cfs) June 14.

1954-55: Maximum discharge during fiscal year, 2,080 mgd (3,220 cfs) Nov. 28 (gage height, 9.67 ft), from rating curve extended above 550 mgd on basis of slope-area determination at gage height 8.1 ft; no flow at times.

Remarks.--Records good except those for periods of backwater from flashboards, which are fair, and those for periods of no gage-height record, which are poor. At times, the Oahu Sugar Co. installs flashboards on the control diverting the entire flow for irrigation.

## Discharge, in million gallons a day, 1953

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	-	4.3	3.3	9	-	6.4	2.95	17	1.80	2.75	3.15	25	3.3	3.75	0.74
2	-	3.5	3.3	10	-	3.5	3.15	18	1.59	2.95	3.9	26	3.4	3.7	2.05
3	-	6.5	2.8	11	-	2.55	3.3	19	1.48	3.15	*3.9	27	3.0	3.15	2.35
4	-	38.5	3.7	12	-	3.05	3.5	20	1.59	3.15	3.7	28	3.95	2.95	2.35
5	-	8.4	3.65	13	-	2.95	3.7	21	1.99	3.15	2.95	29	4.3	3.3	2.95
6	-	5.2	3.15	14	-	3.15	3.3	22	2.55	3.15	2.2	30	4.6	3.3	2.35
7	-	3.9	2.95	15	-	3.6	3.35	23	2.55	2.95	2.3	31	-	3.15	-
8	-	4.8	2.75	16	2.2	3.15	2.75	24	2.95	3.3	1.68				
Total													-	151.30	88.17
Mean, million gallons a day														4.88	2.94
Mean, cubic feet per second														7.55	4.55
Runoff in acre-feet														464	271

\* Discharge measurement made on this day.

Note.--Backwater from flashboards June 3-5, 10-30.

## Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.59	2.75	2.35	3.5	2.75	2.95	72	0.59	3.1	0.64	14.0	8.3
2	2.2	2.35	2.75	3.5	3.15	2.95	23.5	1.27	*10.1	.64	8.9	5.4
3	2.35	2.35	2.75	4.1	3.5	3.3	9.0	2.05	*4.2	.54	4.8	4.6
4	2.55	2.75	2.55	3.7	4.1	3.7	5.4	2.65	*2.2	.54	4.1	3.7
5	2.2	2.95	2.75	2.95	4.8	3.15	3.5	3.55	4.0	.49	3.7	2.55
6	1.99	*3.0	2.55	2.95	4.5	2.2	2.2	2.75	3.9	.54	3.5	1.38
7	2.75	4.0	1.99	3.3	4.1	2.2	1.69	1.80	2.35	.64	2.95	1.37
8	3.3	2.8	1.59	3.15	3.3	2.55	1.48	2.55	1.80	.59	2.75	4.3
9	3.3	2.1	1.80	2.95	2.75	2.55	1.27	2.35	1.48	.59	2.55	4.3
10	3.9	1.8	1.69	2.2	2.65	2.75	.95	2.75	8.6	.69	2.35	3.3
11	4.3	1.7	1.80	1.69	3.5	2.95	.74	2.55	9.4	.74	a2.2	1.99
12	3.9	1.6	2.35	1.69	4.1	2.75	.74	2.55	5.0	.69	a2.1	1.38
13	3.9	5.0	2.2	2.35	4.5	1.80	.64	2.2	3.15	.59	a2.0	.74
14	5.0	3.85	1.59	2.2	4.5	1.59	.69	1.59	1.99	.59	a1.9	.54
15	5.0	2.95	1.80	2.75	3.7	1.69	1.06	1.58	1.80	.85	a1.8	.69
16	5.0	2.2	2.35	3.3	3.2	1.80	1.06	1.16	1.48	.74	1.69	1.35
17	3.9	1.59	2.95	2.75	2.95	2.7	.95	1.06	2.4	.69	2.1	1.61
18	2.75	1.59	*2.7	1.99	2.95	2.75	1.06	.85	2.75	.64	3.15	2.15
19	1.80	1.48	2.35	1.80	2.75	1.69	1.16	.85	2.35	.74	3.35	2.2
20	1.59	1.59	1.99	2.75	2.55	1.48	1.06	.74	1.59	1.27	4.2	1.38
21	1.99	1.69	1.59	3.15	1.99	1.48	1.34	.69	1.38	1.99	4.8	1.22
22	2.55	1.59	1.80	3.15	1.59	4.9	1.16	.74	1.16	2.55	3.15	1.38
23	3.3	1.38	2.55	3.3	1.37	4.7	1.80	.69	1.06	*3.1	1.80	1.27
24	3.9	1.06	2.55	2.95	2.05	1.59	.95	.64	.95	3.15	4.5	1.27
25	3.7	1.80	2.55	2.95	2.3	1.27	.69	2.55	.74	2.35	3.35	1.38
26	2.95	2.95	2.55	2.75	1.69	1.16	.64	5.2	.85	1.99	2.55	1.38
27	2.55	3.5	2.2	3.3	2.2	1.27	.64	3.2	.85	2.35	1.99	.95
28	4.1	3.5	1.80	3.7	2.2	*.95	.59	3.25	.74	2.75	3.3	.74
29	3.5	3.15	2.75	3.9	1.69	.95	.59	-	.74	55	2.55	1.06
30	3.15	2.55	3.15	3.7	1.80	1.06	.49	-----	.74	28.5	5.2	1.38
31	3.15	2.2	-----	3.3	-----	1.06	.49	-----	.64	-----	14.6	-----
Total	98.11	75.77	68.34	91.72	89.18	69.89	139.53	54.20	83.49	117.17	121.88	65.26
Mean												
mgd	3.16	2.44	2.28	2.96	2.97	2.25	4.50	1.94	2.69	3.91	3.93	2.18
cfs	4.89	3.78	3.53	4.58	4.60	3.48	6.96	3.00	4.16	6.05	6.08	3.37
Ac-ft	301	253	210	281	274	214	428	166	256	360	374	200

Calendar year 1953: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -  
Fiscal year 1953-54: Max 72 Min 0.49 Mean(mgd) 2.94 Mean(cfs) 4.55 Ac-ft 3,300

Peak discharge (base, 300 mgd).--Jan. 1 (8 a.m.) 368 mgd (569 cfs), 4.92 ft; Apr. 29 (2 p.m.) 315 mgd (487 cfs), 4.55 ft.

\* Discharge measurement made on this day.

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

Note.--Backwater from flashboards July 1 to Nov. 16, Nov. 23-25, Jan. 2-12, May 16 to June 30 (no gage-height record Aug. 7-13).

## Halawa Stream near Aiea--Continued

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.35	6.2	0.49	0	0.48	10.6	9.8	1.80	8.4	3.15	2.55	4.1
2	2.55	3.15	.24	0	.10	9.5	7.1	1.80	*6.6	2.95	2.35	4.1
3	3.5	1.80	.07	0	.22	7.3	5.4	2.35	5.6	6.6	*3.15	4.8
4	31.5	1.48	0	0	.74	5.3	4.5	2.55	8.6	4.8	4.1	4.1
5	12.3	6.1	0	0	.64	22	4.3	2.35	39.5	3.7	4.5	3.15
6	6.2	3.9	0	0	.44	101	3.7	2.55	10.3	3.7	4.1	2.75
7	2.55	2.75	0	0	.18	122	2.55	91	7.1	4.1	3.5	3.15
8	1.80	3.9	0	0	.09	*60	1.99	42	5.8	3.3	2.95	3.3
9	1.38	3.9	0	0	.29	24	1.80	12.4	4.8	2.35	3.7	3.5
10	11.1	2.75	0	18.5	.64	16.4	1.48	7.3	6.3	1.80	3.9	3.9
11	32.5	4.9	0	17.8	.59	11.0	*1.16	5.8	6.8	1.69	3.7	4.9
12	25	9.9	0	6.6	.69	7.5	1.06	59	8.1	1.69	3.5	a3.5
13	11.7	2.95	0	2.75	.64	7.1	.95	27.5	7.1	1.59	3.15	a3.0
14	6.2	1.48	0	1.69	.32	46	.95	15.1	5.8	1.69	2.95	a2.7
15	2.95	1.27	0	1.27	.21	27.5	.85	10.6	30	2.2	2.55	a2.8
16	2.55	3.15	0	.64	.29	124	.85	11.1	31	2.2	2.2	a3.0
17	3.25	2.95	0	.05	.18	23	.74	12.4	8.6	1.99	2.55	a3.1
18	26.5	3.15	.76	0	.44	11.5	.74	15.7	6.0	1.80	3.3	a3.0
19	10.1	2.95	.85	0	.74	7.3	.74	36.5	4.5	1.80	3.7	a2.6
20	6.2	1.99	.07	0	.54	5.4	.69	30	3.3	1.99	4.1	a3.0
21	2.95	7.3	0	0	.04	7.1	*151	17.0	2.95	1.99	3.7	*a2.5
22	1.80	3.7	.13	0	0	34.5	22.5	98	75	2.2	2.75	2.55
23	*1.80	15.0	0	0	.13	19.6	9.2	*420	51	1.99	3.15	3.15
24	1.48	10.1	0	0	.54	9.8	5.8	225	14.8	1.59	3.3	3.15
25	.95	3.3	5.1	0	.44	6.2	3.7	111	8.1	1.59	3.7	3.3
26	.54	1.69	1.48	0	.11	4.3	2.75	30.5	5.6	2.2	5.2	3.15
27	.34	10.9	.33	0	.10	5.5	1.99	17.8	4.1	5.9	8.4	2.55
28	72	3.3	0	.05	268	4.3	1.69	11.7	3.15	5.6	8.0	2.95
29	154	2.75	0	.27	408	17.5	1.48	-	2.75	3.5	4.5	2.95
30	44	1.59	0	.39	*28	20.5	1.48	-----	2.95	3.3	3.7	2.55
31	11.1	.74	-----	.13	-----	14.8	1.80	-----	2.95	-----	3.9	-----
Total	493.14	128.99	9.52	50.14	713.82	790.5	254.74	1,319.80	387.55	84.95	116.80	97.25
Mean:	15.9	4.16	0.317	1.62	23.8	25.5	8.22	47.1	12.5	2.83	3.77	3.24
mgd	24.6	6.44	0.490	2.51	36.8	39.5	12.7	72.9	19.3	4.38	5.83	5.01
cfs	1,510	396	29	154	2,190	2,430	782	4,050	1,190	261	358	298
Ac-ft												
Calendar year 1954: Max	154			Min 0		Mean(mgd)	7.58	Mean(cfs)	11.7	Ac-ft	8,490	
Fiscal year 1954-55: Max	420			Min 0		Mean(mgd)	12.2	Mean(cfs)	18.9	Ac-ft	13,650	

Peak discharge (base, 300 mgd).--July 29 (1 p.m.) 510 mgd (789 cfs), 5.58 ft; Nov. 28 (7 p.m.) 2,080 mgd (3,220 cfs), 9.67 ft; Jan. 21 (10 a.m.) 850 mgd (1,320 cfs), 6.87 ft; Feb. 7 (12 m.) 350 mgd (542 cfs), 4.80 ft; Feb. 23 (5 p.m.) 1,240 mgd (1,920 cfs), 8.10 ft; Mar. 22 (6:30 p.m.) 428 mgd (662 cfs), 5.15 ft.

\* Discharge measurement made on this day.

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

Note.--Backwater from flashboards July 1 to Nov. 30.

## Moanalua Stream near Honolulu

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

Drainage area--2.8 sq mi.

Records available--June 1926 to June 1955.

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

Average discharge--29 years, 2.06 mgd (3.19 cfs).

Extremes--Maximum discharge during year, 695 mgd (1,080 cfs) Feb. 23 (gage height, 6.52 ft), from rating curve extended above 71 mgd as explained below; no flow for many days.

1926-55: Maximum discharge, 2,960 mgd (4,580 cfs) Nov. 18, 1930 (gage height, 11.58 ft), from rating curve extended above 71 mgd by test on model of station site; no flow at times each year.

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

Revisions (fiscal years)--WSP 905: Drainage area. WSP 935: 1931(M).

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Nov. 28

Nov. 29 to June 30

0.6	2.85	-0.2	0	0.5	1.86
.8	5.7	-.1	.01	.6	2.9
1.1	13.0	0.0	.03	.8	5.8
1.5	27	.1	.10	1.1	13.8
2.0	55	.2	.30	1.5	34
2.5	91	.3	.63	2.0	72
		.4	1.13	3.0	165

Note.--Same as following table below 0.5 ft.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	3.4	0.17	0	0	2.6	1.78	0.07	2.7	0.06	0.07	
2	0	1.86	.08	0	0	4.3	1.27	.13	1.86	.20	.04	
3	0	1.20	.06	0	0	1.40	*.81	.33	1.47	3.75	.03	
4	6.0	.86	.04	0	0	.76	2.3	.38	1.82	1.26	.02	
5	1.93	3.0	.03	0	0	9.2	1.01	.92	8.9	.63	.02	
6	.57	2.25	.03	0	0	20.5	.59	1.22	2.05	.38	.02	
7	.19	1.40	.02	0	0	22.5	.38	.72	1.47	.19	0	
8	.04	2.05	.02	0	0	14.4	.19	.20	.96	.09	0	
9	.02	1.27	.02	0	0	6.0	.08	5.8	.71	.07	0	
10	2.9	1.09	0	8.1	0	3.8	.05	2.8	.67	.06	0	
11	7.4	1.71	0	6.1	0	2.15	.04	1.85	.59	.05	0	
12	6.4	5.7	0	2.05	0	1.27	.03	.23	.71	.04	0	
13	3.15	a1.0	0	.97	0	1.27	.03	8.9	.51	.04	0	
14	1.45	a.90	0	1.18	0	19.5	.03	4.4	.35	.03	0	
15	.81	a1.1	0	.52	0	9.4	.03	2.7	18.1	.02	0	
16	.51	a1.1	0	.15	0	38.5	.03	2.5	10.1	.01	0	
17	3.7	a.90	0	.05	0	7.5	.02	6.2	2.45	.01	0	
18	8.4	a1.2	0	.02	0	3.55	.02	6.1	1.34	0	0	
19	3.1	a1.0	0	.02	0	1.96	.01	14.6	.76	0	0	
20	2.6	a1.1	0	.01	0	1.27	0	8.6	.51	0	0	
21	1.70	a3.0	0	0	0	2.45	54	4.4	.35	0	0	
22	1.01	a1.5	0	0	0	14.4	6.0	35.5	.26	0	0	
23	.55	a6.0	0	0	0	6.0	2.2	139	14.7	0	0	
24	.35	*3.1	0	0	0	2.7	1.07	.61	5.95	0	0	
25	.17	1.86	.02	0	0	1.62	.59	37.5	1.95	0	0	
26	.06	1.38	0	0	0	1.01	.30	10.4	1.01	0	0	
27	.03	2.35	0	0	0	1.01	.10	6.0	.67	8.6	.61	
28	35	1.20	0	0	0	.96	.05	3.95	.41	1.82	1.49	
29	50	.96	0	0	*67	4.3	.03	-	.28	.63	.24	
30	13.5	.59	0	0	7.3	6.1	.03	-	.17	.25	.02	
31	5.9	.35	-----	0	-----	3.15	.27	-----	.09	-----	0	
Total	157.44	56.38	0.49	19.17	144.3	215.53	73.34	479.25	107.61	18.19	2.56	0
Mean:	5.08	1.82	0.016	0.618	4.81	6.95	2.37	17.1	3.47	0.606	0.083	0
mgd	7.86	2.82	0.025	0.956	7.44	10.8	3.67	26.5	5.37	0.938	0.128	0
cfs	483	173	1.5	59	443	661	225	1,470	330	56	7.9	0
Ac-ft												

Calendar year 1954: Max 70 Min 0 Mean(mgd) 1.77 Mean(cfs) 2.74 Ac-ft 1,980  
Fiscal year 1954-55: Max 138 Min 0 Mean(mgd) 3.49 Mean(cfs) 5.40 Ac-ft 3,910

Peak discharge (base, 150 mgd)--July 29 (10 a.m.) 198 mgd (308 cfs), 3.39 ft; Nov. 28 (6:30 p.m.) 590 mgd (913 cfs), 6.01 ft; Jan. 21 (8:30 a.m.) 430 mgd (685 cfs), 5.02 ft; Feb. 7 (11:30 a.m.) 370 mgd (572 cfs), 4.65 ft; Feb. 23 (4:30 p.m.) 695 mgd (1,080 cfs), 6.52 ft.

\* \* Discharge measurement made on this day.

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

## Kalihi Stream near Honolulu

Location.--Lat 21°22'00", long 157°50'45", on right bank at Kioi Pool, 0.4 mile upstream from Catholic Orphanage and 4.1 miles north of Honolulu Post Office.

Drainage area.--2.7 sq mi.

Records available.--September 1913 to June 1955.

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, water-stage recorder at same site at datum 2.00 ft lower.

Average discharge.--38 years (1916-20, 1921-55), 4.59 mgd (7.10 cfs).

Extremes.--Maximum discharge during year, 1,950 mgd (3,020 cfs) Feb. 23 (gage height, 9.42 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 0.72 mgd (1.11 cfs) Nov. 27, 28.

1913-55: Maximum discharge (revised), about 5,400 mgd (about 8,400 cfs) Nov. 18, 1930, by observing on model of station site, the hydraulic conditions which would produce floodmarks of 13.8 ft in gage shelter; minimum, 0.06 mgd (0.09 cfs) Oct. 22, 1933.

Revisions.--The maximum discharge for the fiscal year 1931 has been revised to about 5,400 mgd (about 8,400 cfs) Nov. 18, 1930, superseding figure published in WSP 795.

Remarks.--Records good. Water for domestic use diverted from stream above station.

Revisions (fiscal years).--WSP 795: 1921-30(M), 1932(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

2.1	0.37	3.0	19.2
2.2	1.05	3.5	38
2.3	2.2	4.0	65
2.4	3.9	5.0	134
2.7	10.9	6.0	240

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	9.0	3.7	1.22	1.32	4.6	4.8	2.5	8.7	2.95	2.5	2.2
2	3.3	7.1	3.5	1.77	1.13	6.3	4.1	3.35	7.6	4.1	2.35	2.2
3	2.95	6.2	3.3	1.22	1.13	3.9	3.9	2.8	6.9	6.4	2.95	2.05
4	13.2	6.0	2.95	1.66	1.05	3.7	4.4	2.65	6.7	3.7	2.2	1.66
5	6.2	11.8	2.95	1.43	1.05	12.2	3.5	4.9	12.3	3.15	2.05	1.54
6	3.9	8.6	3.3	1.54	.96	13.7	3.15	4.1	5.7	2.95	2.05	1.54
7	3.15	6.7	2.8	1.54	.96	25	2.95	122	5.5	2.95	1.78	1.43
8	2.8	7.7	2.65	1.32	1.13	15.8	2.8	26	5.3	2.65	1.66	1.54
9	2.2	5.7	2.65	1.43	1.13	8.5	2.65	9.7	4.8	2.35	1.54	1.43
10	6.7	5.5	2.35	7.1	1.22	6.9	2.5	6.9	5.5	2.2	1.54	2.25
11	13.5	6.0	2.2	5.8	.96	5.5	2.5	8.2	5.3	2.2	1.54	1.54
12	10.9	6.8	2.05	4.6	.87	4.8	2.35	20.5	5.5	2.05	1.43	1.43
13	9.0	5.0	2.05	*3.15	.87	5.9	2.8	12.3	4.6	1.90	1.43	1.32
14	6.2	4.6	1.90	3.15	1.05	23.5	2.65	8.0	3.9	1.90	1.32	1.22
15	5.7	5.5	1.90	2.5	1.54	9.2	2.35	7.1	18.7	2.05	1.32	1.13
16	4.6	5.3	1.90	2.05	2.2	34	2.35	7.6	11.6	2.2	1.22	1.13
17	8.4	4.6	1.78	1.78	1.05	9.2	2.2	7.9	5.5	3.45	1.22	*1.13
18	10.4	5.7	2.5	1.90	1.05	6.7	2.2	7.4	4.8	2.05	2.55	1.13
19	6.7	5.0	2.05	1.66	.96	5.3	2.05	19.0	4.1	1.78	1.90	1.13
20	6.4	5.3	1.66	1.99	.87	4.8	1.90	11.4	3.7	1.54	4.1	1.05
21	5.3	9.2	1.66	2.5	.87	8.8	57	7.8	3.5	1.78	2.05	1.05
22	4.6	6.2	1.43	1.90	.87	23	6.7	37	27.5	2.2	1.66	.96
23	3.9	9.1	1.43	1.54	.96	9.5	3.9	210	13.2	1.66	2.25	2.05
24	3.5	8.5	1.43	1.43	.87	6.4	3.3	73	6.0	1.54	2.95	1.54
25	3.15	6.2	4.2	1.43	.79	5.3	2.95	47	4.8	1.43	2.5	1.32
26	2.65	6.7	1.90	1.32	.87	4.8	2.65	17.4	4.1	2.3	5.0	1.13
27	2.5	6.4	1.54	1.32	.79	5.7	2.35	13.2	3.7	26.5	8.9	1.13
28	73	6.5	1.32	1.22	101	5.5	2.2	10.4	3.5	*4.8	5.5	.96
29	73	5.0	1.54	1.22	71	9.7	2.2	-	3.15	3.3	3.7	2.25
30	21.5	4.6	1.32	1.22	*8.0	6.6	3.85	-----	2.95	3.3	2.8	1.32
31	11.6	4.1	-----	1.71	-----	5.7	3.9	-----	2.35	-----	2.35	-----
Total	334.20	199.6	67.91	65.62	208.52	302.5	149.10	710.10	212.05	103.33	78.31	43.76
Mean	10.8	6.44	2.26	2.12	6.95	9.76	4.81	25.4	6.84	3.44	2.53	1.46
mgd	16.7	9.96	3.50	3.28	10.8	15.1	7.44	39.3	10.6	5.32	3.91	2.26
cfs	1,030	613	208	201	640	928	458	2,180	651	317	240	134
Ac-ft												

Calendar year 1954: Max 101 Min 0.45 Mean(mgd) 4.30 Mean(cfs) 6.65 Ac-ft 4,820  
Fiscal year 1954-55: Max 210 Min 0.79 Mean(mgd) 6.78 Mean(cfs) 10.5 Ac-ft 7,600

Peak discharge (base, 400 mgd).--Nov. 28 (9 p.m.) 1,240 mgd (1,920 cfs), 8.60 ft; Feb. 7 (9 a.m.) 760 mgd (1,180 cfs), 7.76 ft; Feb. 23 (7:30 p.m.) 1,950 mgd (3,020 cfs), 9.42 ft.

\* Discharge measurement made on this day.

## Nuuanu Stream below reservoir 2 wasteway, near Honolulu

Location.--Lat 21°20'55", long 157°49'40", on right bank near Pali Road in upper Nuuanu Valley, 0.2 mile downstream from reservoir 2 wasteway and 3.5 miles northeast of Honolulu Post Office.

Drainage area.--3.4 sq mi.

Records available.--October 1913 to June 1955.

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. Sept. 7, 1915, to Apr. 4, 1918, staff gage at same site and datum.

Average discharge.--36 years (1917-20, 1922-55), 4.93 mgd (7.63 cfs).

Extremes.--Maximum discharge during year, 652 mgd (1,010 cfs) Feb. 23 (gage height, 5.54 ft); minimum, 1.45 mgd (2.24 cfs) Nov. 27.  
1913-55: Maximum discharge, 4,520 mgd (6,990 cfs) Jan. 16, 1921 (gage height, 8.74 ft, from floodmarks), from rating curve extended above 300 mgd by test on model of station site; minimum, 0.06 mgd (0.09 cfs) Sept. 10, 11, 1925.

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

Revisions (fiscal years).--WSP 985: 1921-35(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.5	1.45	1.1	5.2
.6	1.90	1.3	9.7
.7	2.4	1.6	19.0
.8	2.95	2.0	37.5
.9	3.5	3.0	105
1.0	4.1	4.0	195

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.86	10.0	5.0	3.0	2.15	*5.6	6.4	6.0	14.7	4.8	5.8	4.6
2	3.0	7.7	4.9	3.05	2.05	7.3	5.6	9.7	12.8	6.6	5.6	4.8
3	3.2	8.4	4.9	2.9	2.05	5.2	6.0	8.0	11.1	12.8	5.8	4.4
4	7.8	9.0	4.4	3.05	2.0	5.6	7.7	7.0	10.8	6.0	5.4	4.5
5	3.05	14.6	4.4	3.0	2.0	9.6	6.0	7.7	10.8	5.4	5.2	4.5
6	2.3	11.4	5.1	3.3	1.95	13.1	5.6	6.8	9.2	6.4	5.2	4.1
7	2.1	9.7	4.3	2.9	1.90	16.5	5.2	55	8.2	7.0	5.1	4.1
8	2.05	10.5	4.5	2.85	2.0	10.5	5.1	41	7.2	7.2	5.1	4.2
9	2.0	8.4	4.3	2.95	1.95	8.0	4.9	16.6	6.8	7.2	5.0	3.75
10	4.8	8.2	*4.2	6.6	1.95	7.2	4.6	12.5	7.4	6.8	5.0	4.0
11	6.9	8.2	4.0	4.2	1.81	6.2	4.1	14.5	6.8	6.4	5.1	3.8
12	6.2	9.0	3.9	3.7	1.95	6.0	4.2	20.5	7.4	6.4	5.0	4.0
13	4.1	7.7	3.8	4.5	1.76	6.2	4.4	17.1	6.4	6.0	4.9	3.75
14	3.45	8.0	3.75	3.85	1.86	16.1	4.2	12.8	5.6	6.2	4.9	3.75
15	3.5	8.7	3.9	3.45	2.0	*8.2	4.0	11.4	17.5	6.4	4.9	3.6
16	a3.2	7.4	3.85	3.05	2.45	23.5	4.0	9.7	17.0	6.2	4.8	3.6
17	a4.2	7.7	3.35	2.9	1.72	9.0	3.9	9.4	10.0	6.6	4.8	3.45
18	a5.0	8.2	3.6	2.85	1.76	7.0	3.85	8.7	8.0	6.2	5.1	3.45
19	a3.5	9.2	3.55	2.75	1.68	6.6	3.7	16.5	6.8	5.8	4.9	3.35
20	a3.4	6.8	3.4	2.8	1.68	6.2	3.7	12.3	6.0	6.0	6.0	3.3
21	3.2	10.5	3.3	2.9	1.58	9.1	36.5	10.5	5.6	6.0	4.9	3.2
22	3.3	7.2	3.2	3.0	1.58	14.5	7.4	24.5	32	6.0	4.8	3.1
23	3.1	8.0	3.15	2.6	1.63	7.7	6.8	140	25.5	5.8	4.8	4.0
24	3.15	7.4	3.3	2.5	1.58	6.8	6.2	108	11.7	5.8	4.6	3.1
25	2.95	6.0	5.4	2.4	1.54	6.6	6.2	94	8.7	5.6	4.9	3.0
26	2.9	7.4	3.4	2.35	1.89	6.2	6.2	64	7.4	5.8	5.0	2.95
27	2.85	7.0	3.2	2.25	1.58	6.8	6.0	39.5	6.4	26.5	5.6	2.9
28	34	5.8	3.35	2.2	52	8.0	6.0	17.3	5.8	*6.6	5.4	2.8
29	55	6.4	3.5	2.15	64	13.0	6.0	5.4	6.4	6.4	5.0	3.5
30	17.5	5.6	3.1	2.2	7.2	8.6	7.3	5.1	6.4	4.9	4.9	2.9
31	10.0	5.2	-----	2.4	-----	6.8	6.6	-----	5.0	-----	4.8	-----
Total	213.56	255.3	118.00	94.60	173.25	277.7	198.35	801.0	309.1	213.1	158.3	110.45
Mean:	6.89	8.24	3.93	3.05	5.78	8.96	6.40	28.6	9.97	7.10	5.11	3.68
mgd	10.7	12.7	6.08	4.72	8.94	13.9	9.30	44.3	15.4	11.0	7.31	5.63
cfs	655	783	392	290	532	852	609	2,460	949	654	486	339
Ac-ft												

Calendar year 1954: Max 64 Min 0.36 Mean(mgd) 3.90 Mean(cfs) 6.03 Ac-ft 4,370  
Fiscal year 1954-55: Max 140 Min 1.54 Mean(mgd) 8.01 Mean(cfs) 12.4 Ac-ft 8,970

Peak discharge (base, 150 mgd).--Nov. 28 (10 p.m.) 560 mgd (866 cfs), 5.31 ft; Jan. 21 (8 a.m.) 218 mgd (337 cfs), 4.17 ft; Feb. 7 (8 a.m.) 234 mgd (362 cfs), 4.34 ft; Feb. 23 (7:30 p.m.) 652 mgd (1,010 cfs), 5.54 ft.

\* Discharge measurement made on this day.

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

## East Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long 157°48'10", on right bank just downstream from highway bridge, 400 ft upstream from confluence with West Branch and 4 miles northeast of Honolulu Post Office.

Drainage area.--1.0 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1955.

Gage.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft above mean sea level (Honolulu Board of Water Supply benchmark). Prior to May 20, 1914, staff gage at site 200 ft upstream at different datum. May 20, 1914, to Jan. 16, 1921, water-stage recorder at site 50 ft upstream at different datum. Aug. 18, 1925, to Oct. 18, 1933, water-stage recorder at present site at datum 0.41 ft higher.

Average discharge.--36 years (1913-20, 1926-55), 3.13 mgd (4.84 cfs).

Extremes.--Maximum discharge during year, 525 mgd (812 cfs) Nov. 28 (gage height, 4.41 ft), from rating curve extended above 21 mgd by test on model of station site; minimum, 2.2 mgd (3.4 cfs) Nov. 22-28.

1913-21, 1925-55: Maximum gage height, 10.4 ft Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,000 mgd or 3,090 cfs, estimated from rating curve extended above 37 mgd); minimum discharge, 0.4 mgd (0.6 cfs) June 7, 8, 1926.

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day,  
(Shifting-control method used July 2-14, May 21 to June 16)

July 1-29

July 30 to June 30

0.4	1.85	1.1	9.4	0.4	2.1	1.1	10.0
.5	2.65	1.3	14.5	.5	2.95	1.3	15.0
.6	3.5	1.6	26.5	.6	3.9	1.6	26.5
.7	4.5	2.0	47	.7	5.0	2.0	47
.8	5.6	2.5	91	.8	6.1	2.5	91
.9	6.7			.9	7.3		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9	5.4	3.6	2.5	2.6	3.7	4.1	2.6	4.8	3.8	3.5	3.25
2	4.3	4.9	3.35	3.55	2.5	7.2	3.7	5.2	4.3	6.8	4.3	3.35
3	3.6	6.1	3.25	2.7	2.45	*3.6	3.8	3.6	3.9	16	4.1	3.25
4	8.3	6.7	3.15	3.4	2.45	6.1	5.0	3.05	3.8	5.0	3.6	3.25
5	4.0	11.7	3.05	3.05	2.35	10.2	3.7	6.2	4.5	4.0	*3.35	3.05
6	2.75	7.7	3.7	3.05	2.35	13.8	*3.35	3.8	3.8	3.6	3.5	2.85
7	2.4	6.1	3.35	2.8	2.45	19.5	3.25	39.5	3.7	3.4	3.35	2.85
8	2.55	7.9	3.05	2.85	2.8	6.3	3.15	10.5	3.6	3.6	3.35	3.15
9	2.5	5.1	3.05	4.3	2.7	6.3	3.05	4.7	3.5	3.7	3.25	2.8
10	5.4	5.7	2.95	12.0	2.7	5.1	2.95	3.9	4.9	3.5	3.25	3.85
11	5.5	4.7	2.85	4.9	2.45	4.2	2.85	7.3	3.8	3.4	3.25	2.95
12	4.0	5.2	2.85	3.85	2.35	4.1	2.85	9.8	4.5	3.4	3.25	3.05
13	3.5	4.0	2.85	4.0	2.25	6.3	3.15	7.2	4.3	3.35	3.25	2.95
14	3.05	4.7	2.8	*6.0	3.5	13.1	3.25	6.0	3.9	3.35	3.25	2.8
15	3.25	6.0	2.85	3.6	3.65	*5.5	2.85	6.2	14	4.2	3.15	2.7
16	2.75	4.6	4.3	3.15	3.95	12.0	2.85	6.0	7.0	3.7	3.15	*2.8
17	7.8	4.0	3.75	3.05	2.6	4.8	2.8	5.8	4.6	4.8	3.05	2.7
18	5.9	6.5	3.5	3.25	2.35	4.1	2.8	4.8	4.1	3.7	5.2	2.95
19	3.9	5.0	4.3	2.85	2.25	3.7	2.7	7.2	3.8	3.6	3.9	2.8
20	4.1	5.0	3.15	4.3	2.25	3.5	2.7	5.3	3.6	3.6	6.6	2.7
21	3.0	5.7	3.5	*3.6	2.25	11.6	27	*4.7	3.5	3.9	3.6	2.7
22	3.15	4.5	3.05	3.15	2.2	11.1	3.9	12.5	20	4.7	3.15	2.8
23	2.8	4.7	2.85	2.85	2.2	4.8	3.15	57	8.0	3.7	3.9	5.6
24	2.8	5.3	2.85	2.8	2.2	4.1	2.95	*25.5	4.5	3.5	3.25	3.6
25	2.5	3.9	6.2	2.7	2.2	3.7	2.8	16.1	3.9	3.5	3.65	3.35
26	2.4	7.5	3.55	2.7	2.25	3.6	2.7	7.5	3.6	7.1	5.3	3.25
27	2.35	5.3	3.85	2.8	2.2	4.9	2.8	6.3	3.5	19.3	7.3	3.65
28	58	4.3	2.8	2.5	4.0	9.1	2.6	5.4	3.4	4.7	5.0	2.95
29	41	5.0	2.85	2.5	4.9	13.4	2.6	-	3.7	4.0	3.7	6.4
30	12.4	4.1	2.6	2.8	5.2	6.5	3.25	-----	3.4	4.0	3.4	3.75
31	6.5	3.6	-----	3.0	-----	4.6	2.85	-----	3.6	-----	3.35	-----
Total	219.35	170.9	98.70	110.35	162.65	222.5	121.25	283.65	155.5	148.90	119.20	98.10
Mean												
mgd	7.08	5.51	3.29	3.56	5.42	7.18	3.91	10.1	5.02	4.96	3.85	3.27
cfs	11.0	8.53	5.09	5.51	8.39	11.1	6.05	15.6	7.77	7.67	5.96	5.06
Ac-ft	673	524	303	339	499	683	372	870	477	457	368	301
Calendar year 1954: Max	58				Min 0.77	Mean(mgd)	3.73	Mean(cfs)	5.77	Ac-ft	4,180	
Fiscal year 1954-55: Max					Min 2.2	Mean(mgd)	5.24	Mean(cfs)	8.11	Ac-ft	5,860	

Peak discharge (base, 200 mgd).--July 29 (12 m. 236 mgd (365 cfs), 3.42 ft; Nov. 28 (9 p.m.) 525 mgd (812 cfs), 4.41 ft; Jan. 21 (9 a.m.) 260 mgd (402 cfs), 3.52 ft; Feb. 7 (11:30 a.m.) 214 mgd (331 cfs), 3.30 ft; Feb. 23 (7 p.m.) 490 mgd (758 cfs), 4.26 ft; Apr. 27 (4:30 a.m.) 248 mgd (384 cfs), 3.47 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Feb. 28 to Apr. 12; discharge estimated on basis of recorded range in stage and records for West Branch Manoa Stream near Honolulu.

## West Branch Manoa Stream near Honolulu

Location.--Lat 21°19'50", long 157°48'15", on left bank 100 ft upstream from highway bridge and 4.2 miles northeast of Honolulu Post Office.

Drainage area.--1.1 sq mi.

Records available.--May 1913 to January 1921, August 1925 to June 1955.

Gage.--Water-stage recorder and combination Parshall flume and V-notch weir. Datum of gage is 290.84 ft above mean sea level (Honolulu Board of Water Supply benchmark). Prior to June 17, 1914, staff gage at same site at different datum. June 17, 1914, to Jan. 16, 1921, water-stage recorder at site 150 ft upstream at different datum. Aug. 4, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 3.40 ft lower.

Average discharge.--36 years (1913-20, 1926-55), 2.51 mgd (3.88 cfs).

Extremes.--Maximum discharge during year, 635 mgd (982 cfs) Feb. 23 (gage height, 4.84 ft), from rating curve extended above 33 mgd by test on model of station site; minimum, 0.16 mgd (0.25 cfs) Nov. 25, 27, 28.

1913-21, 1925-55: Maximum gage height, 10.4 ft Jan. 16, 1921, from floodmarks, site and datum then in use (discharge, 2,100 mgd or 3,250 cfs, estimated from rating curve extended above 40 mgd); minimum discharge, about 0.05 mgd (0.08 cfs) Mar. 16, 22, 1926.

Remarks.--Records good except those for period of no gage-height record, which are fair. Small quantity of water diverted above station occasionally for irrigation.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day),  
(Shifting-control method used Sept. 4-16, Oct. 17-21, Mar. 19-22,  
Mar. 25 to Apr. 2, June 28-30)

0.05	0.07	0.8	6.5
.1	.22	1.0	11.4
.2	.67	1.2	18.7
.3	1.28	1.6	40
.4	2.0	2.0	71
.6	3.8		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.45	4.6	1.86	0.52	0.47	2.6	2.5	0.73	3.05	1.50	1.42	1.04
2	5.1	3.5	1.84	.86	.42	6.5	2.1	3.4	2.6	5.0	2.35	1.31
3	5.4	3.6	1.84	.52	.38	2.55	2.05	1.50	2.15	12.3	2.55	1.04
4	15.9	3.8	1.68	1.14	.34	3.95	4.3	1.28	2.1	2.4	1.64	.98
5	6.4	8.4	1.64	.62	.34	10.5	2.35	4.6	2.45	1.71	1.28	1.21
6	3.6	6.6	2.05	.85	.30	15.1	1.68	1.97	1.78	1.42	1.35	.67
7	2.6	4.8	1.78	.62	.30	15.9	1.57	31	1.64	1.28	1.22	.62
8	2.4	7.0	1.64	.81	.43	7.9	1.42	7.9	1.57	1.16	1.10	1.26
9	2.3	3.95	1.73	1.86	.52	6.4	1.28	3.25	1.42	1.04	.98	.67
10	5.9	3.75	1.71	8.1	.47	4.4	1.16	2.25	2.85	.98	.91	1.99
11	6.2	3.1	1.57	3.4	.34	3.15	1.04	5.0	1.64	.91	.85	.85
12	5.8	3.85	1.35	*2.1	.30	2.6	9.9	2.95	8.9	.85	.73	.91
13	a4.0	2.5	1.28	2.15	.30	5.2	1.22	6.4	2.9	.85	.67	.79
14	a2.8	3.2	1.16	2.15	.82	16.6	1.22	4.4	1.71	.79	.67	.67
15	a3.2	4.7	1.42	1.35	1.25	6.8	.98	4.8	10.6	1.86	.67	.73
16	a2.4	3.75	2.0	1.04	1.85	13.1	.91	3.7	5.7	1.22	.57	.73
17	a7.5	2.6	1.60	.84	.52	4.3	.85	4.0	2.35	3.0	.52	*.62
18	a6.0	6.1	1.69	.52	.42	3.15	.65	3.0	1.71	1.42	2.35	1.34
19	a3.5	4.8	1.48	.39	.34	2.5	.75	7.2	1.58	1.16	1.52	.91
20	*a3.8	3.9	.79	.94	.30	2.15	.67	4.2	1.44	1.04	5.3	.67
21	2.6	5.1	.84	1.14	.30	6.9	24.5	*3.4	1.42	1.22	1.57	.62
22	3.05	3.85	.62	.98	.26	9.9	2.95	13.0	19.9	2.4	1.16	.69
23	2.15	3.8	.52	.73	.26	3.55	1.64	62	6.4	1.42	1.52	5.5
24	2.0	3.85	.57	.62	.26	2.5	1.28	*25.5	2.6	1.16	1.10	2.05
25	1.78	2.5	4.3	.57	.19	2.1	1.10	18.1	1.98	.98	2.0	1.61
26	1.57	6.8	1.84	.57	.30	1.86	.98	5.9	1.67	5.9	2.75	1.16
27	1.42	4.6	.79	.52	.22	3.05	.79	4.5	1.45	22.5	4.6	1.20
28	32.5	3.05	.67	.47	38.5	5.0	.73	3.6	1.35	3.05	3.25	.87
29	38	3.9	.73	.42	42	11.9	.73	-	1.50	2.0	1.78	5.3
30	11.8	2.65	.62	.52	5.0	5.4	1.70	-----	1.16	2.2	1.42	1.69
31	5.8	2.0	-----	.62	-----	3.05	1.18	-----	1.35	-----	1.22	-----
Total	199.92	130.60	43.01	37.93	97.70	190.56	67.62	243.48	94.97	84.72	51.02	39.70
Mean:												
mgd	6.45	4.21	1.43	1.22	3.26	6.15	2.18	8.70	3.06	2.82	1.65	1.32
cfs	9.98	6.51	2.21	1.89	5.04	9.52	3.37	13.5	4.73	4.36	2.55	2.04
Ac-ft	614	401	132	116	300	585	208	747	291	260	157	122

Calendar year 1954: Max 42 Min 0.07 Mean(mgd) 2.49 Mean(cfs) 3.65 Ac-ft 2,790  
Fiscal Year 1954-55: Max 62 Min 0.19 Mean(mgd) 3.51 Mean(cfs) 5.43 Ac-ft 3,930

Peak discharge (base, 200 mgd).--Nov. 28 (8:30 p.m.) 515 mgd (797 cfs), 4.53 ft; Jan. 21 (8 a.m.) 248 mgd (384 cfs), 3.40 ft; Feb. 7 (7:30 a.m.) 225 mgd (348 cfs), 3.26 ft; Feb. 23 (6:30 p.m.) 235 mgd (353 cfs), 4.84 ft; Apr. 27 (6 a.m.) 248 mgd (384 cfs), 3.45 ft.

\* Discharge measurement made on this day.

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



## Pukele Stream near Honolulu

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

Drainage area.--1.2 sq mi.

Records available.--April 1912 to September 1913, June 1926 to June 1955.

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

Average discharge.--29 years (1926-55), 1.27 mgd (1.96 cfs).

Extremes.--Maximum discharge during year, 530 mgd (820 cfs) Nov. 29 (gage height, 5.71 ft), from rating curve extended above 36 mgd by test on model of station site; minimum, 0.27 mgd (0.42 cfs) June 22.

1912-13, 1926-55: Maximum discharge, 1,680 mgd (2,600 cfs) Apr. 11, 1930 (gage height, 7.75 ft, from floodmarks), from rating curve extended above 14 mgd by test on model of station site; minimum, 0.07 mgd (0.11 cfs) Nov. 15-25, 1945.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are fair. A 2-inch pipe diverts water from stream above station.

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Nov. 28

Nov. 29 to June 30

1.0	0.23	1.8	8.0	0.9	0.15	1.7	7.8
1.1	.55	2.0	12.5	1.0	.42	2.0	14.3
1.2	1.00	2.5	31	1.1	.87	2.5	32
1.4	2.7	3.0	60	1.2	1.50	3.0	60
1.6	4.9			1.4	3.35	3.5	100

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.67	1.63	1.28	0.55	0.51	1.11	1.75	a0.77	2.75	1.50	0.62	0.72
2	1.34	1.35	1.21	.59	.47	2.15	1.67	1.03	2.55	1.43	.67	.72
3	1.39	1.56	1.21	.55	.47	*1.14	1.67	.77	2.35	3.45	.67	.67
4	5.2	2.4	1.14	.59	.43	2.4	1.99	.77	2.35	1.17	.62	.62
5	2.15	4.3	1.07	.59	.43	5.2	1.67	a.73	2.3	1.17	.62	.58
6	1.28	2.8	1.00	.55	.43	7.9	*1.50	a.70	2.15	1.17	.62	.54
7	1.21	2.2	.95	.51	.43	13.1	1.43	18.2	2.1	1.11	.54	.50
8	1.21	2.25	.90	.51	.43	5.9	1.43	5.9	2.0	1.04	.54	.50
9	1.14	1.64	.85	.58	.43	3.0	1.37	1.72	1.92	1.04	.50	.46
10	1.78	1.64	.80	2.85	.40	2.25	1.37	1.17	2.0	.98	.50	.46
11	2.4	1.49	.75	.95	.40	1.83	1.23	2.95	1.75	.96	.46	.42
12	1.47	1.49	.75	.67	.40	1.83	1.17	6.3	1.75	.87	.46	.42
13	1.36	1.42	.71	*.88	.40	3.95	1.11	4.7	1.75	.87	.42	.38
14	1.28	1.42	.67	2.55	.44	a8.0	1.04	2.75	1.75	.82	.42	.38
15	1.28	1.56	.67	.95	.40	*a3.5	.92	2.7	9.3	.87	.42	.38
16	1.28	1.35	.69	.90	.40	7.4	.87	3.1	6.8	.78	.42	.35
17	1.94	1.28	.72	.90	.40	2.7	.82	3.05	1.92	.77	.42	.32
18	2.2	1.99	.63	.90	.40	2.0	.77	2.8	1.58	.70	.59	.32
19	1.42	1.46	.63	.85	.40	1.83	.77	3.4	1.58	.67	.42	.35
20	*1.14	1.35	.63	1.02	.40	1.75	.72	2.75	1.50	.67	1.69	.35
21	1.07	1.94	.59	.85	.40	5.0	16.9	*2.55	1.50	.67	.46	.29
22	1.15	1.42	.59	.75	.37	*7.7	1.92	7.3	21.5	.73	.46	.29
23	1.07	1.49	.59	.75	.37	2.75	1.04	47	9.6	.67	.54	.76
24	1.00	1.93	.59	.71	.37	1.92	a.96	20	2.3	.62	.58	.35
25	.95	1.35	.72	.67	.37	1.75	a.92	16.7	1.75	.62	.54	.35
26	.95	2.2	.59	.63	.37	1.75	a.90	6.2	1.75	.72	1.27	.35
27	.90	2.25	.59	.63	.37	1.77	a.86	4.2	1.67	2.35	2.25	.38
28	*34	1.49	.59	.59	31.5	4.3	a.82	3.25	1.67	.58	.88	.42
29	11.4	1.49	.59	.55	64	7.8	a.80	-	1.67	.58	.72	.95
30	3.4	*1.42	.59	.55	3.1	3.8	a.90	-----	1.58	.62	.72	.50
31	1.92	1.35	-----	.55	-----	2.0	a.83	-----	1.50	-----	.72	-----
Total	90.95	54.91	23.29	25.67	109.69	119.48	52.12	173.46	98.64	30.20	20.76	14.08
Mean:												
mgd	2.93	1.77	0.776	0.828	3.66	3.85	1.68	6.20	3.18	1.01	0.670	0.469
cfs	4.53	2.74	1.20	1.28	5.66	5.96	2.60	9.59	4.92	1.56	1.04	0.725
Ac-ft	279	169	71	79	337	367	160	532	303	93	64	43

Calendar year 1954: Max 64 Min 0.19 Mean(mgd) 1.50 Mean(cfs) 2.32 Ac-ft 1,680  
Fiscal year 1954-55: Max 64 Min 0.29 Mean(mgd) 2.23 Mean(cfs) 3.45 Ac-ft 2,500

Peak discharge (base, 90 mgd).--July 28 (7 a.m.) 120 mgd (186 cfs), 3.68 ft; Nov. 29 (4 a.m.) 530 mgd (820 cfs), 5.71 ft; Dec. 29 (7:30 p.m.) 95 mgd (147 cfs), 3.44 ft; Jan. 21 (9 a.m.) 128 mgd (198 cfs), 3.77 ft; Feb. 7 (10 a.m.) 115 mgd (178 cfs), 3.65 ft; Feb. 23 (6 p.m.) 280 mgd (433 cfs), 4.40 ft; Mar. 22 (9 p.m.) 105 mgd (162 cfs), 3.56 ft.

\* Discharge measurement made on this day.  
a Doubtful or no gage-height record; discharge estimated on basis of probable decrease in flow and records for nearby streams.

## Waiomao Stream above Pukele Stream, near Honolulu

Location.--Lat 21°18'30", long 157°47'10", on left bank 300 ft west of road, 1 mile upstream from confluence with Pukele Stream, and 5 miles east of Honolulu Post Office.

Drainage area.--1.0 sq mi.

Records available.--April 1911 to December 1912, June 1926 to June 1955.

Gage.--Water-stage recorder and V-notch weir. Datum of gage is 373.66 ft above mean sea level (Honolulu Board of Water Supply benchmark). Apr. 12, 1911, to Dec. 31, 1912, staff gage at site 0.3 mile downstream at different datum.

Average discharge.--29 years (1926-55), 1.17 mgd (1.81 cfs).

Extremes.--Maximum discharge during year, 465 mgd (719 cfs) Nov. 29 (gage height, 5.07 ft), from rating curve extended above 58 mgd as explained below; minimum, 0.05 mgd (0.08 cfs) Nov. 13, 14.  
1911-12, 1926-55: Maximum discharge, 602 mgd (931 cfs) Oct. 15, 1938 (gage height, 5.43 ft), from rating curve extended above 58 mgd by test on model of station site; no flow at times.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.9	0.02	1.7	5.4
1.0	.10	1.9	8.6
1.1	.32	2.2	16.5
1.2	.69	2.6	34
1.3	1.22	3.0	56
1.4	1.95	3.5	90
1.5	2.9		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.25	1.57	0.56	0.15	0.46	1.86	0.99	0.29	1.36	0.35	0.23	0.32
2	2.2	1.10	.44	.57	.23	2.3	.79	1.40	1.04	.38	.26	.32
3	1.72	1.75	.38	.29	.17	1.10	.64	1.04	.84	<u>3.0</u>	.41	.32
4	8.3	2.35	.32	.29	.11	2.85	1.36	.56	.69	.69	.26	.23
5	2.5	<u>5.1</u>	.29	.32	.10	5.1	.79	.48	.89	.44	.21	.21
6	1.16	2.95	.32	.29	.08	8.9	.56	<u>2.48</u>	.56	.38	.23	.19
7	.74	2.15	.26	.26	.08	<u>11.8</u>	.44	22.5	.48	.32	.23	.15
8	.64	2.4	.21	.21	.10	5.3	.38	8.8	.44	.29	.19	.17
9	.64	1.29	.19	.29	.13	2.25	.32	2.15	.56	.26	.15	.13
10	1.94	1.36	.17	<u>5.0</u>	.13	1.57	.29	1.16	1.12	.23	.13	.29
11	3.0	1.16	<u>.13</u>	1.55	.10	1.04	.23	3.65	.74	.23	.13	.29
12	1.57	1.23	<u>.13</u>	*.69	.09	1.04	.21	7.9	.48	.19	.15	.23
13	1.22	.89	.23	*1.56	<u>.07</u>	2.05	.23	4.7	.48	.15	.13	.23
14	.79	.64	.13	*4.1	<u>.66</u>	6.5	.23	2.4	.48	.15	.11	.19
15	a.79	1.40	.13	1.36	.99	3.0	.19	2.35	9.1	.20	.10	.17
16	a.79	1.04	.60	.74	.89	8.1	.19	3.3	6.1	.29	.09	.15
17	a2.0	.74	.54	.48	.48	2.05	.19	2.8	1.36	.35	<u>.07</u>	.15
18	a2.4	a1.7	.62	.52	.26	1.22	.19	2.7	.84	.23	a.9	.19
19	a1.4	a.90	.41	.41	.19	.84	<u>.15</u>	2.85	.60	.19	a.7	.26
20	a.75	a.60	.23	.82	.13	.64	.15	2.35	.48	<u>.13</u>	a1.2	.15
21	.60	a1.65	.49	.97	.11	5.3	*a20	*1.99	.46	.21	a.52	<u>.11</u>
22	.60	a.87	.38	.48	.10	*8.0	2.4	9.0	<u>32</u>	.62	.38	.118
23	.52	a.89	.23	.35	.15	2.0	1.10	72	9.7	.35	.44	1.18
24	.44	a1.6	.19	.29	.11	1.10	.69	45	2.05	.23	.38	a.80
25	.35	a.80	<u>.98</u>	.26	.08	.84	.52	17.7	1.16	.17	.35	a.60
26	.29	2.65	.41	.21	.09	.60	.41	4.3	.84	.23	1.52	a.54
27	<u>.23</u>	2.05	.23	.19	.08	.74	.35	3.35	.64	*.82	3.75	a.64
28	<u>64</u>	1.16	.19	.17	26.5	2.85	.26	1.87	.52	.60	<u>1.61</u>	a.52
29	20.5	1.04	.23	.13	71	6.9	.26	1	.48	.38	.79	a1.4
30	5.4	*.94	.23	.19	4.5	3.45	.32	-----	.41	.38	.52	a.6
31	2.15	<u>.64</u>	-----	.67	-----	1.43	.41	-----	<u>.38</u>	-----	.41	-----
Total	130.88	47.01	9.85	23.81	108.17	102.72	35.24	229.07	77.28	13.44	16.55	11.04
Mean:												
mgd	4.22	1.52	0.328	0.768	3.61	3.31	1.14	8.18	2.49	0.448	0.534	0.368
cfs	6.53	2.35	0.507	1.19	5.53	5.12	1.76	12.7	3.85	0.693	0.826	0.569
Ac-ft	402	144	30	73	332	315	108	703	237	41	51	34

Calendar year 1954: Max 71 Min 0 Mean(mgd) 1.59 Mean(cfs) 2.46 Ac-ft 1,780  
Fiscal year 1954-55: Max 72 Min 0.07 Mean(mgd) 2.21 Mean(cfs) 3.42 Ac-ft 2,470

Peak discharge (base, 70 mgd).--July 28 (8:30 a.m.) 156 mgd (241 cfs), 4.16 ft; Nov. 29 (4 a.m.) 465 mgd (719 cfs), 5.07 ft; Jan. 21 (time and discharge unknown); Feb. 7 (11 a.m.) 145 mgd (224 cfs), 4.10 ft; Feb. 23 (12:30 p.m.) 295 mgd (456 cfs), 4.70 ft; Mar. 22 (9 p.m.) 125 mgd (193 cfs), 3.90 ft.

\* Discharge measurement made on this day.

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

## 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.--3.0 sq mi.

Records available.--April 1952 to June 1955.

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

Extremes.--Maximum discharge during year, 1,560 mgd (2,410 cfs) Nov. 29 (gage height, 4.52 ft), from rating curve extended above 75 mgd by test on model of station site; minimum daily, 0.22 mgd (0.34 cfs) June 21.  
1952-55: Maximum discharge, that of Nov. 29, 1954; minimum, 0.10 mgd (0.16 cfs) Sept. 29, 1953.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.2	0.12	1.8	9.3
1.3	.24	1.9	17.0
1.4	.50	2.0	33
1.5	1.00	2.2	82
1.6	2.0	2.4	153
1.7	4.5	2.6	275

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.95	3.5	1.9	0.88	1.08	4.0	2.55	1.2	5.0	1.35	0.90	0.76
2	3.2	2.75	1.6	1.76	.82	5.0	2.35	2.9	3.8	1.35	.92	1.02
3	4.4	4.7	1.5	.82	.66	3.5	2.15	1.9	3.5	7.8	1.1	.82
4	10.3	7.8	1.4	1.08	.62	7.0	3.4	1.2	3.5	1.88	.86	.66
5	5.3	11.5	1.3	1.19	.58	14	2.15	1.1	3.9	1.45	.80	.54
6	1.16	7.3	1.2	1.00	.54	21	*2.0	1.0	2.75	1.16	.76	.50
7	.94	5.9	1.1	.98	.54	40	2.0	64	2.55	1.08	.70	.42
8	.94	6.7	1.0	.99	.58	26.5	1.76	24	2.55	1.08	.62	.58
9	.94	5.2	.96	1.36	.62	8.8	1.65	7.4	2.75	.94	.58	.39
10	1.51	4.4	.92	12.2	.58	7.9	1.55	5.5	4.7	.88	.54	.54
11	7.1	3.6	.88	3.85	.58	4.5	1.35	12.4	2.75	.88	.50	.46
12	6.6	3.3	.88	2.0	.58	4.3	1.25	31	2.8	.76	.50	.46
13	5.5	2.6	1.0	2.35	.50	11.7	1.25	21.5	2.15	.76	.46	.46
14	3.1	2.4	.94	7.7	1.42	51	1.25	8.8	2.0	.71	.39	.55
15	1.83	3.0	.94	2.6	*1.63	23.5	1.00	9.0	21	.97	.36	.40
16	1.76	2.5	1.66	1.76	1.55	38	1.00	10.5	22	.90	.34	.33
17	6.7	2.1	2.75	1.55	.94	6.9	.94	12.5	4.5	.91	.34	.30
18	2.8	4.0	1.65	1.65	.76	3.8	.94	12.8	3.5	1.05	1.74	.36
19	1.55	2.8	1.35	1.35	.66	3.2	.88	19.2	2.55	.88	1.30	.39
20	1.45	2.5	1.08	1.71	.62	3.2	.92	10.5	2.35	.80	5.3	.26
21	1.45	3.8	1.25	2.2	.58	15.6	89	13.3	2.35	.88	1.76	.22
22	1.46	2.6	1.16	1.30	.62	27	6.7	62	151	1.50	.88	.26
23	1.25	2.7	1.00	1.16	1.01	6.4	3.0	258	35	.94	1.17	2.25
24	1.25	3.6	1.08	1.08	.66	3.5	2.0	99	5.5	.82	.90	1.60
25	1.08	2.7	2.0	.88	.66	2.75	1.5	52	2.95	.76	.71	1.00
26	1.16	6.0	1.25	.83	.72	2.75	1.2	12	2.35	1.39	3.6	.88
27	1.08	5.2	1.08	.82	.58	2.95	1.1	8.8	2.0	5.7	9.1	.80
28	79	3.1	1.08	.76	125	21.5	1.0	6.8	1.88	1.7	3.1	.62
29	20.5	2.7	1.28	*.76	200	24	.9	-	1.76	1.3	1.65	2.95
30	*9.1	2.4	1.00	.82	13	9.1	1.6	-----	1.55	1.1	1.08	1.26
31	5.5	2.1	-----	1.68	-----	3.5	1.7	-----	1.55	-----	.88	-----
Total	192.86	125.45	38.19	61.07	358.69	406.85	142.04	770.3	308.49	43.68	43.84	22.04
Mean:												
mgd	6.22	4.05	1.27	1.97	12.0	13.1	4.58	27.5	9.95	1.46	1.41	0.735
cfs	9.62	6.27	1.96	3.05	18.6	20.3	7.09	42.5	15.4	2.26	2.18	1.14
Ac-ft	592	385	117	187	1,100	1,250	436	2,360	947	134	135	66

Calendar year 1954: Max 200 Min 0.24 Mean(mgd) 4.36 Mean(cfs) 6.78 Ac-ft 4,910  
Fiscal year 1954-55: Max 258 Min 0.22 Mean(mgd) 6.89 Mean(cfs) 10.7 Ac-ft 7,710

Peak discharge (base, 220 mgd).--July 28 (7 a.m.) 460 mgd (712 cfs), 2.89 ft; Nov. 29 (3 a.m.) 1,560 mgd (2,410 cfs), 4.52 ft; Dec. 15 (10:30 p.m.) 258 mgd (399 cfs), 2.57 ft; Jan. 21 (9 a.m.) 600 mgd (928 cfs), 3.12 ft; Feb. 7 (11 a.m.) 358 mgd (554 cfs), 2.73 ft; Feb. 23 (11:30 a.m.) 1,320 mgd (2,040 cfs), 4.12 ft; Mar. 22 (7 p.m.) 830 mgd (1,280 cfs), 3.51 ft.

\* Discharge measurement made on this day.

Note.--Doubtful or no gage-height record Aug. 11 to Sept. 14, Nov. 29 to Dec. 7, Jan. 23 to Feb. 6, Feb. 24-28, Apr. 28 to May 15; discharge estimated on basis of records for nearby streams.

## Haiku Stream near Heeia

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

Drainage area--1.0 sq mi.

Records available--January 1914 to October 1919, July 1939 to June 1955.

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. 29, 1914, to Oct. 25, 1919, water-stage recorder, at same site at different datum.

Extremes--Maximum discharge during year, 420 mgd (650 cfs) Feb. 23 (gage height, 3.92 ft), from rating curve extended above 21 mgd as explained below; minimum, 0.28 mgd (0.43 cfs) Oct. 29.

1914-19, 1939-55: Maximum discharge, 1,150 mgd (1,780 cfs) Mar. 26, 1951 (gage height, 5.39 ft), from rating curve extended above 21 mgd by test on model of station site; minimum, 0.17 mgd (0.26 cfs) Oct. 25, 1946.

Remarks--Records fair. Suburban Water System diverts ground water from tunnel in drainage area.

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)  
(Shifting-control method used July 1-22)

July 1-28				July 29 to June 30			
0.9	0.21	1.5	2.1	0.9	0.21	1.5	4.8
1.0	.53	1.5	4.2	1.0	.53	1.7	8.4
1.1	.92	1.7	9.2	1.1	1.04	2.0	21
1.2	1.45	2.0	30.5	1.2	1.68	2.3	54
				1.3	2.5		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.39	1.55	0.94	0.46	0.50	1.62	1.49	1.23	1.55	1.30	0.89	0.78
2	.44	1.17	.94	.53	.50	1.42	1.36	1.30	1.42	1.30	.89	.78
3	.43	.89	.73	.39	.43	*1.30	1.36	1.23	1.36	1.30	.89	.78
4	.53	.84	.46	.39	.39	1.23	1.36	1.26	1.49	1.30	.84	.78
5	.57	.94	.46	.39	.39	1.36	1.36	1.23	1.77	1.30	.84	.78
6	.46	.89	.46	.43	.39	4.8	1.30	1.23	1.36	1.17	.89	.78
7	.43	.89	*.46	.39	.43	3.55	1.21	33	1.36	1.17	.89	.78
8	.39	.78	.50	.43	.46	2.25	1.17	6.2	1.30	1.10	.84	.78
9	.39	.78	.50	.46	.46	1.84	1.17	2.45	1.23	1.17	.89	.78
10	.68	.84	.53	1.18	.43	1.62	1.17	1.84	1.23	1.17	.84	.78
11	1.08	.84	.53	1.56	.43	1.55	1.17	1.62	1.17	1.10	.84	.73
12	.92	1.66	.53	.89	.43	1.55	1.17	6.4	1.17	1.10	.84	.73
13	.76	1.17	.53	.68	.39	1.62	1.10	2.0	1.10	1.10	.84	.68
14	.57	.73	.53	.63	.43	1.93	*1.04	1.76	1.04	1.04	.78	.73
15	.50	.73	.58	.58	.43	1.96	1.10	1.62	5.3	1.04	.78	.63
16	.46	.89	.58	.58	.46	9.5	1.10	1.62	4.0	1.04	.73	.50
17	.50	1.10	.53	.53	.43	2.4	1.10	2.1	1.49	.99	.73	.46
18	.61	1.10	.63	.53	.39	1.93	1.10	2.0	1.30	.99	.78	.50
19	.53	1.10	.53	.50	.39	1.84	1.04	2.1	1.17	.99	.78	.46
20	.46	1.04	.53	.50	.39	1.68	1.04	2.1	1.17	.94	.78	.46
21	.39	1.10	.63	.53	.39	1.84	15.4	1.93	1.17	*.94	.78	.43
22	*.39	1.10	.58	.53	.39	2.8	2.0	15.0	10.0	.84	.78	.39
23	.39	1.81	.53	.50	.43	2.25	1.42	*4.9	4.6	.78	.78	.43
24	.35	1.42	.63	.46	.39	1.84	1.30	19.0	1.84	.84	.78	.46
25	.35	1.17	.89	.46	.35	1.68	1.23	12.5	1.49	.84	.78	.46
26	.35	1.10	.73	*.39	.39	1.68	1.17	4.4	1.36	.99	.78	.43
27	.35	1.04	.53	.35	.35	1.68	1.17	3.25	1.30	1.04	1.04	.43
28	21.5	1.04	.50	.35	34.5	1.62	1.17	2.4	1.30	.99	1.10	*.39
29	9.4	1.04	.50	.35	25	1.58	1.17	-	1.30	.94	.84	*.46
30	*3.95	1.04	.46	.35	2.9	1.62	1.30	-----	1.30	.89	.84	.43
31	2.1	.99	-----	.50	-----	1.55	1.30	-----	1.30	-----	.78	-----
Total	50.60	32.78	17.46	16.76	71.64	67.19	52.54	181.77	59.94	31.70	25.96	17.99
Mean:	1.63	1.06	0.582	0.541	2.39	2.17	1.69	6.49	1.93	1.06	0.837	0.600
mgd	2.52	1.64	0.900	0.837	3.70	3.36	2.61	10.0	2.99	1.64	1.30	0.928
Ac-ft	155	101	54	51	220	206	161	558	184	97	80	55

Calendar year 1954: Max 34.5 Min 0.23 Mean(mgd) 1.04 Mean(cfs) 1.61 Ac-ft 1,170  
Fiscal year 1954-55: Max 49 Min 0.31 Mean(mgd) 1.72 Mean(cfs) 2.66 Ac-ft 1,920

Peak discharge (base, 100 mgd).--Nov. 28 (10 p.m.) 395 mgd (611 cfs), 3.79 ft; Dec. 16 (4 a.m.) 108 mgd (167 cfs), 2.71 ft; Jan. 21 (9:30 a.m.) 183 mgd (283 cfs), 5.15 ft; Feb. 7 (1 p.m.) 330 mgd (511 cfs), 3.62 ft; Feb. 23 (4:30 p.m.) 420 mgd (650 cfs), 3.92 ft; Mar. 22 (6 p.m.) 115 mgd (178 cfs), 2.73 ft.

\* Discharge measurement made on this day.

## Iolekaa Stream mauka near Heeia

Location.--Lat 21°25'15", long 157°49'50", on left bank 0.7 mile upstream from confluence with Haiku Stream, 1.5 miles southwest of Heeia and 1.8 miles west of Kaneohe Post Office.

Drainage area.--0.3 sq mi.

Records available.--March 1940 to June 1955.

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.--14 years (1940-42, 1943-55), 0.366 mgd (0.566 cfs).

Extremes.--Maximum discharge during year, 33 mgd (51 cfs) Nov. 28 (gage height, 1.92 ft), from rating curve extended above 4.0 mgd as explained below; minimum, 0.21 mgd (0.32 cfs) Sept. 11-15.

1940-55: Maximum discharge, 69 mgd (107 cfs) Oct. 22, 1941 (gage height, 2.40 ft), from rating curve extended above 4.0 mgd by rating for Columbus-type control and test on model of station site; minimum daily, 0.10 mgd (0.16 cfs) Oct. 31 to Nov. 9, Nov. 24, 27, 1946.

Remarks.--Records fair.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.21	0.9	1.55
.6	.35	1.0	2.5
.7	.55	1.1	3.8
.8	.90	1.2	5.5

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	.24	0.39	0.27	0.24	0.28	0.47	0.31	0.34	0.49	0.37	0.39	0.39
2	.25	.34	.27	.28	.28	.39	.31	.37	.45	.37	.41	.41
3	.25	.32	.27	.24	.28	*.39	.29	.34	.45	.37	.41	.41
4	.45	.32	.25	.25	.28	.39	.29	.34	.43	.37	.41	.41
5	.24	.50	.25	.24	.28	.49	.29	.34	.52	.37	.41	.41
6	.22	.32	.28	.24	.28	2.15	.29	.34	.43	.37	.41	.41
7	.22	.32	*.25	.24	.28	1.28	.29	3.05	.41	.37	.41	.41
8	.22	.31	.24	.24	.28	.62	.29	1.66	.39	.37	.41	.41
9	.22	.29	.22	.24	.28	.47	.28	.69	*.37	.35	.41	.41
10	.60	.33	.22	.59	.28	.41	*.28	.53	.37	.35	.41	.41
11	.53	.31	.21	.47	.28	.39	.28	.51	.37	.35	.41	.41
12	.39	.46	.21	.31	.27	.35	.28	1.04	.37	.35	.41	.41
13	.31	.29	.22	.28	.27	.35	.28	.58	.37	.35	.41	.41
14	*.29	.29	.21	.27	.28	.40	.28	.53	.35	.35	.41	.41
15	.27	.29	.21	.25	.28	.50	.29	.51	1.36	.35	.41	.41
16	.27	.31	.24	.25	.29	1.99	.28	.51	1.12	.35	.41	.41
17	.28	.29	.22	.25	.27	.55	.29	.55	.49	.37	.41	.41
18	.28	.28	.28	.25	.27	.41	.28	.58	.45	.37	.43	.41
19	.27	.28	.22	.25	.27	.37	.28	.62	.41	.35	.41	.41
20	.27	.29	.22	*.25	.27	.34	.28	.58	.39	.35	.41	.41
21	.25	.31	.31	.27	.27	.37	2.90	.55	.39	.35	.41	.43
22	.25	.29	.24	.25	.27	.89	.66	.77	1.87	.35	.41	.43
23	.27	.58	.24	.25	.40	.45	.45	4.4	1.46	.35	.41	.43
24	.25	.37	.25	.25	.29	.39	.39	3.6	.58	.35	.41	.43
25	.25	.31	.46	.25	.27	.37	.35	1.55	.47	.35	.41	.43
26	.25	.32	.27	.25	.28	.35	.35	.90	.43	*.37	.41	.43
27	.25	.31	.25	.25	.27	.35	.34	.72	.41	.39	.70	.43
28	5.2	.29	.25	.25	4.2	.34	.34	.55	.39	.39	.47	.41
29	2.5	.28	.25	.25	4.1	.35	.34	--	.39	.39	.39	.41
30	*.94	.28	.24	.27	.75	.34	.34	-----	.37	.39	.39	.41
31	.51	.28	-----	.42	-----	.34	.34	-----	.37	-----	.39	-----
Total	16.98	10.15	7.52	8.59	16.65	17.23	12.54	27.05	17.12	10.88	13.00	12.42
Mean:												
mgd	0.548	0.327	0.251	0.277	0.555	0.556	0.405	0.966	0.552	0.363	0.419	0.414
cfs	0.848	0.506	0.388	0.429	0.859	0.860	0.627	1.49	0.854	0.562	0.648	0.641
Ac-ft	52	31	23	28	51	53	38	83	53	33	40	38

Calendar year 1954: Max 5.2 Min 0.18 Mean(mgd) 0.390 Mean(cfs) 0.588 Ac-ft 426

Fiscal year 1954-55: Max 5.2 Min 0.21 Mean(mgd) 0.466 Mean(cfs) 0.721 Ac-ft 521

Peak discharge (base, 15 mgd).--Nov. 28 (6 p.m.) 33 mgd (51 cfs), 1.92 ft.

\* Discharge measurement made on this day.

## Kahaluu Stream near Heeia

Location.--Lat 21°26'20", long 157°51'05", on left bank 40 ft upstream from intake of Libby ditch, 0.5 mile upstream from forest-reserve boundary, and 3.0 miles northwest of Heeia.

Drainage area.--0.4 sq mi.

Records available.--October 1935 to June 1955.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 357.52 ft above mean sea level (levels by Wright, Harvey & Wright).

Extremes.--Maximum discharge during year, 67 mgd (104 cfs) Nov. 28 (gage height, 3.07 ft), from rating curve extended above 9 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Feb. 9, 13-17.  
1935-55: Maximum discharge, 290 mgd (449 cfs) Sept. 27, 1937 (gage height, 5.47 ft, control then in use), from rating curve computed from 11 to 240 mgd by Parshall flume formula and extended above; minimum daily, 0.07 mgd (0.11 cfs) Mar. 19, 1947.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Suburban Water System has diverted ground water from tunnel in drainage area since 1948. Continuous records of rainfall are obtained at station.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.1	0.13	0.5	2.1
.2	.43	.7	3.9
.3	.84	1.1	9.0
.4	1.40		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.39	0.47	0.39	0.47	0.47	0.35	0.35	0.23	0.47	0.43	0.39	0.43
2	.56	.47	.35	.47	.43	.43	.35	.23	.43	.47	.39	.43
3	.47	.43	.43	.43	.43	.43	.39	.23	.39	.43	.35	.39
4	.62	.43	.43	.43	.43	.43	.39	.20	.43	.43	.35	.39
5	.43	.69	.43	.47	.43	.47	.35	.26	.43	.43	.35	.39
6	.35	.55	.47	.47	.43	1.49	.35	.23	.43	.43	.39	.39
7	.35	.47	.47	.47	.43	1.77	.35	4.3	.43	.43	.39	.35
8	.35	.51	.47	.47	.47	.51	.35	.44	.43	.43	.35	.35
9	.35	.51	.43	.51	.51	.35	.35	.17	*.39	.43	.35	.39
10	1.12	.47	.43	1.63	.51	.32	*.35	.20	.51	.43	.32	.39
11	.59	.51	.43	.79	.47	.29	.35	.20	.39	a.43	.32	.39
12	.54	.47	.43	.63	.43	.29	.35	.96	.39	a.43	.29	.39
13	.43	.47	.43	.55	.43	*.35	.39	.17	.35	a.43	.29	.39
14	.35	.47	.43	.69	.43	.43	.39	.15	.35	a.43	.29	.39
15	.35	.47	.43	.51	.51	1.34	.43	.15	a.94	a.43	.29	.39
16	.32	.51	.66	.47	.47	1.13	.43	.15	.55	a.43	.29	.35
17	.35	.47	.43	.47	.47	.43	.43	.17	.47	a.45	.29	.35
18	.35	.47	.53	.47	.47	.39	.43	.20	.47	a.45	.32	.39
19	.35	.47	1.13	.43	.43	.39	.43	.32	.47	a.43	.29	.39
20	.39	.43	.51	.43	.43	.39	.43	.26	.47	a.43	.32	.39
21	.32	.51	.61	.47	.47	.47	1.91	.26	.47	*.39	.26	.35
22	*.39	.51	.51	*.43	.43	1.17	.26	2.45	a1.54	.39	.26	.32
23	.43	.56	.47	.43	.43	.47	.26	4.2	.63	.39	.26	.35
24	.43	.59	.47	.43	.65	.43	.23	2.1	.51	.35	.35	.39
25	.39	.47	.63	.43	.43	.39	.23	.96	.51	.35	.51	.39
26	.39	.47	.47	.43	.47	.39	.23	.51	.47	.39	.51	.39
27	.39	.47	.47	.39	.43	.39	.23	.47	.47	.39	1.01	.39
28	8.8	.43	.47	.39	4.4	.39	.23	.47	.47	.39	.63	.39
29	6.9	.43	.47	.39	2.8	.39	.23	.47	.47	.35	.51	.39
30	2.2	.43	.47	.43	.47	.35	.23	-----	.43	.35	.43	.39
31	.67	.39	-----	.61	-----	.35	.23	-----	.47	-----	.43	-----
Total	30.32	15.00	14.75	16.13	20.06	17.17	11.91	20.64	15.63	12.42	11.78	11.47
Mean:												
mgd	0.978	0.484	0.492	0.520	0.669	0.554	0.384	0.737	0.504	0.414	0.380	0.382
cfs	1.51	0.749	0.761	0.805	1.04	0.857	0.594	1.14	0.780	0.641	0.588	0.591
Ac-ft	93	46	45	50	62	53	37	63	48	38	36	35

Calendar year 1954: Max 8.8 Min 0.29 Mean(mgd) 0.559 Mean(cfs) 0.865 Ac-ft 626  
Fiscal year 1954-55: Max 8.8 Min 0.15 Mean(mgd) 0.540 Mean(cfs) 0.836 Ac-ft 606

Peak discharge (base, 30 mgd).--Nov. 28 (7 p.m.) 67 mgd (104 cfs), 3.07 ft; Dec. 7 (10:30 a.m.) 34 mgd (53 cfs), 2.22 ft; Feb. 7 (7:30 a.m.) 32.5 mgd (50.3 cfs), 2.17 ft; Feb. 22 (7:30 p.m.) 34 mgd (53 cfs), 2.22 ft.

\* Discharge measurement made on this day.

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

## Waihee Stream near Heela

Location.--Lat 21°27'05", long 157°51'35", on left bank 70 ft upstream from intake of Kihe ditch, 120 ft downstream from forest-reserve boundary, 4.1 miles northwest of Heela and 4.4 miles northwest of Kaneohe.

Drainage area.--1.1 sq mi.

Records available.--December 1935 to June 1955.

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

Average discharge.--19 years (1936-55), 6.42 mgd (9.93 cfs).

Extremes.--Maximum discharge during year, 255 mgd (395 cfs) Feb. 7 (gage height, 5.02 ft); minimum, 4.0 mgd (6.2 cfs) July 7-10.

1935-55: Maximum discharge, 465 mgd (719 cfs) Feb. 28, 1939 (gage height, 5.47 ft, control then in use), from rating curve computed from 20 to 230 mgd by Parshall flume formula and extended above; minimum, 3.2 mgd (5.0 cfs) Oct. 2, 1946.

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1-28		July 29 to Feb. 7		Feb. 8 to June 30	
0.7	3.55	0.7	4.1	1.0	7.6
.9	6.2	.9	7.1	1.2	11.1
1.2	11.6	1.2	12.8	1.5	17.7
1.6	21.5	1.5	20	1.8	26
2.0	35	2.0	36	2.2	39.5
		2.5	55		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.6	6.8	5.2	5.7	5.8	5.4	6.4	6.3	14.6	12.9	17.7	15.3
2	4.8	6.0	5.1	5.8	6.0	5.2	6.4	6.8	14.6	12.9	17.7	15.3
3	4.6	5.8	5.1	5.7	6.0	5.5	6.4	6.3	14.4	12.9	17.7	15.3
4	5.1	5.7	5.1	5.7	6.0	5.7	6.8	6.3	14.4	12.7	17.7	15.1
5	4.4	6.4	4.9	5.7	5.8	7.2	6.4	6.9	14.4	12.7	17.7	15.1
6	4.3	6.1	5.1	5.7	5.7	*12.5	6.4	6.8	14.0	12.7	16.5	15.1
7	4.0	6.0	5.1	5.7	5.8	17.1	6.4	4.3	13.8	13.3	16.5	15.1
8	4.0	5.2	*5.1	5.7	6.0	8.3	6.6	13.0	13.8	14.6	16.5	15.1
9	4.0	5.5	5.2	6.2	5.7	6.6	6.6	8.8	13.8	16.5	16.5	14.9
10	6.7	5.7	5.2	9.6	5.7	6.1	6.6	*13.7	16.5	16.5	14.9	
11	5.2	5.4	5.1	8.3	5.7	6.0	6.4	12.0	*13.1	17.8	16.5	14.9
12	4.6	5.4	5.1	6.6	5.7	5.8	6.6	14.5	13.1	20.5	16.5	14.9
13	4.4	5.2	5.2	8.1	5.7	6.5	6.4	12.7	13.1	19.0	16.5	14.9
14	4.3	5.2	5.1	7.5	5.7	7.6	6.4	13.5	13.1	19.0	16.5	14.9
15	4.4	5.2	5.1	6.3	5.8	11.4	6.8	14.0	17.0	19.0	16.5	14.6
16	4.3	5.4	5.7	6.0	6.0	13.5	6.6	14.4	14.6	19.0	16.5	14.6
17	4.4	5.2	5.1	6.0	5.8	7.9	*6.4	14.9	13.5	19.0	16.5	14.6
18	4.4	5.5	6.1	6.1	5.8	7.2	6.3	14.6	13.1	17.7	16.5	14.6
19	4.4	5.4	a7.1	6.0	5.8	6.8	6.3	15.3	13.1	17.7	16.5	14.4
20	4.4	5.7	a4.9	6.0	5.8	6.6	6.3	14.6	13.1	17.7	16.5	14.4
21	4.3	6.1	a5.9	6.0	5.8	6.8	21.5	14.2	13.1	*17.7	16.5	14.4
22	*4.3	5.5	a5.8	5.8	5.7	7.9	7.8	25	20	19.0	16.5	14.2
23	4.3	6.0	5.7	5.8	5.8	6.9	6.9	*38.5	15.6	19.0	16.5	14.2
24	4.4	6.3	5.7	5.8	5.8	6.8	6.6	32.5	13.8	19.0	16.5	14.2
25	4.2	5.7	6.8	5.8	5.8	6.6	6.4	19.4	13.5	17.7	16.5	14.2
26	4.2	5.5	6.0	*5.8	5.8	6.4	6.4	16.5	13.3	17.7	15.3	14.2
27	4.2	5.4	5.8	5.8	5.8	6.8	6.4	15.3	13.1	18.8	16.5	14.0
28	32.5	5.5	5.8	5.8	22.5	7.3	6.4	15.3	13.1	17.7	16.5	14.0
29	19.9	5.4	5.8	5.8	22	7.1	6.4	-	13.1	17.7	15.3	14.2
30	12.2	5.2	5.7	6.0	6.6	6.8	6.8	-----	13.1	17.7	15.3	14.0
31	7.9	5.2	-----	6.6	-----	6.6	6.8	-----	12.9	-----	15.3	-----
Total	193.7	177.2	164.6	191.4	207.9	234.7	217.5	430.4	432.9	506.1	512.7	439.6
Mean:												
mgd	6.25	5.72	5.49	6.17	6.93	7.57	7.02	15.4	14.0	16.9	16.5	14.7
cfs	9.67	8.85	8.49	9.55	10.7	11.7	10.9	23.8	21.7	26.1	25.5	22.7
Ac-ft	594	544	505	587	638	720	667	1,320	1,330	1,550	1,570	1,350

Calendar year 1954: Max 32.5 Min 3.7 Mean(mgd) 5.40 Mean(cfs) 8.36 Ac-ft 6,050  
Fiscal year 1954-55: Max 45 Min 4.0 Mean(mgd) 10.2 Mean(cfs) 15.8 Ac-ft 11,380

Peak discharge (base, 90 mgd).--Nov. 28 (6 p.m.) 150 mgd (232 cfs), 4.22 ft; Dec. 7 (10:30 a.m.) 129 mgd (200 cfs), 3.87 ft; Dec. 15 (11:30 p.m.) 111 mgd (172 cfs), 3.63 ft; Jan. 21 (8:30 a.m.) 158 mgd (244 cfs), 4.31 ft; Feb. 7 (12 p.m.) 255 mgd (395 cfs), 5.02 ft; Feb. 22 (9 p.m.) 122 mgd (189 cfs), 3.85 ft.

\* Discharge measurement made on this day.

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

## Waiahole tunnel at Waiianu, near Waiahole

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

Records available.--December 1950 to June 1955 in reports of Geological Survey. June 1916 to November 1950 in files of Waiahole Water Co.

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

Extremes.--1950-55: 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 water from headwaters of nearly all streams from Waiahole Valley to Kahana Valley for irrigation in central Oahu. Water may be diverted at various intakes above station.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24.4	22.0	24.0	23.5	*24.2	24.0	24.6	25.1	26.7	27.2	26.7	25.6
2	22.9	21.4	23.3	23.7	23.7	27.6	24.6	29.4	26.7	27.6	26.9	*25.6
3	21.6	21.8	23.5	23.5	23.5	25.3	25.1	25.1	26.7	29.2	26.7	25.6
4	32.2	22.4	23.3	23.7	23.3	32.6	26.1	24.6	26.9	27.2	26.2	25.6
5	20.9	30.1	23.3	23.5	23.3	32.6	24.0	40.2	26.7	27.2	26.2	25.6
6	20.1	30.4	23.3	23.7	23.3	38.0	23.7	29.3	26.7	26.9	26.2	25.8
7	19.7	26.3	27.9	24.6	23.3	32.3	24.6	55.0	26.7	26.7	26.0	25.6
8	19.9	26.1	24.0	24.2	23.3	29.0	25.3	31.4	26.7	26.7	26.0	25.6
9	19.3	22.6	25.3	24.2	23.3	26.2	24.6	27.2	26.7	26.7	26.5	25.3
10	25.9	29.8	23.5	36.3	23.3	25.3	24.6	26.7	27.2	26.7	25.8	25.6
11	25.2	24.9	23.3	30.2	23.3	24.9	24.4	26.7	26.7	26.9	25.8	25.1
12	26.9	22.9	23.3	25.6	23.3	24.6	24.4	34.2	26.9	26.7	25.6	25.1
13	22.2	22.2	23.5	29.1	23.1	24.6	26.0	26.7	27.4	26.7	25.6	24.9
14	20.5	22.2	23.3	34.8	23.1	27.2	24.6	26.2	26.9	26.5	25.6	25.1
15	20.7	25.0	23.3	27.2	25.9	26.7	26.5	26.0	45.3	27.6	25.6	
16	20.5	24.4	23.7	25.1	27.7	30.7	25.6	27.2	35.7	26.7	26.0	25.6
17	22.1	24.4	23.5	24.4	25.5	25.3	24.9	26.9	26.5	27.2	25.6	24.9
18	26.0	41.4	28.0	24.9	23.3	24.4	25.1	28.1	27.8	26.5	31.0	25.3
19	21.2	25.8	29.8	24.2	23.3	24.2	24.9	27.6	27.8	26.2	27.4	24.6
20	21.2	25.5	24.0	24.2	23.3	24.2	24.9	26.2	27.6	26.2	30.4	24.4
21	20.5	34.3	31.6	24.2	23.3	24.6	43.0	26.0	27.4	26.2	26.7	24.4
22	20.9	33.7	25.1	24.2	23.3	26.9	26.0	34.1	43.0	26.9	25.8	24.4
23	20.7	31.1	25.6	24.0	23.1	24.6	25.1	44.2	32.6	26.2	26.0	25.8
24	20.5	32.3	24.0	24.0	23.1	24.4	25.1	46.2	27.8	26.0	26.0	24.9
25	20.5	24.6	29.7	24.0	23.1	24.4	25.3	30.4	27.4	26.0	30.4	24.9
26	20.7	30.1	25.1	24.0	23.7	24.4	25.1	27.8	27.2	33.0	27.8	24.4
27	20.1	26.8	24.2	23.7	23.1	24.9	24.9	27.4	27.2	30.7	39.6	24.9
28	74.0	33.2	24.0	23.7	39.1	25.1	24.9	27.2	26.9	26.7	30.4	24.2
29	53.0	24.6	23.7	23.7	38.6	25.3	24.9	-	26.9	26.9	26.7	25.5
30	29.7	24.0	23.5	23.7	26.8	25.1	25.1	-----	26.9	30.9	26.2	24.4
31	25.1	23.7	-----	30.0	-----	24.9	26.5	-----	27.2	-----	26.0	-----
Total	777.1	632.0	743.6	769.8	741.5	824.3	794.4	873.1	888.8	818.8	843.4	755.0
Mean:	25.1	26.8	24.8	25.5	24.7	26.6	25.6	31.2	28.7	27.3	27.2	25.2
mgd	38.8	41.5	38.4	39.5	38.2	41.2	39.6	48.3	44.4	42.2	42.1	39.0
cfs	2,380	2,550	2,280	2,420	2,280	2,530	2,440	2,680	2,730	2,510	2,590	2,320
Ac-ft												
Calendar year 1954: Max	74.0			Min 16.6	Mean(mgd) 22.4	Mean(cfs) 34.7	Ac-ft 25,050					
Fiscal year 1954-55: Max	74.0			Min 19.3	Mean(mgd) 26.5	Mean(cfs) 41.0	Ac-ft 29,710					

\* Discharge measurement made on this day.



## Waiahole tunnel wasteway at intake 31, near Waiahole

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

Records available--January 1951 to June 1955.

Gage--Water-stage recorder and Parshall flume.

Extremes--1951-55: Maximum daily discharge, 38.4 mgd (59.4 cfs) Feb. 23, 1955; no flow most of time.

Remarks--Records good. Station measures releases from Waihole tunnel.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0			0	*6.24	0	0	0			
2	0	0			0	0	0	0	0			
3	0	0			0	0	0	0	0			
4	0	0			0	0	0	0	0			
5	0	0			0	0	0	0	0			
6	0	0			0	.14	0	0	0			
7	0	0			0	.21	0	18.0	0			
8	0	0			0	0	0	14.8	0			
9	0	0			0	0	0	3.74	0			
10	0	.01			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	.02	0	0	0			
15	0	0			0	.60	0	0	0			
16	0	0			0	11.6	0	0	0			
17	0	0			0	0	0	0	0			
18	0	0			0	0	0	0	0			
19	0	0			0	0	0	0	0			
20	0	0			0	0	0	0	0			
21	0	0			0	0	6.40	0	0			
22	0	0			0	.12	4.29	1.95	11.9			
23	0	0			0	0	0	38.4	18.5			
24	0	0			0	0	0	32.6	15.0			
25	0	0			0	0	0	20.2	14.6			
26	0	0			0	0	0	8.12	14.6			
27	0	0			0	.01	0	0	14.4			
28	.27	0			6.94	0	0	0	4.46			
29	0	0			10.9	0	0	-	0			
30	0	0			11.7	0	0	-----	0			
31	0	0			-----	0	0	-----	0			
Total	0.27	0.01	0	0	29.54	18.94	10.69	137.81	93.46	0	0	0
Mean:												
mgd	0.009	0.0003	0	0	0.985	0.611	0.345	4.92	3.01	0	0	0
cfs	0.014	0.0005	0	0	1.52	0.945	0.554	7.61	4.66	0	0	0
Ac-ft	0.8	0.03	0	0	91	58	33	423	286	0	0	0
Calendar year 1954: Max	11.7	Min	0		Mean(mgd)	0.134	Mean(cfs)	0.207	Ac-ft	150		
Fiscal year 1954-55: Max	38.4	Min	0		Mean(mgd)	0.796	Mean(cfs)	1.23	Ac-ft	892		

\* Discharge measurement made on this day.

## Waiahole tunnel at north portal, near Waiahole

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

Records available.--January 1951 to June 1955 in reports of Geological Survey. May 1916 to December 1950 in files of Waiahole Water Co.

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

Extremes.--1951-55: Maximum daily discharge, 81.0 mgd (125 cfs) July 28, 1954; minimum daily, 7.0 mgd (10.8 cfs) Jan. 24, 25, 1951.

Remarks.--Records excellent. Tunnel diverts water from headwaters of nearly all streams from Waiahole Valley to Kahana Valley for irrigation in central Oahu. Numerous intakes can divert water above station.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	25.7	23.0	25.2	25.4	26.1	*18.8	26.1	25.9	28.0	28.6	29.6	28.4
2	24.4	22.3	24.5	25.4	25.8	29.3	28.1	30.6	28.2	29.1	29.8	28.4
3	22.6	22.7	24.7	25.4	25.6	26.5	26.3	26.8	28.2	31.0	30.0	28.4
4	33.7	23.3	24.7	25.4	25.4	33.3	27.7	26.3	28.4	28.6	29.3	28.4
5	22.3	32.3	24.7	25.4	25.4	34.1	26.1	40.2	28.6	28.4	29.3	28.4
6	21.5	30.8	24.7	25.6	25.2	39.8	25.6	31.1	28.2	28.4	28.1	28.4
7	21.0	27.7	28.7	26.8	25.2	34.3	25.8	39.6	28.2	28.4	28.9	28.4
8	21.2	27.0	25.4	25.6	25.2	30.5	27.0	15.4	28.0	28.4	28.9	28.4
9	20.5	25.6	26.6	28.1	25.2	27.7	26.6	23.8	28.0	28.2	29.6	28.0
10	25.3	30.6	25.0	38.3	25.2	26.8	26.3	27.7	28.6	28.2	28.9	28.4
11	27.8	26.4	24.7	32.5	25.0	26.3	26.3	27.7	28.2	28.2	28.6	28.0
12	27.8	23.8	24.7	27.5	25.0	26.3	26.1	35.4	28.2	28.0	28.6	27.7
13	23.3	23.2	24.7	30.3	25.0	26.1	27.0	28.2	28.6	28.0	28.6	27.7
14	21.6	23.2	24.5	36.5	25.0	28.4	26.3	27.3	28.2	27.7	28.6	27.7
15	21.9	26.0	24.5	28.9	27.5	26.0	27.5	27.3	46.9	28.9	28.6	28.2
16	21.5	25.5	25.2	26.8	29.2	22.0	26.6	28.2	38.4	28.0	29.1	28.4
17	23.1	24.7	24.7	26.3	25.4	26.8	26.1	28.0	29.8	28.6	28.6	27.5
18	27.3	42.7	29.8	26.3	25.2	26.1	26.1	29.3	29.3	28.0	34.3	28.0
19	22.5	27.0	31.5	26.1	25.0	25.9	25.9	29.8	28.9	27.5	30.5	27.7
20	22.5	26.2	25.4	26.1	25.0	25.9	25.6	27.5	28.9	27.5	33.2	27.5
21	21.4	35.3	32.9	26.1	24.7	26.2	38.8	27.3	28.6	27.7	29.8	27.5
22	22.0	34.3	27.0	25.9	24.7	26.4	27.9	33.7	31.1	29.1	28.6	27.3
23	22.1	32.4	27.0	25.6	24.7	26.3	25.9	25.2	15.6	29.1	29.1	28.6
24	21.6	33.5	25.4	25.9	24.5	26.1	25.9	12.3	13.7	28.9	28.6	28.0
25	21.6	25.6	31.6	25.6	24.5	25.9	26.1	10.1	13.4	29.1	33.8	28.0
26	21.9	30.5	26.7	25.6	25.0	25.9	25.9	20.8	13.4	35.8	30.8	27.5
27	21.0	30.0	25.6	25.6	24.5	26.3	25.6	28.4	13.2	34.0	43.7	27.7
28	31.0	34.0	25.4	25.4	41.4	26.6	25.6	28.4	23.6	29.6	33.5	27.3
29	27.7	25.9	25.4	25.6	35.1	27.0	25.6	-	28.4	28.9	29.6	29.8
30	32.0	25.2	25.4	25.4	15.8	26.6	26.1	-----	28.4	34.0	28.6	27.5
31	24.3	25.0	-----	31.6	-----	26.3	27.3	-----	28.6	-----	28.4	-----
Total	827.1	863.7	786.3	845.0	776.3	854.5	822.8	762.5	835.8	873.9	936.6	841.2
Mean	26.7	27.9	26.2	27.3	25.9	27.6	26.5	27.2	27.0	29.1	30.2	28.0
mgd	41.3	43.2	40.5	42.2	40.1	42.7	41.0	42.1	41.8	45.0	46.7	43.3
cfs	2,540	2,650	2,410	2,590	2,380	2,620	2,530	2,340	2,560	2,680	2,870	2,580
Ac-ft												
Calendar year 1954: Max	81.0			Min	15.8	Mean(mgd)	23.8	Mean(cfs)	36.8	Ac-ft	26,630	
Fiscal year 1954-55: Max	81.0			Min	10.1	Mean(mgd)	27.5	Mean(cfs)	42.5	Ac-ft	30,750	

\* Discharge measurement made on this day.

## Punaluu ditch near Punaluu

Location.--Lat 21°33'40", long 157°54'10", on right bank of ditch 800 ft downstream from intake, 1.7 miles southwest of highway bridge at Punaluu, and 3.3 miles southeast of Hauula Post Office.

Records available.--May 1953 to June 1955.

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

Extremes.--1953-55: Maximum daily discharge, 16.2 mgd (25.1 cfs) May 20, 26, 1955; minimum daily, 0.02 mgd (0.03 cfs) Jan. 9, 14, 1955.

Remarks.--Records good. Ditch diverts water from Punaluu Stream for irrigation of sugar-cane in the Punaluu district.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.78	0.10	3.85	11.2	8.7	0.06	0.04	0.08	4.2	4.4	6.1	9.0
2	1.78	.10	3.85	11.2	8.0	.05	.04	.10	4.5	4.5	6.1	8.8
3	1.73	.10	3.85	11.2	8.0	.05	.04	.08	4.5	4.5	6.1	8.8
4	1.67	.08	3.85	11.2	8.0	.05	.05	.08	4.5	4.4	6.1	8.8
5	1.67	.06	3.85	11.2	8.0	.05	.03	.11	4.5	4.4	6.1	9.7
6	1.73	.05	3.85	11.2	8.0	.04	.03	.10	4.5	4.4	6.1	11.2
7	3.45	.06	3.9	11.2	8.0	.05	.04	1.08	4.4	4.4	6.1	12.8
8	4.5	.08	3.85	11.2	8.0	.05	.03	.14	4.1	4.3	6.1	12.8
9	4.4	.08	3.85	11.2	8.0	.05	.02	.11	4.3	4.3	6.1	12.8
10	5.0	.10	3.9	12.8	8.0	.06	.03	.10	*4.5	4.3	10.4	12.8
11	6.0	.06	3.85	5.6	8.0	.06	.03	.08	4.5	4.4	12.8	12.8
12	5.8	.06	3.85	.40	8.0	.06	.03	.06	4.5	4.3	12.8	12.8
13	5.7	.06	7.9	.38	8.0	.06	.03	.05	4.5	4.3	12.8	12.8
14	*8.0	1.65	11.2	.38	8.0	.11	.02	.05	4.5	4.3	12.0	12.8
15	11.2	3.85	11.2	.38	6.2	.14	.04	.04	5.0	4.3	12.0	12.8
16	11.2	3.85	11.2	.38	6.1	.10	.04	.04	4.9	4.3	12.8	12.8
17	11.2	3.85	11.2	.35	5.9	.10	.03	.04	4.7	4.3	12.0	12.0
18	12.0	3.9	12.8	.32	5.8	.10	.05	3.2	4.7	10.2	12.8	12.0
19	11.2	3.85	12.8	2.5	5.8	.08	.05	4.8	4.6	12.8	13.6	12.0
20	12.0	3.85	12.0	*6.1	5.8	.09	.05	4.8	4.6	*12.0	16.2	12.0
21	11.2	3.9	11.2	6.1	5.8	.06	.18	4.8	4.6	12.0	14.5	12.0
22	11.2	3.85	11.2	6.1	5.7	.06	.08	5.0	5.0	12.8	14.5	12.0
23	11.2	3.85	11.2	6.1	5.7	.05	.10	5.6	4.9	12.0	14.5	12.0
24	11.2	3.85	11.2	6.2	5.7	.05	.11	5.3	4.7	12.0	15.6	12.0
25	10.5	3.75	12.8	6.3	5.7	.04	.11	5.0	4.6	12.8	15.4	12.0
26	10.5	3.75	12.0	6.3	5.9	.04	.10	4.8	4.5	12.8	16.2	12.0
27	10.5	3.75	11.2	6.3	6.0	.05	.08	4.7	4.5	11.2	13.1	12.0
28	6.3	3.75	11.2	8.2	4.8	.05	.08	4.6	4.5	6.1	9.7	11.2
29	1.37	3.7	11.2	11.2	.06	.05	.08	-	4.5	6.1	9.2	12.0
30	.12	3.5	11.2	11.2	.06	.04	.08	-----	4.4	6.2	9.1	11.2
31	.11	3.85	-----	13.5	-----	.04	.06	-----	4.4	-----	9.0	-----
Total	206.21	67.29	251.00	217.89	167.72	1.93	1.80	54.94	141.1	213.1	333.9	349.7
Mean:	6.65	2.17	8.37	7.03	5.59	0.062	0.058	1.96	4.55	7.10	10.8	11.7
mgd	10.5	3.36	13.0	10.9	8.65	0.096	0.090	3.03	7.04	11.0	16.7	18.1
cfs	633	207	770	669	515	5.9	5.5	169	433	654	1,020	1,070
Ac-ft												
Calendar year 1954:	Max 16.0	Min 0.04	Mean(mgd) 5.57	Mean(cfs) 8.62	Ac-ft 6,250							
Fiscal year 1954-55:	Max 16.2	Min 0.02	Mean(mgd) 5.50	Mean(cfs) 8.51	Ac-ft 6,150							

\* Discharge measurement made on this day.

## Punaluu Stream near Punaluu

Location.--Lat 21°33'35", long 157°54'05", on left bank at diversion dam, 1.8 miles southwest of Punaluu and 3.5 miles southeast of Hauula.

Drainage area.--2.8 sq mi.

Records available.--May 1953 to June 1955.

Gage.--Water-stage recorder and masonry control. Altitude of gage is 212 ft (from topographic map).

Extremes.--1953: Maximum discharge during period May to June, 10.0 mgd (15.5 cfs) May 8 (gage height, 0.78 ft); no flow most of period.

1953-54: Maximum discharge during fiscal year, 372 mgd (576 cfs) Apr. 29 (gage height, 2.54 ft), from rating curve extended above 105 mgd; no flow at times.

1954-55: Maximum discharge during fiscal year, 1,110 mgd (1,720 cfs) Feb. 7 (gage height, 4.12 ft), from rating curve extended above 105 mgd; no flow July 7-10.

Remarks.--Records good except those for period of no gage-height record, which are poor. Records do not include flow of Punaluu ditch.

Rating table, May 8, 1953, to June 30, 1955 (gage height, in feet, and discharge, in million gallons a day)

0.0	0	0.8	10.5
.1	.18	1.0	21
.2	.69	1.2	38
.3	1.53	1.5	79
.4	2.7	2.0	195
.6	5.9	2.5	355

## Discharge, in million gallons a day, 1953

Day	May	June	Day	May	June	Day	May	June	Day	May	June
1	-		9	0.79		17	0.02		25	0.01	
2	-		10	.30		18	.02		26	0	
3	-		11	1.87		19	.05		27	0	
4	-		12	.09		20	.02		28	.15	
5	-		13	.09		21	.01		29	0	
6	-		14	.29		22	0		30	0	
7	-		15	.09		23	.01		31	.02	
8	3.65		16	.05		24	0				
Total.....										-	0
Mean, million gallons a day.....										-	0
Mean, cubic feet per second.....										-	0
Runoff in acre-feet.....										-	0

## Discharge, in million gallons a day, fiscal year July, 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0	0	25.5	4.5	3.45	4.5	4.5	21	0	1.33	2.65
2	0	0	0	14.5	4.4	3.6	14.3	4.4	19.1	.07	.57	1.24
3	0	0	0	7.5	4.4	3.6	10.0	4.4	14.6	0	.45	.99
4	0	0	0	4.2	*4.4	3.75	8.6	4.4	13.0	0	.15	.69
5	0	0	0	3.15	4.5	3.9	7.9	4.4	13.2	0	.07	.51
6		.16	0	2.7	5.0	4.0	7.2	4.2	10.9	0	.29	.40
7		8.4	0	2.85	4.9	4.2	7.0	4.2	10.0	0	.05	.89
8		4.0	0	2.55	4.5	4.2	8.0	4.2	10.0	0	2.2	.51
9		.12	0	2.45	4.4	4.0	6.8	4.2	9.8	0	.49	.26
10		.02	.30	2.05	4.4	3.9	6.1	4.2	9.8	0	.22	.12
11		0	0	1.96	4.2	4.3	6.1	4.7	9.1	0	.07	.05
12		0	0	1.85	4.2	5.0	5.9	8.3	8.8	0	.01	.02
13		0	0	4.1	4.2	4.9	5.7	16.6	8.6	0	0	0
14		0	0	4.9	4.2	5.0	5.6	8.3	8.3	0	0	.01
15		0	0	5.0	4.2	4.4	5.6	16.9	8.5	.04	0	.12
16		0	0	5.0	4.5	4.2	5.4	41	7.9	0	0	.02
17		0	0	5.0	4.2	4.0	5.4	12.3	8.1	1.66	.01	.03
18		0	0	5.2	4.2	6.2	5.7	9.5	7.9	0	.53	0
19		0	0	5.2	4.2	4.7	5.6	8.3	7.7	0	.75	0
20		0	0	5.0	4.2	4.4	5.0	7.7	7.7	0	1.11	.02
21		0	0	5.0	4.0	*4.7	5.4	7.4	8.8	0	.51	.01
22		0	0	5.0	4.0	9.9	5.2	10.7	7.4	0	.15	4.8
23		0	0	5.0	3.9	6.3	5.0	9.3	7.2	.32	.26	8.3
24		0	0	4.9	4.5	5.2	4.9	21	7.0	0	.40	8.6
25		0	0	4.7	4.9	5.0	4.9	17.8	7.0	0	.12	10.4
26		0	0	4.7	4.2	5.0	4.7	16.5	6.8	.01	.35	8.8
27		0	0	4.7	3.75	5.6	4.7	33	6.8	0	.35	8.6
28		0	0	4.5	3.45	4.9	4.7	25	6.8	0	.35	8.3
29		0	.16	4.4	3.6	4.7	4.5	-	6.6	40	.24	8.3
30		0		4.5	3.45	4.7	4.9	-----	6.3	3.7	1.37	8.8
31		0		4.5	-----	5.3	4.5	-----	3.25	-----	7.7	-----
Total	0	9.10	13.86	162.56	127.45	147.00	230.3	314.5	287.95	45.80	20.10	83.44
Mean	0	0.294	0.462	5.24	4.25	4.74	7.43	11.2	9.29	1.53	0.648	2.78
cfs	0	0.455	0.715	8.11	6.58	7.33	11.5	17.3	14.4	2.37	1.00	4.30
Ac-ft	0	28	43	499	391	451	707	965	884	141	62	256

Calendar year 1953: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -  
 Fiscal year 1953-54: Max 45 Min 0 Mean(mgd) 3.95 Mean(cfs) 6.11 Ac-ft 4,430

Peak discharge (base, 500 mgd).--No peak above base.

\* Discharge measurement made on this day.

## Punaluu Stream near Punaluu--Continued

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.3	21	12.1	0.22	3.5	23	16	15.9	17.8	13.0	9.5	9.8
2	9.3	18.4	10.5	.22	5.6	25.5	15	19.6	17.2	16.9	9.5	9.5
3	9.1	16.5	10.0	.18	5.4	19.1	18	17.2	15.9	16.1	9.3	9.1
4	11.0	15.9	9.5	.18	5.2	29	24	16.5	16.5	13.0	8.8	8.8
5	9.1	35.5	9.5	.15	5.0	32.5	19	24.5	16.5	12.6	8.8	8.6
6	8.6	19.7	9.5	.22	5.0	35.5	17	19.1	14.6	12.1	8.8	4.3
7	3.3	19.1	12.8	.40	5.2	29	16	292	14.2	12.1	8.6	2.05
8	0	18.4	10.1	.15	5.4	26	15	65	13.8	11.7	8.6	2.05
9	0	17.8	10.0	.22	5.0	21.5	14	35	13.4	11.7	8.6	1.85
10	.31	36.5	9.3	2.05	5.0	20	14	26.5	14.6	11.7	4.1	1.85
11	2.45	23	9.1	12.3	4.9	19	13	24.5	13.4	13.4	1.43	1.65
12	1.29	18.4	9.3	13.0	4.9	18	13	25	13.4	11.7	1.33	1.74
13	.91	17.2	4.2	13.0	4.7	17	13	21	12.6	11.7	1.33	1.74
14	.43	13.7	.45	15.2	5.4	22	13	19.7	13.0	11.3	1.33	1.63
15	.51	11.3	.45	13.0	6.5	28	20	19.7	45	12.6	1.33	1.63
16	.35	11.3	.40	12.6	6.6	30	18	19.7	30.5	11.7	1.74	2.4
17	.49	10.9	.45	12.1	5.4	24	17	20.5	19.1	11.3	1.33	1.63
18	.86	20	1.73	12.1	5.0	20	15.9	16.9	16.5	5.3	2.6	1.53
19	.48	12.6	1.88	9.5	5.0	19	14.6	12.6	15.2	1.85	3.35	1.33
20	.62	14.9	.57	*5.6	4.9	18	14.2	12.6	14.6	*1.85	10.5	1.24
21	.22	33.5	.45	5.6	4.7	20	112	12.1	13.8	2.05	5.0	1.24
22	.18	25	.45	5.4	4.7	24	26	45	64	2.2	4.5	1.24
23	.43	20.5	.45	5.4	4.9	20	19.7	98	24.5	1.85	5.0	1.33
24	.22	16.5	.40	5.2	4.7	18	18.4	63	19.1	1.85	3.9	1.24
25	.07	14.6	1.42	5.0	4.7	16	17.8	38.5	16.5	1.74	9.5	1.24
26	.03	14.6	.63	5.0	6.4	15	16.5	27.5	15.2	2.55	9.3	1.15
27	.02	13.6	.45	5.2	7.7	16	15.9	23	14.2	13.5	36	1.33
28	58	15.2	.40	3.05	136	18	15.2	20.5	13.8	10.0	20	1.24
29	77	12.6	.35	.07	110	22	14.6	-	13.8	10.2	13.4	1.53
30	39.5	11.7	.30	.25	42	19	15.9	-----	13.4	11.7	12.1	1.15
31	25	11.3	-----	3.9	-----	17	20	-----	13.4	-----	10.5	-----
Total	269.04	561.4	137.13	166.46	429.4	681.1	611.7	1,051.1	569.5	281.24	240.07	87.31
Mean	8.68	18.1	4.57	5.37	14.3	22.0	19.7	37.5	18.4	9.37	7.74	2.91
cfs	13.4	28.0	7.07	8.31	22.1	34.0	30.5	58.0	28.5	14.5	12.0	4.50
Ac-ft	826	1,720	421	511	1,320	2,090	1,880	3,230	1,750	863	737	268

Calendar year 1954: Max 136 Min 0 Mean(mgd) 8.84 Mean(cfs) 13.7 Ac-ft 9,900  
 Fiscal year 1954-55: Max 292 Min 0 Mean(mgd) 13.9 Mean(cfs) 21.5 Ac-ft 15,620

Peak discharge base, 500 mgd,--Nov. 28 (6:30 p.m.) 1,110 mgd (1,720 cfs), 4.08 ft; Jan. 21 (8 a.m.) 680 mgd (1,050 cfs), 3.30 ft; Feb. 7 (11 a.m.) 1,110 mgd (1,720 cfs), 4.12 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 10 to Jan. 17; discharge estimated on basis of records for nearby streams.

## Discharge measurements at points other than gaging stations

Measurements of streamflow on the island of Oahu made at points other than regular gaging 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. Measurements believed to have been made under base-flow conditions are identified by an asterisk (\*) to the left of the discharge figure. 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 stream. The column headed, "Measured previously" shows the fiscal years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at points other than gaging stations on the island of Oahu during fiscal year July 1954 to June 1955

Stream	Tributary to	Location	Measured previously (fiscal years)	Date	Discharge	
					Million gallons a day	Cubic feet per second
Makaha tunnel.	Farm land...	Lat 21°29'35", long 158°11'20", at mouth in Makaha Valley, near Waianae.	1947-51, 1953-54	Oct. 7 Jan. 12 May 19	*0.87 *.70 *.73	*1.34 *1.08 *1.13
Makaha mauka ditch.	....do.....	Lat 21°29'20", long 158°11'40", at 4-foot Parshall flume about 2,000 ft below tunnel in Makaha Valley, near Waianae.	1947-51, 1954	Oct. 7 Jan. 12 May 19	.73 .76 1.00	1.13 1.17 1.17
Tunnel 19...	Kanewai Stream.	Lat 21°29'25", long 158°08'35", at weir 28, near Waianae.	1947-51, 1953-54	Oct. 5 Jan. 10 Mar. 9 May 18	*.36 *.34 *.45 *.55	*.56 *.53 *.70 *.86
Tunnel 6....	....do.....	Lat 21°29'25", long 158°08'40", at weir 7, near Waianae.	1911, 1923, 1925-27, 1947-51, 1953-54	Oct. 6 Jan. 10 Mar. 9 May 18	*.023 *.033 *.043 *.063	*.036 *.051 *.066 *.098
Tunnel 6-A....	....do.....	Lat 21°29'25", long 158°08'40", at weir 20, near Waianae.	1948-51, 1953-54	Oct. 6 Jan. 10 Mar. 9 May 18	*.014 *.014 *.029 *.029	*.022 *.024 *.045 *.045
Tunnel 7....	....do.....	Lat 21°29'20", long 158°08'40", at weir 21, near Waianae.	1911, 1925-27, 1947-51, 1953-54	Oct. 6 Jan. 10 Mar. 9 May 18	*.049 *.039 *.049 *.049	*.076 *.060 *.076 *.076
Tunnel 9....	....do.....	Lat 21°29'20", long 158°08'40", at weir 23, near Waianae.	1925-27, 1947-51, 1953-54	Oct. 6 Jan. 10 Mar. 9 May 18	*.029 *.029 *.041 *.037	*.045 *.045 *.063 *.057
Kanewai Stream.	Honua Stream.	Lat 21°29'15", long 158°08'40", above flume entrance, near Waianae.	1923, 1948-51, 1953-54	Oct. 6 Jan. 10 Mar. 9 May 18	*.53 *.49 *.81 .85	*.82 *.76 *1.26 1.32
Right Branch of West Fork Kalalula Stream.	West Fork Kalalula Stream.	Lat 21°29'40", long 158°08'55", at weir 25, above tunnel 14, near Waianae.	1947-51, 1953-54	Oct. 5 Jan. 11 Mar. 8 May 17	*.047 *.037 *.060 .093	*.073 *.057 *.093 .144
Tunnel 14....	Right Branch of West Fork Kalalula Stream.	Lat 21°29'40", long 158°08'55", at weir 24, near Waianae.	1925-27, 1947-51, 1953-54	Oct. 6 Jan. 11 Mar. 8 May 17	*.047 *.047 *.093 *.079	*.073 *.073 *.144 *.122
Right Branch of West Fork Kalalula Stream.	West Fork Kalalula Stream.	Lat 21°29'35", long 158°08'55", at weir 10, near Waianae.	1947-51, 1953-54	Oct. 5 Jan. 11 Mar. 8 May 17	*.099 *.102 *.154 .209	*.153 *.158 *.238 .323
Left Branch of West Fork Kalalula Stream.	....do.....	Lat 21°29'35", long 158°08'55", at weir 9, below tunnel 11, near Waianae.	1925-27, 1947-51, 1953-54	Oct. 5 Jan. 10 Mar. 8 May 17	(a) 0 *.035 .300	- - *.054 .464
Tunnel 15....	....do.....	Lat 21°29'30", long 158°08'55", at weir 13, near Waianae.	1925-27, 1947-54	Oct. 5 Jan. 11 Mar. 8 May 17	*.24 *.21 *.28 *.28	*.37 *.33 *.44 *.44
West Fork Kalalula Stream.	Kalalula Stream.	Lat 21°29'25", long 158°08'55", at weir 14, below tunnel 15, above pipeline diversion, near Waianae.	1923, 1947-54	Oct. 5 Jan. 11 Mar. 8 May 17	*.34 *.33 *.47 .83	*.53 *.51 *.72 1.29
East Fork Kalalula Stream.	....do.....	Lat 21°29'30", long 158°08'55", at weir 30, near Waianae.	1948-54	Oct. 5 Mar. 8 May 17	0 *.016 .045	- *.025 *.070
Kalalula Stream.	Honua Stream	Lat 21°29'00", long 158°09'05", at weir 15, near Waianae.	1948-54	Oct. 6 Jan. 10 Mar. 8 May 18	0 0 *.043 .159	- - *.086 .246

\* Base flow.  
a Trace.

## Discharge measurements at points other than gaging stations

Discharge measurements made at points other than gaging stations on the island of Oahu during fiscal year July 1954 to June 1955--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Date	Discharge	
					Million gallons a day	Cubic feet per second
Huu.....	Honua Stream	Lat 21°28'55", long 158°09'20", at weir 26, above flume outlet, near Waianae.	1948-54	Oct. 7 Jan. 12 May 19	*0.015 *.047 *.024	*0.023 *.179 *.037
Do.....	.....do.....	Lat 21°28'40", long 158°09'15", at weir 17, near Waianae.	1948-51, 1953-54	Oct. 7 Jan. 12 May 19	*.029 *.116 *.128	*.045 *.179 *.198
Kumaipo.....	.....do.....	Lat 21°29'15", long 158°09'30", at weir 11, below tunnel 16, near Waianae.	1926, 1948-54	Oct. 7 Jan. 12 Mar. 10 May 19	*.033 *.063 .95 *.060	*.051 *.098 1.47 *.093
Do.....	.....do.....	Lat 21°28'55", long 158°09'30", at weir 12, above diversion flume to Huu Stream, near Waianae.	1947-54	Oct. 7 May 19	*.026 .108	*.040 .167
Punanaula....	.....do.....	Lat 21°29'05", long 158°09'40", at weir 16, below tunnel 17, near Waianae.	1926-27, 1948-51, 1953-54	Oct. 7 Jan. 12 Mar. 10 May 19	*.015 *.021 .026 *.016	*.023 *.032 .040 *.025
City and county of Honolulu tunnel.	.....do.....	Lat 21°28'25", long 158°09'20", 40 ft below tunnel portal, near Waianae.	1948-51, 1953-54	Oct. 6 Jan. 10 Mar. 9 May 18	1.26 1.38 1.54 1.84	1.95 2.13 2.39 2.84
Puea mauka ditch.	Farm land...	Lat 21°26'10", long 158°09'40", at 2-foot Parshall flume below powerplant, near Waianae.	1947-51, 1953-54	Oct. 6 Jan. 11 Mar. 9 May 18	1.55 1.04 .54 1.21	2.40 1.61 .83 1.87
Opaeula.....	Pacific Ocean.	Lat 21°35'05", long 158°06'05", at crest-stage gaging station, 1 mile upstream from Helemano Stream and 0.8 mile south of Haleiwa, at Waiialua.		Apr. 6	20.7	32.0
Kealahala.....	.....do.....	Lat 21°24'55", long 157°48'05", at Kamehameha Highway bridge, near Kaneohe.	1953-54	Aug. 12 Sept. 8 Oct. 20 Jan. 14 Mar. 11	*3.16 *2.24 *2.11 *3.08 *3.68	*4.89 *3.47 *3.26 *4.77 *5.69
Left tributary of Kahaluu Stream.	Kahaluu Stream.	Lat 21°26'20", long 157°51'10", first culvert below gaging station, near Heeia.	1949, 1953-54,	July 22 Sept. 3 Oct. 22 Dec. 13 Mar. 11 Apr. 21 June 22	*.381 *.414 *.341 *.549 *.341 *.256 *.031	*.589 *.641 *.528 *.849 *.528 *.396 *.048
North Fork Waihee Stream.	Waihee Stream.	Lat 21°26'50", long 157°52'20", at altitude 720 ft, near Heeia.		Mar. 21 Apr. 11 June 9	*1.40 *1.29 *1.47	*2.17 *2.00 *2.27
Do.....	.....do.....	Lat 21°26'50", long 157°52'10", at altitude 500 ft, near Heeia.		Mar. 21	*1.20	*1.86
South Fork Waihee Stream.	.....do.....	Lat 21°26'45", long 157°52'10", at altitude 710 ft, about 75 ft below falls, near Heeia.		Mar. 21 Apr. 11 June 9	*1.21 *1.32 *1.25	*1.87 *2.04 *1.93
Do.....	.....do.....	Lat 21°26'45", long 157°52'10", at altitude 580 ft, about 500 ft below falls, near Heeia.		Sept. 22 Oct. 26	*1.23 *1.07	*1.90 *1.66
Do.....	.....do.....	Lat 21°26'50", long 157°52'10", at altitude 500 ft, near Heeia.		Mar. 21	*1.36	*2.10
Waihee Stream.	Pacific Ocean.	Lat 21°26'55", long 157°52'00", at altitude 350 ft, 20 ft above confluence with Upper Right Branch and about 700 ft below waterfall, near Heeia.		Oct. 26	*1.47	*2.27
Upper Right Branch Waihee Stream.	Waihee Stream.	Lat 21°26'55", long 157°52'00", at altitude 350 ft, 20 ft above confluence with Left Branch, near Heeia.		Sept. 22 Oct. 26 Mar. 21 Apr. 11 May 20 June 9	*.501 *.422 *.095 *.001 *0 *0	*.755 *.653 *.147 *.002 *0 *0
Upper Left Branch Waihee Stream.	.....do.....	Lat 21°27'00", long 157°51'55", at altitude 300 ft, near Heeia.		Mar. 21  May 20  June 9	b.5 to 1.0 b.02 to .03 *0.14	b.8 to 2.0 b.03 to .05 *.022
Waihee Stream.	Pacific Ocean.	Lat 21°27'00", long 157°51'45", at altitude 205 ft, 75 ft above bridge, near Heeia.		Mar. 11 Mar. 17 Apr. 7 June 9	*2.63 *2.86 *2.52 *2.18	*4.07 *4.43 *3.90 *3.37

\* Base flow.

b Estimated.

## Discharge measurements at points other than gaging stations

Discharge measurements made at points other than gaging stations on the island of Oahu during  
fiscal year July 1954 to June 1955--Continued

Stream	Tributary to	Location	Measured previously (fiscal years)	Date	Discharge	
					Million gallons a day	Cubic feet per second
Waihee tunnel.	Waihee Stream.	Lat 21°26'50", long 157°51'55", 40 ft below main heading, near Heeia.		May. 3	7.24	11.2
Do.....	....do.....	Lat 21°26'50", long 157°51'55", 50 ft below right branch heading, near Heeia.		Apr. 14	8.66	13.4
Waihee tunnel flume.	....do.....	Lat 21°26'55", long 157°52'00", near Heeia.		Feb. 10	2.53	3.91
				Feb. 17	11.1	17.2
				Feb. 17	11.0	17.0
				Mar. 1	11.0	17.0
				Mar. 11	10.1	15.6
				Mar. 17	10.7	16.6
				Apr. 7	10.1	15.6
				Apr. 12	16.5	25.5
				Apr. 14	16.7	25.8
				May 20	12.1	18.7



## Halawa Stream near Halawa

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

Drainage area.--4.5 sq mi.

Records available.--August 1917 to July 1932, November 1937 to June 1955.

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

Average discharge.--31 years (1918-32, 1938-55), 18.9 mgd (29.2 cfs).

Extremes.--Maximum discharge during year, 4,000 mgd (6,190 cfs) Feb. 7 (gage height, 10.30 ft), from rating curve extended above 45 mgd as explained below; minimum, 1.84 mgd (2.85 cfs) Nov. 25, 28.

1917-32, 1937-55: Maximum discharge, 5,420 mgd (8,390 cfs) Dec. 3, 1950 (gage height, 11.55 ft), from rating curve extended above 45 mgd on basis of slope-area determination at gage height 6.7 ft; maximum gage height, 12.30 ft Apr. 2, 1948; minimum discharge, 0.80 mgd (1.24 cfs) Oct. 13-15, 19, 1917, Feb. 11, 1954.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.8	1.90	2.5	77
.9	2.55	3.0	130
1.1	4.4	3.5	200
1.3	7.2	4.0	294
1.5	11.3	4.5	405
2.0	42		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.3	16.5	8.2	3.9	2.95	7.2	9.1	10.2	15.4	12.3	8.2	7.2
2	21.5	11.3	6.4	3.9	2.95	11.8	11.3	26.5	11.8	29.5	6.4	16.5
3	23	17.7	5.7	3.9	3.3	8.6	15.6	10.2	10.2	14.3	8.2	10.2
4	75	61	5.7	5.0	2.55	12.8	19.0	9.1	9.1	11.1	8.2	8.6
5	29.5	24	5.7	4.4	2.55	73	8.2	13.3	30.5	8.2	5.7	17.3
6	15.9	23.5	6.0	3.9	2.55	31	8.8	18.5	11.3	7.2	5.8	8.2
7	10.2	18.7	26	3.9	17.7	94	22.5	236	9.1	6.4	8.9	6.4
8	16.8	23	9.5	3.35	5.1	86	10.0	81	14.0	5.7	6.4	5.7
9	*26	15.2	*9.5	7.4	12.9	32.5	6.4	23	11.6	5.0	5.7	5.0
10	39	64	5.7	20.5	8.9	43	5.7	25.5	72	5.0	5.0	11.3
11	41	29.5	5.0	26.5	3.9	19.2	5.0	74	21	5.0	*5.0	5.7
12	62	20	4.4	6.8	2.95	12.3	5.0	70	18.2	5.0	5.7	12.8
13	51	12.3	5.0	4.4	2.55	10.2	6.9	47	10.2	4.4	6.1	7.2
14	21.5	18.4	6.3	6.8	2.55	53	15.8	23	9.1	4.4	5.0	8.6
15	13.4	25.5	7.5	5.0	9.9	45	21.5	36	34	4.4	4.4	5.7
16	12.8	23	5.0	3.9	31.5	250	15.1	23	129	5.7	5.0	5.0
17	37	14.4	31	3.35	6.1	28	7.2	31	*17.0	28.5	5.0	5.0
18	29.5	24	21.5	8.4	4.4	13.6	9.6	30.5	11.3	21	22	7.4
19	14.5	14.3	20.5	6.2	*3.35	10.2	6.4	33	9.1	8.2	15.8	26
20	30.5	21.5	10.4	29	2.95	8.2	5.0	45	9.1	5.7	28	9.1
21	12.4	49	16.6	32	2.55	115	146	16.5	8.2	5.7	11.5	7.2
22	16.8	22.5	10.0	6.9	2.55	56	13.4	21	67	7.2	11.3	6.4
23	12.9	22	7.2	5.0	2.2	13.0	7.2	74	110	9.1	12.7	19.4
24	10.4	16.5	18.1	4.4	2.2	11.3	6.4	44	29.5	7.2	11.0	12.5
25	9.1	12.2	26.5	3.9	1.90	8.2	42	20	13.9	6.4	15.6	18.1
26	16.9	49	10.2	16.4	2.95	7.2	66	99	10.2	47	27	11.2
27	31.5	22.5	8.2	5.8	2.55	12.1	17.0	41	9.1	16.1	42	12.2
28	384	22.5	5.7	4.4	1.90	66	9.1	29.5	8.2	8.2	23.5	8.2
29	48	21	5.0	3.9	197	19.7	7.2	-	8.2	12.2	11.3	34
30	26	12.3	4.4	3.35	11.6	13.1	17.7	-----	7.2	15.1	12.4	20
31	16.5	9.1	-----	3.35	-----	12.6	39.5	-----	11.4	-----	9.1	-----
Total	1,165.9	736.4	316.9	249.90	359.00	1,183.8	585.6	1,210.8	745.9	331.2	357.9	338.1
Mean:												
mgd	37.6	23.8	10.6	8.06	12.0	38.2	18.9	43.2	24.1	11.0	11.5	11.3
cfs	58.2	36.8	16.4	12.5	18.6	59.1	29.2	66.8	37.3	17.0	17.8	17.5
Ac-ft	3,580	2,260	973	767	1,100	3,630	1,900	3,720	2,290	1,020	1,100	1,040

Calendar year 1954: Max 394 Min 0.87 Mean(mgd) 18.5 Mean(cfs) 28.6 Ac-ft 20,670  
Fiscal Year 1954-55: Max 384 Min 1.90 Mean(mgd) 20.8 Mean(cfs) 32.2 Ac-ft 23,280

Peak discharge (base, 950 mgd).--July 28 (11 a.m.) 1,180 mgd (1,830 cfs), 6.63 ft; Nov. 29 (4 a.m.) 1,600 mgd (2,480 cfs), 7.44 ft; Dec. 16 (12 m.) 1,600 mgd (2,480 cfs), 7.39 ft; Jan. 21 (1 p.m.) 1,540 mgd (2,380 cfs), 7.28 ft; Feb. 7 (4 p.m.) 4,000 mgd (6,190 cfs), 10.30 ft; Feb. 26 (9 p.m.) 1,560 mgd (2,370 cfs), 7.48 ft.

\* Discharge measurement made on this day.

## Pulena Stream near Wailau

Location--Lat 21°07'40", long 156°49'50", on left bank 0.5 mile upstream from confluence with Waiakeakua Stream, 3 miles south of Wailau, and 4 miles northwest of Pukoo.

Drainage area--4.4 sq mi.

Records available--October 1919 to December 1928, September 1937 to June 1955.

Gage--Water-stage recorder. Datum of gage is 591 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Dec. 5, 1928, at site 150 ft upstream at different datum.

Average discharge--25 years (1920-28, 1938-55), 22.0 mgd (34.0 cfs).

Extremes--Maximum discharge during year, 1,740 mgd (2,690 cfs) Nov. 29 (gage height, 7.04 ft), from rating curve extended above 220 mgd as explained below; minimum, 3.3 mgd (5.1 cfs) Nov. 24.

1919-28, 1937-55: Maximum discharge, 5,970 mgd (9,240 cfs) Jan. 26, 1948 (gage height, 13.16 ft), from rating curve extended above 220 mgd by test on model of station site; minimum, 3.0 mgd (4.6 cfs) June 28, July 14, 1920, Oct. 8, 1952, Sept. 27, 29, Oct. 10, 1953.

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

Remarks--Records good.

Revisions (fiscal years)--WSP 1185: 1938-48(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.5	3.0	1.6	48
.6	4.6	2.0	80
.8	9.0	2.5	138
1.0	15.5	3.0	225
1.3	29	3.5	335

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	21	27.5	17.5	8.0	5.2	13.3	23.5	15.5	24.5	15.9	9.9	9.6
2	53	19.1	15.1	8.0	5.0	35	20.5	30	20.5	39.5	13.1	12.9
3	41	28	13.3	8.3	4.8	17.9	21.5	20.5	17.9	48	22	11.0
4	116	62	12.6	9.0	4.6	17.9	20.5	17.2	16.3	20.5	12.6	9.6
5	62	34.5	12.3	8.0	4.6	53	14.4	45	27	15.9	10.2	10.9
6	34	35.5	16.4	7.3	4.6	51	*13.0	30	17.9	13.3	13.0	8.3
7	22.5	31	19.2	6.6	6.8	97	58	288	14.4	11.9	14.4	7.6
8	24	36	11.3	7.7	6.0	131	24	119	16.1	11.3	9.3	7.3
9	37.5	24.5	10.7	17.7	7.3	70	16.7	44	14.1	10.4	21.5	7.1
10	47	90	9.3	19.0	10.8	152	14.1	53	55	10.4	9.6	9.6
11	59	54	8.8	11.3	5.2	68	12.3	137	49	12.5	10.2	6.8
12	53	32	8.3	8.5	4.6	83	11.6	120	*35.5	9.0	9.0	11.8
13	51	24.5	8.0	7.1	4.3	56	14.1	146	23.5	8.5	11.0	7.6
14	34	29	8.3	7.3	4.4	101	20.5	67	18.3	8.0	8.5	8.9
15	25	40	9.0	7.6	6.0	46	18.7	55	121	10.1	8.0	7.3
16	26	36	9.9	6.4	11.5	196	17.8	38.5	184	9.0	8.5	7.8
17	86	26	44	6.0	*5.2	65	14.6	41	44	21.5	*7.1	7.1
18	64	35	33.5	8.0	4.4	36	15.1	49	29	21	15.5	8.4
19	36.5	29.5	*21	6.8	4.1	25.5	11.0	78	22.5	18.2	11.4	29.5
20	53	27	*13.7	17.2	3.95	21	9.9	66	19.1	10.2	15.9	10.7
21	27.5	36.5	11.3	19.0	3.8	72	134	38.5	16.7	9.9	9.0	10.4
22	27	35.5	9.9	8.0	3.8	58	30	34.5	47	11.3	11.8	10.0
23	*21	47	9.6	6.8	3.65	29.5	18.3	76	133	18.0	19.3	25
24	18.3	33	16.8	6.6	3.5	21.5	14.8	59	37	12.3	13.7	14.3
25	17.1	24	34	7.1	3.65	17.9	18.5	37.5	25	12.3	14.0	14.4
26	40	50	15.5	8.3	5.1	16.3	43	79	20.5	24	29.5	13.3
27	25	37.5	11.3	6.2	3.65	17.9	27.5	56	17.5	16.7	36	15.2
28	123	47	9.9	5.8	3.8	163	17.5	32.5	15.5	11.6	19.5	10.4
29	58	45	9.6	5.4	186	49	14.1	-	13.7	17.9	14.1	31.5
30	37.5	27	8.8	6.0	22	43	16.3	-----	12.3	15.1	13.7	18.5
31	26	21	-----	5.4	-----	28	27.5	-----	18.8	-----	11.0	-----
Total	1,365.9	1,124.6	438.9	270.2	352.30	1,851.7	733.3	1,872.7	1,126.6	474.2	433.3	361.8
Mean:												
mgd	44.1	36.3	14.6	8.72	11.7	59.7	23.7	66.9	36.3	15.8	14.0	12.1
cfs	68.2	56.2	22.6	13.5	18.1	92.4	36.7	104	56.2	24.4	21.7	18.7
Ac-ft	4,190	3,450	1,350	829	1,080	5,680	2,250	5,750	3,460	1,460	1,330	1,110
Calendar year 1954:	Max	196		Min	3.5	Mean(mgd)	22.4	Mean(cfs)	34.7	Ac-ft	25,110	
Fiscal year 1954-55:	Max	298		Min	3.5	Mean(mgd)	28.5	Mean(cfs)	44.1	Ac-ft	31,940	

Peak discharge (base, 1,800 mgd)--No peak above base.

\* Discharge measurement made on this day.

## Waiakeakua Stream near Wailau

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

Drainage area.--1.4 sq mi.

Records available.--November 1919 to September 1929, September 1937 to June 1955.

Gage.--Water-stage recorder. Datum of gage is 698 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Dec. 6, 1949, at datum 0.17 ft higher.

Average discharge.--26 years (1920-29, 1938-55), 7.49 mgd (11.6 cfs).

Extremes.--Maximum discharge during year, 740 mgd (1,140 cfs) Aug. 10 (gage height, 6.69 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 1.55 mgd (2.40 cfs) Nov. 13, 14, 28.  
1919-29, 1937-55: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 26, Apr. 2, 1948, from rating curve extended above 25 mgd by test on model of station site; maximum gage height, 9.90 ft Jan. 26, 1948; minimum discharge, 1.15 mgd (1.78 cfs) Nov. 1, 1949.

Remarks.--Records fair except those prior to Jan. 21 and those for period of no gage-height record, which are poor.

Revisions (fiscal years).--WSP 1249: 1920(M), 1923(M), 1939(M), 1943(M), 1947(M), 1948(P).

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)  
(Shifting-control method used Oct. 31 to Nov. 28)

July 1 to Jan. 21

Jan. 22 to June 30

1.65 1.35 2.2 13.1  
1.7 1.85 2.5 26  
1.6 3.15 3.0 56  
1.9 4.9 3.5 98

1.8 2.5  
1.9 4.0  
2.0 6.2  
2.2 11.3  
2.5 23  
3.1 63

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.6	9.5	6.0	4.0	1.98	4.7	6.7	4.6	6.2	4.9	3.85	4.0
2	11.1	7.1	5.3	3.85	1.98	7.7	6.4	7.7	5.9	14.1	3.85	6.4
3	8.6	11.1	4.9	3.85	2.1	5.9	8.6	5.1	5.5	7.3	5.1	4.4
4	35.5	27.5	4.6	4.4	2.1	6.6	8.2	4.4	5.1	5.5	4.0	5.2
5	13.1	13.3	4.4	3.3	1.98	17.4	5.8	10.1	a7.3	4.9	3.55	5.4
6	8.4	14.6	7.5	3.0	1.98	14.8	*5.6	6.2	a5.3	4.2	3.7	3.85
7	6.2	11.4	11.1	2.75	4.6	34.5	10.9	57	a4.3	4.0	4.0	3.55
8	7.9	12.3	5.3	3.1	3.0	39.5	5.8	18.8	a4.5	4.0	3.4	3.55
9	11.8	9.8	5.0	5.8	2.95	17.2	4.9	8.5	a4.0	3.7	3.25	3.4
10	15.0	64	4.7	6.8	4.2	32	4.6	10.4	a15	3.7	3.25	5.1
11	16.9	18.4	4.4	5.2	2.25	13.8	4.4	36.5	*a12	3.7	3.4	3.4
12	21	11.4	4.2	3.3	1.85	12.7	4.2	29.5	*8.7	3.55	3.1	5.7
13	22	8.4	4.0	2.9	1.65	10.7	4.5	35	5.9	3.4	3.85	3.55
14	11.4	9.9	*4.2	3.15	1.85	26	6.7	14.4	5.3	3.25	3.1	4.3
15	8.4	14.3	4.0	2.9	3.2	17.3	6.1	15.3	32	3.55	3.1	3.55
16	6.7	11.6	3.85	2.65	9.7	42	6.0	9.9	28.5	3.25	3.25	3.4
17	22.5	9.0	21	2.35	*3.7	13.7	4.6	9.0	8.5	8.8	*3.1	3.4
18	13.4	13.4	*14.8	3.65	*2.75	9.8	4.7	11.7	6.2	5.9	8.4	4.1
19	9.0	9.8	*8.4	2.65	2.5	7.1	4.2	16.1	5.7	4.2	5.0	11.6
20	16.8	11.7	*6.4	13.2	2.35	6.4	3.85	15.2	5.3	3.55	8.0	4.4
21	8.4	15.4	6.0	9.0	2.1	35	40	8.5	4.9	3.55	4.4	3.85
22	9.5	13.4	5.3	3.85	1.98	19.8	7.3	9.4	12.6	3.85	5.7	3.7
23	*4.4	15.4	4.7	3.7	1.98	9.8	5.3	19.4	32	4.4	7.2	7.7
24	6.2	8.4	10.0	3.0	1.75	7.1	4.6	12.3	7.3	3.7	6.8	5.1
25	5.9	8.4	17.1	3.5	1.85	6.2	5.1	7.3	6.2	3.7	5.7	6.1
26	9.7	26.5	7.1	4.4	2.6	5.6	9.9	20	5.5	13.0	10.0	4.9
27	14.2	11.0	6.2	2.75	1.75	6.7	6.1	11.0	5.1	5.5	13.9	6.2
28	82	18.9	5.3	2.5	2.15	37.5	4.6	8.5	4.9	4.2	9.0	4.0
29	20.5	13.5	4.9	2.25	52	11.1	4.2	-	4.6	5.1	5.7	13.1
30	11.4	8.4	4.4	2.1	7.4	10.5	6.5	-----	4.4	5.3	5.7	8.9
31	8.4	8.2	-----	2.1	-----	7.1	9.4	-----	6.8	-----	4.6	-----
Total	455.9	444.5	205.05	121.55	134.23	495.2	219.75	421.8	275.5	151.75	160.95	158.80
Mean:	14.7	14.3	6.84	3.92	4.47	16.0	7.09	15.1	8.89	5.06	5.19	5.29
mgd	22.7	22.1	10.6	6.07	6.92	24.8	11.0	23.4	13.8	7.83	8.03	8.18
cfs	1,400	1,360	629	373	412	1,520	674	1,290	845	466	494	467
Ac-ft												
Calendar year 1954: Max	82			Min 1.45	Mean(mgd)	7.69	Mean(cfs)	11.9	Ac-ft	8,610		
Fiscal year 1954-55: Max	82			Min 1.65	Mean(mgd)	8.89	Mean(cfs)	13.8	Ac-ft	9,950		

Peak discharge (base, 240 mgd).--Aug. 10 (2 p.m.) 740 mgd (1,140 cfs), 6.69 ft; Nov. 29 (5:30 a.m.) 390 mgd (603 cfs), 5.40 ft; Jan. 21 (12:30 p.m.) 290 mgd (449 cfs), 4.94 ft.

\* Discharge measurement made on this day.

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

## Pelekunu Stream near Pelekunu

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

Drainage area.--2.4 sq mi.

Records available.--December 1919 to January 1929, September 1937 to June 1955.

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

Average discharge.--24 years (1920-28, 1938-47, 1948-55), 10.8 mgd (16.7 cfs).

Extremes.--Maximum discharge during year not determined; minimum, 2.4 mgd (3.7 cfs)

Nov. 23-25.

1919-29, 1937-55: Maximum discharge observed, 3,080 mgd (4,770 cfs) Nov. 20, 1940 (gage height, 6.81 ft), from rating curve extended above 80 mgd by logarithmic plotting, but may have been greater Jan. 26, 1948, when flood of undetermined magnitude destroyed station; minimum, 1.46 mgd (2.26 cfs) Nov. 26, 27, 1943.

Remarks.--Records fair.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.7	2.2	1.6	23.5
.8	2.65	1.8	38
.9	3.2	2.0	58
1.0	4.1	2.3	110
1.2	8.3	2.7	265
1.4	14.3		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.0	10.5	7.0	3.75	2.85	9.4	14.3	9.6	14.3	8.8	6.3	5.5
2	25.5	8.3	6.6	3.65	2.75	16.5	12.3	14.6	12.6	18.5	8.7	6.0
3	17.9	9.6	6.0	3.75	2.75	9.6	12.3	12.5	11.3	23	11.2	5.6
4	39.5	20.5	5.8	3.9	2.7	8.8	12.0	10.5	11.3	9.9	7.8	5.1
5	22.5	12.3	5.8	3.65	2.7	16.2	*9.9	12.9	18.4	8.6	6.6	5.5
6	14.3	11.3	6.0	3.45	2.7	20.5	9.1	13.7	12.3	7.8	7.8	4.8
7	11.0	10.5	6.6	3.2	4.7	37.5	16.9	e240	10.7	7.0	8.0	4.6
8	10.7	11.7	5.1	3.4	3.35	57	11.7	66	11.0	6.8	6.0	4.4
9	16.4	8.8	4.8	8.1	4.2	33	9.4	21.5	10.5	6.3	6.6	4.4
10	18.4	19.8	4.3	7.6	6.0	e200	8.6	32.5	21	6.0	5.8	4.8
11	25	14.2	4.1	4.8	3.1	55	8.0	84	24.5	6.3	7.3	4.3
12	20.5	11.3	4.0	3.65	2.85	73	7.8	69	20.5	5.8	6.3	5.1
13	17.2	10.2	*4.0	3.4	2.75	36	8.3	121	14.3	5.6	6.8	4.8
14	12.6	11.9	4.1	3.45	2.8	49	9.9	38	12.0	5.5	5.8	4.8
15	11.0	13.5	4.3	3.55	3.2	22.5	9.6	32	*e60	6.6	*5.3	4.4
16	11.3	11.7	4.3	3.3	3.9	e160	9.1	20.5	e100	6.0	5.5	4.4
17	35.5	9.6	11.5	3.15	2.8	37	9.5	21	21	9.7	5.0	4.4
18	25	10.2	8.6	3.95	2.65	19.5	9.4	29.5	13.6	9.6	6.1	4.8
19	14.3	9.4	7.0	3.3	2.6	14.3	7.6	35	11.3	10.0	5.5	8.5
20	17.1	8.8	5.3	5.4	2.55	12.3	7.0	37	9.9	6.3	6.0	5.1
21	11.0	11.0	4.8	6.6	2.5	24	e80	21	8.8	6.0	5.1	5.1
22	10.2	10.7	4.3	3.55	2.45	21.5	19.2	17.8	22	6.8	5.3	5.5
23	8.9	12.3	4.0	3.3	2.4	14.0	12.6	44	e26	9.4	6.0	11.3
24	7.8	10.2	6.5	3.2	2.4	11.7	10.7	31.5	15.1	7.0	5.5	7.7
25	7.3	8.6	10.7	3.35	2.4	10.5	13.5	20	11.7	6.8	5.8	6.3
26	9.7	13.4	5.8	3.65	2.9	9.9	24	e44	10.2	9.3	10.3	5.8
27	7.6	11.9	4.8	3.1	2.45	9.4	18.0	36.5	9.1	7.3	13.2	6.0
28	36	12.3	4.3	3.0	2.6	e100	13.0	18.1	8.3	6.3	7.6	5.1
29	22.5	11.9	4.3	2.9	e70	28	12.6	-	7.6	8.8	6.3	9.4
30	14.7	9.1	3.9	6	12.0	22	10.7	-----	7.3	8.0	6.6	6.6
31	11.0	7.8	-----	3.0	-----	16.0	12.0	-----	7.8	-----	5.8	-----
Total	521.3	353.3	168.6	121.65	166.00	1,154.1	429.0	1,153.7	554.4	249.8	211.9	170.1
Mean:	16.8	11.4	5.62	3.92	5.53	37.2	13.8	41.2	17.9	8.33	6.84	5.67
mgd	26.0	17.6	8.70	6.07	8.58	57.6	21.4	63.7	27.7	12.9	10.6	8.77
cfs	1,600	1,080	517	373	509	3,540	1,320	5,540	1,700	787	650	522
Ac-ft												
Calendar year 1954:	Max	200	Min	2.4	Mean(mgd)	11.3	Mean(cfs)	17.5	Ac-ft	12,630		
Fiscal year 1954-55:	Max	240	Min	2.4	Mean(mgd)	14.4	Mean(cfs)	22.3	Ac-ft	16,120		

Peak discharge (base, 300 mgd).--Nov. 29 (5 a.m.) discharge unknown; Dec. 10 (3 p.m.) discharge unknown; Dec. 16 (4 p.m.) discharge unknown; Dec. 28 (5:30 p.m.) discharge unknown; Jan. 21 (12 m.) discharge unknown; Feb. 7 (2 p.m.) discharge unknown; Feb. 13 (7 a.m.) discharge unknown; Feb. 26 (10 p.m.) discharge unknown; Mar. 15 (11:30 p.m.) discharge unknown; Mar. 23 (4 a.m.) discharge unknown.

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge estimated on basis of records for nearby streams.

## Lanipuni Stream near Pelekunu

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

Drainage area.--0.8 sq mi.

Records available.--December 1919 to September 1929, September 1937 to June 1955.

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

Average discharge.--25 years (1920-29, 1938-47, 1948-55), 9.26 mgd (14.3 cfs).

Extremes.--Maximum discharge during year, 455 mgd (704 cfs) Feb. 7 (gage height, 5.17 ft), from rating curve extended above 35 mgd as explained below; minimum, 2.35 mgd (3.64 cfs) Nov. 25-28.  
1919-29, 1937-55: Maximum discharge, 1,550 mgd (2,400 cfs) Mar. 18, 1943 (gage height, 9.02 ft), from rating curve extended above 35 mgd by test on model of station site; minimum, 1.45 mgd (2.24 cfs) Jan. 29, 1944.

Remarks.--Records fair. No diversion.

Revisions (fiscal years).--WSP 1249: 1943(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)  
(Shifting-control method used Feb. 7 to Mar. 15)

0.3	2.25	1.5	37
.4	3.6	2.0	57
.5	5.3	2.5	85
.7	9.9	3.0	123
1.0	20		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.4	6.6	6.1	3.6	2.85	5.3	8.6	6.8	6.8	8.5	6.1	4.6
2	17.4	5.3	5.5	3.6	2.75	12.2	7.9	12.2	5.9	17.4	8.6	6.7
3	13.7	10.1	5.5	4.1	2.75	6.8	9.7	7.6	5.5	15.6	11.6	5.5
4	32.5	26.5	5.3	4.1	2.75	6.6	7.9	7.0	5.7	7.9	7.4	5.2
5	18.8	10.5	5.5	3.75	2.6	16.5	*6.8	9.4	14.0	7.2	6.4	5.1
6	8.9	8.6	6.4	3.6	2.85	20.5	5.9	11.9	6.1	6.4	7.5	4.3
7	6.6	8.8	6.4	3.3	8.0	35	12.8	102	5.5	5.9	8.2	3.95
8	6.8	9.5	5.0	3.6	4.2	32.5	7.0	41	6.1	5.5	6.1	3.75
9	12.6	7.4	4.6	5.1	4.8	19.0	5.7	12.7	5.3	5.1	6.4	3.6
10	14.3	12.8	4.4	7.9	6.9	6.9	5.1	44	24	5.1	5.5	4.5
11	17.4	9.2	4.4	5.0	3.45	23	4.6	62	17.5	5.9	6.4	3.45
12	17.4	7.9	4.3	3.95	3.15	34	4.4	40	16.4	5.0	6.1	5.3
13	15.3	7.2	*4.1	3.6	2.85	26.5	5.1	46	7.9	4.6	6.8	3.95
14	8.2	8.7	4.1	3.6	3.15	35.5	7.0	26	6.4	4.4	5.3	4.1
15	6.6	14.5	4.3	3.75	3.3	13.4	7.2	21	*46	6.5	*5.0	3.75
16	7.6	10.2	4.3	3.3	4.4	53	6.4	11.1	68	5.1	5.3	3.75
17	31.5	7.4	11.8	3.15	3.0	16.4	6.4	16.5	13.0	10.7	4.4	3.6
18	18.1	8.9	10.2	4.4	2.85	9.2	6.4	16.6	9.4	12.4	6.3	4.4
19	*10.5	7.9	7.0	3.45	2.85	7.4	5.1	17.1	8.4	7.9	5.5	11.8
20	13.9	8.1	5.3	6.3	2.75	7.0	4.4	20	7.6	6.1	6.4	5.3
21	6.8	10.4	4.8	7.4	2.75	36.5	51	10.2	7.2	5.7	4.8	5.0
22	7.3	9.3	4.4	4.1	2.6	23.5	11.6	8.7	15.1	6.4	5.5	5.6
23	6.4	13.1	4.3	3.75	2.6	9.9	7.4	18.9	19.3	10.1	8.8	14.8
24	6.1	8.2	6.0	3.6	2.5	7.9	6.4	15.4	9.9	7.4	6.8	7.8
25	5.6	7.2	12.3	3.8	2.35	6.6	11.9	8.2	8.2	7.4	8.5	6.8
26	12.1	14.6	5.7	4.1	2.9	6.4	27	22.5	7.2	16.1	11.6	5.5
27	8.6	9.7	4.6	3.15	2.35	7.4	13.9	18.3	6.6	8.6	11.8	6.8
28	31.5	13.0	4.4	3.0	2.6	39.5	8.6	8.2	6.4	7.2	7.2	5.0
29	13.2	12.4	4.1	2.85	35.5	15.9	7.2	-	5.9	10.8	5.9	12.7
30	7.4	7.6	3.95	2.85	6.4	14.8	7.6	-----	5.5	7.9	5.9	7.9
31	6.1	6.8	-----	2.85	-----	9.6	9.0	-----	9.5	-----	5.3	-----
Total	396.6	308.4	169.05	124.60	132.75	622.8	295.6	639.3	386.3	240.8	213.4	174.50
Mean:	12.8	9.95	5.64	4.02	4.42	20.1	9.54	22.8	12.5	8.03	6.88	5.82
mgd	19.8	15.4	8.73	6.22	6.84	31.1	14.8	35.3	19.3	12.4	10.6	9.00
cfs	1,220	946	519	382	407	1,910	907	1,960	1,190	739	655	536
Ac-ft												

Calendar year 1954: Max 65 Min 1.70 Mean(mgd) 7.82 Mean(cfs) 12.1 Ac-ft 8,760  
Fiscal year 1954-55: Max 102 Min 2.35 Mean(mgd) 10.1 Mean(cfs) 15.6 Ac-ft 11,370

Peak discharge (base, 300 mgd).--Nov. 29 (6 a.m.) 370 mgd (572 cfs), 4.75 ft; Jan. 21 (1 p.m.) 430 mgd (665 cfs), 5.14 ft; Feb. 7 (4 p.m.) 455 mgd (704 cfs), 5.17 ft.

\* Discharge measurement made on this day.

## Waikolu Stream below pipeline crossing, near Kalaupapa

Location.--Lat 21°09'50", long 156°56'00", on left bank 0.8 mile upstream from mouth and 3.9 miles southeast of Kalaupapa Post Office.

Drainage area.--4.0 sq mi.

Records available.--June 1919 to July 1932, September 1937 to June 1955. Prior to November 1930, published as Waikolu Stream at pipeline crossing.

Gage.--Water-stage recorder and concrete control. Datum of gage is 253 ft above mean sea level (hand levels by Bureau of Reclamation). Prior to Nov. 18, 1930, water-stage recorder at site 500 ft upstream at different datum. Sept. 20, 1937, to July 1948, water-stage recorder at present site at datum 0.49 ft higher.

Average discharge.--25 years (1919-29, 1938-47, 1949-55), 11.7 mgd (18.1 cfs).

Extremes.--Maximum discharge during year, 1,800 mgd (2,790 cfs) Jan. 21 (gage height, 7.59 ft), from rating curve extended above 25 mgd as explained below; minimum, 4.5 mgd (7.0 cfs) Nov. 18-28.

1919-32, 1937-55: Maximum discharge, 3,700 mgd (5,720 cfs) Jan. 26, 1948 (gage height, about 10.25 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 1.3 mgd (2.0 cfs) Nov. 1, 2, 1925, June 5, 1926.

Remarks.--Records good except those for period of no gage-height record, which are fair. Kalaupapa water-supply system diverts water above station.

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7

Feb. 8 to June 30

1.8	3.1	2.5	37	1.9	7.2
1.9	5.2	2.7	58	2.0	10.7
2.0	8.0	3.0	97	2.2	20.5
2.1	11.8	3.5	182	2.4	34
2.2	16.2	4.0	290	2.7	61
2.3	22			3.0	97
				3.3	145

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.0	7.4	6.2	5.2	4.8	6.5	17	8.0	14.6	16.1	12.4	10.0
2	17.4	6.8	6.0	5.2	4.8	14.6	15	17.5	13.7	20.5	12.4	10.0
3	15.4	8.4	5.8	5.2	4.8	8.0	18	10.3	13.3	23	19.6	11.1
4	34.5	41	5.5	5.2	4.8	7.0	15	8.4	13.7	14.1	13.7	10.0
5	20.5	11.3	5.2	5.0	4.8	30	14	8.8	32.5	13.3	12.4	9.6
6	11.0	8.0	5.2	5.0	4.8	40	*12	21	16.6	12.8	12.4	9.3
7	7.4	7.4	6.0	5.0	6.3	75	10.6	282	15.0	12.8	15.6	9.0
8	7.1	9.1	5.8	5.0	5.5	70	11.8	60	13.7	12.8	12.8	9.0
9	12.5	7.4	5.5	6.7	6.0	40	8.8	17.7	15.0	12.8	12.4	9.0
10	16.2	10.7	5.5	5.5	6.5	190	8.4	109	32	12.8	12.4	9.0
11	15.5	13.5	*5.2	6.8	5.2	50	8.0	138	25.5	12.8	13.7	9.0
12	15.9	9.1	5.5	5.8	4.8	70	8.0	52	23.5	12.8	13.7	9.0
13	12.2	9.1	5.5	5.5	4.8	55	8.0	86	14.1	12.4	*12.4	9.0
14	8.8	10.4	5.5	5.2	4.8	75	8.8	30	*15.3	12.4	11.6	9.0
15	7.1	12.5	5.5	5.2	4.8	28	10.7	32.5	106	12.8	11.1	9.0
16	8.0	9.5	5.2	5.2	4.8	140	9.5	18.3	121	13.7	10.7	8.6
17	36.5	7.1	6.8	5.0	4.8	35	9.4	26.5	18.8	18.3	10.7	8.6
18	17.0	6.8	8.4	5.2	4.5	17	13.8	34	15.0	20.5	10.7	8.6
19	8.4	7.4	7.4	5.5	4.5	15	8.8	29.5	14.1	29	10.4	13.9
20	*10.9	7.1	6.2	5.8	*4.5	13	8.0	37.5	13.7	13.7	10.7	9.6
21	7.4	9.2	5.8	10.2	4.5	80	152	17.2	13.3	12.4	10.4	9.0
22	7.4	8.0	5.5	8.0	4.5	19	12.3	16.3	25	12.8	10.0	9.6
23	7.1	8.9	5.5	4.5	4.5	16	8.0	48	48	19.1	11.1	22
24	6.8	8.0	5.8	5.2	4.5	14	6.8	31.5	18.3	15.0	10.7	12.8
25	6.5	6.8	8.9	5.0	4.5	12	22.5	17.8	15.0	13.7	11.1	9.6
26	7.1	9.0	6.2	5.0	4.5	12	49	101	14.1	18.7	15.9	10.4
27	7.1	10.8	5.8	5.0	4.5	14	19.5	45	13.7	15.5	17.8	9.3
28	46	7.7	5.5	5.0	4.5	85	11.4	17.2	13.7	12.8	10.7	9.3
29	15.0	7.1	5.5	5.0	10.8	35	8.4		13.5	14.6	10.0	12.4
30	10.6	7.1	5.2	4.8	8.2	25	7.7		12.8	15.0	10.0	10.7
31	7.4	6.5	-----	4.8	-----	20	8.8	-----	13.3	-----	10.4	-----
Total	418.7	302.1	177.6	173.7	249.8	1,306.1	530.0	1,317.5	743.6	459.0	379.9	305.4
Mean:												
mgd	13.5	9.75	5.92	5.60	8.33	42.1	17.1	47.1	24.0	15.3	12.3	10.2
cfs	20.9	15.1	9.16	8.6	12.9	65.1	28.5	72.9	37.1	23.7	19.0	15.8
Ac-ft	1,280	927	545	533	767	4,010	1,630	4,040	2,280	1,410	1,170	937

Calendar year 1954: Max 190 Min 3.7 Mean(mgd) 11.7 Mean(cfs) 18.1 Ac-ft 13,090  
Fiscal year 1954-55: Max 282 Min 4.5 Mean(mgd) 17.4 Mean(cfs) 26.9 Ac-ft 19,530

Peak discharge (base, 450 mgd).--Nov. 29 (6 a.m.) 1,600 mgd (2,480 cfs), 7.15 ft; Dec. 10 (time unknown) 601 mgd (930 cfs), 5.07 ft; Jan. 21 (1 p.m.) 1,800 mgd (2,790 cfs), 7.59 ft; Feb. 7 (5 p.m.) 1,420 mgd (2,200 cfs), 6.85 ft; Feb. 26 (11 p.m.) 845 mgd (1,310 cfs), 5.66 ft; Mar. 16 (12:30 a.m.) 533 mgd (825 cfs), 4.93 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 3 to Jan. 6; discharge estimated on basis of records for nearby streams.

## Waialala Springs near Kalae

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

Records available.--September 1940 to June 1955.

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

Average discharge.--14 years (1941-55), 0.017 mgd (0.026 cfs).

Extremes.--1940-55: Maximum daily discharge, 0.275 mgd (0.425 cfs) Mar. 11, 1942; minimum daily, 0.002 mgd (0.003 cfs) Jan. 2, 11-13, 1947, Mar. 3-12, 14-17, 1949.

Remarks.--Records good. Maui County Water Works diverts entire flow for domestic supply, from tail bay at station.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.009	0.009	0.010	0.010	0.010	0.011	0.013	0.018	0.020	0.019	0.019	0.016
2	.009	.009	.010	.010	.010	.011	.013	.019	.020	.019	.019	.016
3	.009	.009	.010	.010	.009	.011	.013	.019	.020	.019	.019	.016
4	.008	.009	.010	.010	.009	.011	.013	.019	.020	.019	.019	.016
5	.008	.009	.010	.010	.009	.011	.013	.018	.020	.019	.019	.016
6	.008	.009	.010	.010	.009	.011	.013	.018	.020	.019	.019	.016
7	.008	.009	.010	.010	.010	.011	.014	.018	.019	.019	.019	.016
8	.008	.009	.010	.010	.010	.014	.015	.018	.019	.019	.019	.017
9	.008	.009	.010	.010	.010	.012	.015	.020	.019	.019	.019	.017
10	.008	.009	.010	.010	.010	.012	.015	.022	.019	.019	.019	.017
11	.008	.009	.010	.010	.010	.012	.016	.022	.019	.019	.017	.017
12	.009	.009	.010	.010	.010	.011	.016	.022	.019	.019	.017	.017
13	.009	.009	.010	.010	.010	.012	.016	.022	.019	.019	.017	.017
14	.009	.009	.010	.010	.010	.014	.016	.021	.019	.019	.017	.017
15	.009	.009	.010	.010	*.010	.012	.016	.021	.019	.019	.017	.017
16	.009	.009	.010	.010	.010	.021	.015	.020	.019	.020	.017	.017
17	.009	.009	.010	.010	.010	.015	.015	.020	.019	.019	.017	.017
18	.009	.009	.010	.010	.010	.014	.015	.020	.019	.019	.017	.017
19	.009	.009	.010	.010	.010	.014	.015	.020	.019	.019	.017	.017
20	.009	.009	.010	.010	.010	.014	.015	.020	.019	.019	.017	.017
21	.009	.009	.010	.010	.010	.016	.015	.019	.019	.019	.017	.017
22	.009	.009	.010	.010	.011	.016	.015	.019	.019	.019	.017	.017
23	.009	.009	.010	.010	.010	.014	.015	.021	.019	.019	.017	.016
24	.008	.009	.010	.010	.010	.014	.015	.022	.019	.019	.017	.017
25	.008	.009	.010	.010	.010	.014	.015	.020	.019	.019	.017	.017
26	.008	.009	.010	.010	.010	.014	.015	.020	.019	.019	.017	.017
27	.008	.010	.010	.010	.010	.013	.015	.020	.019	.019	.016	.017
28	.012	.010	.010	.010	.010	.014	.019	.020	.019	.019	.016	.015
29	.010	.010	.010	.010	.014	.014	.019	-	.019	.019	.016	.015
30	.010	.010	.010	.010	.012	.013	.019	-----	.019	.019	.016	.015
31	.009	.010	-----	.010	-----	.013	.019	-----	.019	-----	.016	-----
Total	0.272	0.284	0.300	0.310	0.303	0.409	0.473	0.558	0.595	0.571	0.542	0.496
Mean:	0.009	0.009	0.010	0.010	0.010	0.013	0.015	0.020	0.019	0.019	0.017	0.017
mgd	0.014	0.014	0.016	0.016	0.016	0.020	0.023	0.031	0.029	0.029	0.026	0.026
cfs	0.8	0.9	0.9	1.0	0.9	1.3	1.5	1.7	1.8	1.8	1.7	1.5
Ac-ft												

Calendar year 1954: Max 0.021 Min 0.008 Mean(mgd) 0.009 Mean(cfs) 0.014 Ac-ft 11  
 Fiscal year 1954-55: Max 0.022 Min 0.008 Mean(mgd) 0.014 Mean(cfs) 0.022 Ac-ft 16

\* Discharge measurement made on this day.

## Kaunakakai Stream at Kaunakakai

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

Drainage area--6.48 sq mi.

Records available--December 1949 to June 1955.

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

Average discharge--5 years (1950-55), 1.57 mgd (2.43 cfs).

Extremes--Maximum discharge during year, 560 mgd (866 cfs) Jan. 21, Feb. 7 (gage height, 5.31 ft); no flow most of time.  
1949-55: Maximum discharge, 1,120 mgd (1,730 cfs) Mar. 13, 1951 (gage height, 7.10 ft), from rating curve extended above 130 mgd; no flow most of time.

Remarks--Records fair.

Revisions (fiscal years)--WSP 1289: 1950-51.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.2	0	2.1	5.2
1.3	.33	2.4	10.2
1.4	.69	2.7	18.5
1.6	1.49	3.0	33
1.8	2.45	3.5	75

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1					0	0	0.38	0	0			
2					0	0	0	0	0			
3					0	0	0	0	0			
4					0	0	0	0	0			
5					0	0	0	0	.20			
6					0	0	0	0	.17			
7					0	3.7	0	52	0			
8					0	5.3	0	13.7	0			
9					0	4.8	0	1.31	0			
10					0	32	0	.35	0			
11					0	14.9	0	19.8	0			
12					0	20.5	0	5.6	0			
13					0	7.4	0	21	0			
14					0	6.0	0	4.1	0			
15					0	2.25	0	6.1	16.0			
16					0	43	0	1.68	*64			
17					0	8.7	0	.44	3.0			
18					0	1.37	0	2.6	.15			
19					0	.01	0	4.5	0			
20					0	0	0	4.7	0			
21					0	0	35	1.48	0			
22					0	4.6	2.6	0	0			
23					0	.44	0	9.9	5.4			
24					0	0	0	9.3	1.14			
25					0	0	0	1.78	0			
26					0	0	0	17.6	0			
27					0	0	4.0	14.0	0			
28					0	36.5	0	1.10	0			
29					42	10.6	0	-	0			
30					.91	.65	0	-----	0			
31					-----	2.45	0	-----	0			
Total	0	0	0	0	42.91	205.17	41.98	193.04	90.06	0	0	0
Mean:												
mgd	0	0	0	0	1.43	6.62	1.35	6.89	2.91	0	0	0
cfs	0	0	0	0	2.21	10.2	2.09	10.7	4.50	0	0	0
Ac-ft	0	0	0	0	132	630	129	592	276	0	0	0

Calendar year 1954: Max 43 Min 0 Mean(mgd) 0.874 Mean(cfs) 1.35 Ac-ft 980  
Fiscal year 1954-55: Max 64 Min 0 Mean(mgd) 1.57 Mean(cfs) 2.43 Ac-ft 1,780

Peak discharge (base, 500 mgd)--Nov. 29 (6 a.m.) 500 mgd (774 cfs), 5.13 ft; Jan. 21 (1 p.m.) 560 mgd (866 cfs), 5.31 ft; Feb. 7 (3:30 p.m.) 560 mgd (866 cfs), 5.31 ft.

\* Discharge measurement made on this day.



## Right Branch of East Fork Kawela Stream near Kamalo

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

Drainage area.--0.2 sq mi.

Records available.--September 1946 to June 1955.

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

Average discharge.--8 years (1947-55), 1.52 mgd (2.35 cfs).

Extremes.--Maximum discharge during year, 205 mgd (317 cfs) Nov. 29 (gage height, 4.91 ft), from rating curve extended as explained below; no flow for many days.  
1946-55: Maximum discharge, 882 mgd (1,360 cfs) Jan. 26, 1948 (gage height, 7.97 ft), from rating curve extended above 2.5 mgd by test on model of station site; no flow for many days.

Remarks.--Records fair. Molokai Ranch-diverts low flow from gage pool.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

2.28	0	2.8	1.43
2.4	.03	2.9	2.15
2.5	.17	3.1	5.1
2.6	.45	3.3	12.5
2.7	.86	3.5	25.5

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.85	0.92	0	0	0	0.71	3.65	0.32	0.29	2.2	0.21	0.54
2	8.1	.32	0	0	0	5.2	2.65	2.65	.09	4.5	.75	1.02
3	4.4	1.83	0	0	0	.88	1.58	2.25	0	3.85	4.1	1.41
4	9.6	7.5	0	0	0	.42	2.1	1.09	.01	.40	1.29	.33
5	4.5	1.68	0	0	0	3.9	.39	1.32	3.4	.05	.34	.14
6	1.61	1.14	.02	0	0	6.6	.04	1.53	1.18	.01	1.19	0
7	.23	1.12	.88	0	.58	10.5	1.08	11.2	.80	0	3.05	0
8	.63	2.85	.07	0	.17	11.4	*1.69	5.6	.79	0	.82	0
9	6.1	.68	0	3.25	1.13	6.2	.16	1.18	*1.44	0	.44	0
10	6.2	2.65	0	3.95	1.48	23.5	0	7.9	6.6	0	*.65	0
11	6.3	2.35	0	.96	.12	6.6	0	12.4	6.2	0	2.45	0
12	3.35	1.96	0	.11	0	13.1	0	11.8	4.4	0	1.50	.21
13	3.3	1.74	0	0	0	6.0	0	11.9	.75	0	1.67	.66
14	1.22	3.4	0	0	0	9.3	1.47	7.1	.21	0	.88	.34
15	.24	3.6	0	0	*.67	1.68	1.68	6.6	10.8	.80	.24	.07
16	2.05	2.05	0	0	.82	20.5	.92	2.2	13.9	.96	.58	0
17	7.9	.64	2.7	0	.07	1.98	.96	2.5	1.32	4.4	.12	.03
18	4.2	1.14	2.15	.01	0	.56	2.3	6.3	.48	4.1	.34	.51
19	1.09	1.30	1.22	.07	0	.27	.36	7.9	.24	5.3	.20	4.2
20	3.55	.86	.15	.86	0	.08	.01	5.8	.15	.41	1.00	.48
21	.42	2.15	0	2.8	0	3.3	11.5	1.39	.05	.29	.09	.78
22	.59	1.49	0	.36	0	4.8	1.41	2.1	2.7	1.39	.07	1.82
23	.48	2.15	0	.01	0	.64	.12	9.6	11.7	5.0	1.53	6.6
24	.23	1.72	.89	0	0	.35	0	5.5	.98	2.05	1.12	1.82
25	.04	.42	4.1	0	0	.05	.38	1.46	.20	1.12	1.18	1.08
26	1.71	3.6	.35	.03	0	0	7.7	11.0	.01	2.1	3.7	1.60
27	.37	2.65	0	0	0	0	3.3	4.9	0	1.21	3.2	.83
28	9.6	1.95	0	0	0	19.3	1.14	.98	0	.16	.34	.47
29	3.4	2.35	0	0	19.8	2.7	.11	-	0	1.78	.04	3.1
30	1.47	.47	0	0	.81	4.9	.01	-----	0	1.79	.53	.96
31	.24	.09	-----	0	-----	3.1	1.20	-----	0	-----	.60	-----
Total	95.97	58.72	12.53	12.41	25.65	168.52	47.91	146.47	68.69	43.87	34.22	29.00
Mean:												
mgd	3.10	1.89	0.418	0.400	0.855	5.44	1.55	5.23	2.22	1.46	1.10	0.967
cfs	4.80	2.92	0.647	0.619	1.32	8.42	2.40	8.09	3.43	2.26	1.70	1.50
Ac-ft	295	180	38	38	79	517	147	449	211	135	105	89

Calendar year 1954: Max 23.5 Min 0 Mean(mgd) 1.62 Mean(cfs) 2.51 Ac-ft 1,820  
Fiscal year 1954-55: Max 23.5 Min 0 Mean(mgd) 2.04 Mean(cfs) 3.16 Ac-ft 2,280

Peak discharge (base, 100 mgd).--Nov 29 (6 a.m.) 205 mgd (317 cfs), 4.91 ft; Dec. 28 (3 p.m.) 108 mgd (167 cfs), 4.24 ft; Jan. 21 (12:30 p.m.) 108 mgd (167 cfs), 4.23 ft.

\* Discharge measurement made on this day.

## Punaula Stream near Pukoo

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

Drainage area.--0.4 sq mi.

Records available.--March 1947 to June 1955.

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

Average discharge.--8 years, 0.776 mgd (1.20 cfs).

Extremes.--Maximum discharge during year, 210 mgd (325 cfs) Aug. 10 (gage height, 4.56 ft), from rating curve extended above 3.3 mgd as explained below; minimum, 0.02 mgd (0.03 cfs) Nov. 23-25.  
1947-55: Maximum discharge, 330 mgd (511 cfs) Apr. 2, 1948 (gage height, 6.35 ft), from rating curve extended above 3.3 mgd by test on model of station site; minimum, 0.01 mgd (0.02 cfs) Mar. 13, 1947, Feb. 19, 1954.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.01	0.9	1.48
.5	.04	1.0	2.55
.6	.16	1.1	3.85
.7	.39	1.3	7.2
.8	.78	1.6	14.7

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.33	1.57	0.16	0.05	0.04	0.24	0.39	0.30	0.30	0.32	0.14	0.14
2	1.77	.36	.14	.04	.03	.73	.42	.66	.22	1.62	.09	.57
3	.97	1.15	.11	.05	.03	.50	.64	.39	.18	.59	.70	.46
4	4.3	4.1	.10	.18	.03	1.06	.92	.28	.14	.30	.22	.18
5	1.12	1.23	.11	.10	.05	2.65	.28	.24	.40	.16	.11	.60
6	.46	1.02	.15	.12	.03	2.25	.32	.36	.26	.10	.09	.20
7	.26	.70	1.01	.04	.49	4.4	.92	7.8	.22	.08	.16	.11
8	.77	1.20	*.25	.04	.18	5.6	.50	1.91	.20	.07	.11	.09
9	*1.99	.42	.22	.37	.39	1.83	.26	.36	.24	.06	.08	.08
10	2.75	7.8	.12	.83	.50	4.3	.18	.86	5.5	.04	.07	.30
11	1.88	1.19	.09	.80	.11	1.14	.14	4.9	1.14	.04	.07	.11
12	2.5	.52	.08	.19	.05	1.83	.12	4.3	.48	.04	*.06	.35
13	2.5	.36	.07	.08	.04	.70	.14	4.8	*.25	.04	.06	.16
14	.72	.98	.08	.07	.04	3.25	.76	1.85	.16	.03	.06	.16
15	.28	1.50	.11	.07	.25	2.1	.54	2.85	3.7	.03	.04	.11
16	.33	.81	.09	.06	11.74	8.3	.58	1.15	4.2	.04	.05	.08
17	2.45	.44	2.95	.04	a.18	.84	.26	.64	.46	.87	.05	.07
18	2.05	1.57	2.25	.05	.08	.36	.26	1.27	.22	.37	.57	.11
19	.63	.68	.64	.08	.05	.28	.20	2.45	.14	.24	.44	1.44
20	1.81	.49	.20	2.0	.04	.22	.12	2.65	.11	.10	1.61	.34
21	.33	1.68	.24	1.35	.04	3.35	6.2	.60	.09	.08	.39	.20
22	.57	.94	.24	.18	.03	2.35	.49	1.17	1.58	.11	.67	.11
23	.36	1.23	.16	.10	.02	.39	.20	4.5	5.0	.30	.93	.99
24	.28	.52	.80	.09	.02	.26	.12	2.45	.38	.20	.74	.47
25	.24	.36	1.95	.11	.02	.20	.11	.56	.18	.10	.46	.62
26	1.16	4.2	.45	.26	.08	.16	1.46	2.3	.12	.72	1.71	.44
27	1.52	.85	.18	.10	.04	.28	.87	1.53	.10	.42	2.55	.37
28	13.0	1.32	.12	.07	.04	6.8	.54	.62	.09	.12	1.23	.18
29	1.73	1.04	.09	.04	9.5	.93	.16	-	.09	.21	.36	1.98
30	.75	.33	.07	.05	.71	1.18	.39	-----	.09	.28	.36	.79
31	.36	.22	-----	.04	-----	.68	1.44	-----	.23	-----	.24	-----
Total	50.17	40.78	13.13	7.65	14.81	59.12	19.73	53.75	26.47	7.68	14.42	11.81
Mean:												
mgd	1.62	1.32	0.438	0.247	0.494	1.91	0.636	1.92	0.854	0.256	0.465	0.394
cfs	2.51	2.04	0.678	0.382	0.764	2.96	0.984	2.97	1.32	0.396	0.719	0.610
Ac-ft	154	125	40	23	45	181	61	165	81	24	44	36

Calendar year 1954: Max 13.0 Min 0.02 Mean(mgd) 0.803 Mean(cfs) 1.24 Ac-ft 897  
Fiscal year 1954-55: Max 13.0 Min 0.02 Mean(mgd) 0.875 Mean(cfs) 1.35 Ac-ft 979

Peak discharge (base, 70 mgd).--Aug. 10 (1:30 p.m.) 210 mgd (325 cfs), 4.56 ft; Nov. 29 (5 a.m.) 82 mgd (127 cfs), 3.13 ft; Dec. 16 (7 a.m.) 76 mgd (118 cfs), 3.00 ft.

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of probable decrease in flow.

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

## Oheo Stream below diversion dam, near Kipahulu

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

Drainage area.--5.8 sq mi.

Records available.--February 1927 to September 1929, December 1931 to June 1955. Published as "at elevation 1,550 ft, near Kipahulu" 1927-29.

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

Average discharge.--20 years (1927-29, 1932-35, 1940-55), 36.3 mgd (56.2 cfs).

Extremes.--Maximum discharge during year, 1,800 mgd (2,790 cfs) Dec. 10 (gage height, 8.97 ft), from rating curve extended above 750 mgd by test on model of station site; minimum, 0.02 mgd (0.03 cfs) Nov. 18-26, 28.  
1927-29, 1931-55: Maximum discharge, 6,000 mgd (9,280 cfs) Mar. 4, 1939 estimated on basis of computation of peak flow over dam; no flow at times.

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

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.0	0	1.3	15.3
.1	.03	1.6	27.5
.2	.13	2.0	48.5
.3	.34	2.5	86
.4	.70	3.0	133
.5	1.20	4.0	255
.6	1.95	5.0	425
.8	4.1	6.0	710
1.0	7.5	7.0	1,010

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.4	58	0.82	0.87	0.26	19.8	263	93	1.00	50	7.8	7.8
2	168	6.7	.62	.58	.21	128	168	181	2.75	299	6.9	32.5
3	75	*4.1	.46	.40	.63	104	131	314	.66	213	40	10.0
4	91	74	3.65	.87	.13	8.2	161	159	2.9	24.5	58	22
5	17.7	48	.54	.37	.07	84	13.0	113	.50	6.9	15.0	19.4
6	3.5	24.5	28	3.55	.03	54	72	75	.34	2.3	4.9	2.7
7	1.19	12.2	18.1	.32	4.4	194	68	10.3	.26	.82	54	9.99
8	.90	15.4	15.3	.23	.24	317	28	15.7	2.6	.78	38	1.21
9	7.0	8.3	5.0	.47	.14	302	3.85	1.35	5.1	2.2	29	.66
10	25.5	42	.63	35.5	77	744	1.38	67	145	1.49	13.1	1.13
11	77	50	.37	4.6	.76	181	4.4	275	194	.31	5.2	.98
12	146	335	.27	1.11	.13	380	12.9	74	115	.24	4.7	5.7
13	27	63	.48	.22	.08	137	50	57	37	.68	29.5	5.4
14	6.0	105	*44	.13	.03	*347	33.5	6.7	8.3	3.85	13.6	7.6
15	1.66	53	6.2	.11	.03	76	34.5	4.1	*1.67	16.7	2.15	13.1
16	30.5	109	7.7	.09	.03	244	50	.94	46	6.5	11.1	5.1
17	81	91	69	.05	.03	17.8	24	.94	3.7	221	3.25	2.2
18	67	69	103	.04	.02	3.65	62	40	.65	184	96	3.37
19	9.8	62	59	.04	.02	1.68	16.5	235	.43	154	140	54
20	24.5	41	6.9	6.8	.02	1.02	2.7	51	.31	7.4	161	3.3
21	7.0	120	39.5	10.5	.02	65	89	3.55	.24	3.65	23	2.65
22	8.8	57	32	2.65	.02	47	9.0	1.07	.18	11.3	22.5	24.5
23	15.9	78	6.3	1.18	.02	29.5	1.10	8.3	105	52	15.0	93
24	2.35	15.2	14.4	.16	.02	12.9	.62	152	1.63	42	142	11.3
25	28.5	9.3	64	2.1	.02	.95	.43	10.7	.50	60	45	2.1
26	65	55	33.5	39.5	.27	.50	8.4	9.0	.31	82	91	1.40
27	10.8	15.8	10.2	7.1	.03	.81	22	4.4	.22	24	109	2.2
28	413	32.5	23	58	.02	27	3.7	3.1	.14	37	49	4.48
29	31	20.5	5.3	13.4	108	4.2	.31	-	.19	448	15.3	17.5
30	20.5	5.4	1.57	1.04	47	303	.47	-----	.28	128	13.0	3.45
31	15.2	1.61	-----	.46	-----	166	14.8	-----	19.4	-----	6.1	-----
Total	1,491.70	1,679.51	599.81	192.44	239.68	3,999.01	1,345.58	1,984.15	696.26	2,083.60	1,284.10	354.72
Mean	48.1	54.2	20.0	6.21	7.99	129	43.4	70.1	22.5	69.5	40.8	11.8
cfs	74.4	83.9	30.9	9.61	12.4	200	67.1	108	34.8	108	63.1	18.3
Ac-ft	4,580	5,150	1,840	591	736	12,270	4,130	6,030	2,140	6,390	3,880	1,090

Calendar year 1954: Max 744 Min 0.02 Mean(mgd) 32.1 Mean(cfs) 49.7 Ac-ft 35,940  
Fiscal year 1954-55: Max 744 Min 0.02 Mean(mgd) 43.6 Mean(cfs) 67.5 Ac-ft 48,830

Peak discharge (base, 1,600 mgd).--Dec. 10 (4 p.m.) 1,800 mgd (2,790 cfs), 8.97 ft; Apr. 29 (7 a.m.) 1,700 mgd (2,630 cfs), 8.89 ft.

\* Discharge measurement made on this day.

## Right Branch Kahalawe Stream near Kipahulu

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

Records available.--February 1927 to April 1937, April 1938 to June 1955.

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

Average discharge.--25 years (1927-34, 1935-36, 1938-55), 3.50 mgd (5.42 cfs).

Extremes.--Maximum discharge during year, 218 mgd (337 cfs) Dec. 10 (gage height, 3.05 ft), from rating curve extended above 54 mgd as explained below; minimum, 0.65 mgd (1.01 cfs) Nov. 24, 25.  
1927-37, 1938-55: 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 except those for period of no gage-height record, which are poor.

Revisions (fiscal years).--WSP 1219: 1935(M), 1937(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.9	0.62	1.4	4.9
1.0	1.01	1.5	6.8
1.1	1.54	1.6	9.3
1.2	2.3	1.7	12.4
1.3	3.3	2.0	28.5

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.5	5.5	2.2	2.2	1.30	1.39	7.6	2.0	3.15	2.5	2.4	2.65
2	8.1	2.45	2.05	1.87	1.30	2.25	6.5	3.35	4.5	16.5	2.05	3.65
3	4.7	*3.5	1.87	1.80	5.5	5.1	6.3	3.55	1.80	7.8	2.95	2.55
4	12.9	7.4	1.95	2.3	1.47	1.97	3.9	3.2	2.35	3.5	3.45	5.8
5	3.8	5.1	1.80	1.80	1.25	2.65	2.45	2.45	1.73	2.05	2.05	5.6
6	2.65	7.6	5.8	2.85	1.15	4.1	4.0	3.65	1.47	1.66	1.95	2.4
7	2.1	3.7	4.2	1.60	4.5	5.7	2.75	2.6	1.30	1.41	5.5	1.95
8	2.05	3.35	4.1	1.47	1.41	9.3	2.05	2.5	1.35	1.30	3.6	1.87
9	4.1	3.4	2.4	1.83	1.47	5.3	1.80	1.41	1.41	1.41	2.95	1.80
10	6.2	8.7	1.66	6.2	7.3	27.5	1.60	5.6	18.3	1.25	2.8	2.1
11	5.2	4.3	1.47	2.45	1.47	11.0	1.66	9.8	6.5	1.10	1.95	1.95
12	21.5	19.5	1.35	1.84	1.25	16.6	2.65	6.6	2.05	1.01	1.90	2.25
13	5.2	10.1	1.30	1.47	1.10	7.3	4.3	8.1	2.2	.97	3.0	1.80
14	2.85	8.9	6.2	1.30	1.01	*16.9	3.15	3.65	3.3	.97	2.5	1.87
15	2.3	6.7	1.73	1.35	1.05	10.5	3.1	2.65	*1.66	1.09	1.87	1.80
16	3.55	8.6	2.0	1.30	1.25	26.5	3.05	1.95	3.45	1.20	4.6	1.60
17	6.7	8.6	6.6	1.20	1.20	4.9	1.99	1.80	1.66	8.8	2.5	1.60
18	6.5	6.6	9.8	1.25	1.05	2.95	3.0	3.95	1.41	all	11.3	1.41
19	3.55	5.4	5.6	1.20	.97	2.3	1.95	9.8	1.25	a9.5	13.7	3.8
20	4.1	5.7	2.1	5.3	.87	1.95	1.60	3.8	1.15	a4.0	12.9	1.54
21	2.3	6.6	8.3	2.7	.79	5.9	8.8	1.95	1.10	a3.2	4.9	1.54
22	3.0	6.4	5.4	1.35	.75	3.95	1.87	1.66	1.16	a3.2	5.4	2.3
23	4.6	9.9	2.45	1.41	.71	2.75	1.60	2.95	10.5	a6.9	5.8	4.1
24	2.3	4.2	2.85	1.25	.68	2.1	1.35	12.5	1.41	a7.0	8.7	2.0
25	8.6	3.3	8.1	1.32	.68	1.80	1.25	5.3	1.20	a8.0	4.8	2.5
26	3.35	11.0	4.8	4.8	1.75	1.54	3.15	3.7	1.05	*a6.6	6.1	2.45
27	4.3	4.2	10.0	1.98	.75	2.6	2.65	2.25	.97	a3.0	13.8	3.75
28	21.5	9.2	25.5	*17.2	.71	3.9	1.47	3.1	.92	3.3	7.9	1.87
29	3.8	5.0	4.5	20.5	3.7	1.73	1.25	-	.92	18.2	4.0	5.8
30	4.0	2.95	2.75	2.05	2.35	9.5	1.45	-----	1.35	5.7	3.6	2.9
31	3.35	2.55	-----	1.54	-----	3.45	2.05	-----	3.05	-----	2.95	-----
Total	172.65	200.40	140.83	98.68	50.74	205.38	92.29	115.82	85.62	144.12	153.77	79.20
Mean	5.57	6.46	4.69	3.18	1.69	6.63	2.98	4.14	2.76	4.80	4.96	2.64
cfs	8.62	10.0	7.25	4.92	2.61	10.3	4.61	6.41	4.27	7.43	7.67	4.08
Ac-ft	530	615	432	303	156	630	283	355	263	442	472	243

Calendar year 1954: Max 63 Min 0.35 Mean(mgd) 3.67 Mean(cfs) 5.68 Ac-ft 4,110  
Fiscal year 1954-55: Max 27.5 Min 0.68 Mean(mgd) 4.22 Mean(cfs) 6.53 Ac-ft 4,720

Peak discharge (base, 200 mgd).--July 12 (10:30 a.m.) 203 mgd (314 cfs), 3.00 ft; Dec. 10 (1:30 p.m.) 218 mgd (337 cfs), 3.05 ft.

\* Discharge measurement made on this day.

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

## Makapipi ditch near Nahiku

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

Records available.--July 1948 to June 1955.

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

Average discharge.--7 years, 3.00 mgd (4.64 cfs).

Extremes.--1948-55: Maximum daily discharge, 7.8 mgd (12.1 cfs) Nov. 21, 1951; minimum daily, 0.56 mgd (0.87 cfs) Feb. 11, 12, 14, 15, 1953.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.85	4.8	3.9	2.3	1.29	1.76	4.6	3.7	4.5	2.9	5.6	3.55
2	3.9	4.3	3.6	2.2	1.29	2.95	4.7	4.1	4.3	3.55	5.2	3.25
3	4.9	4.2	3.4	2.2	1.29	3.7	4.9	4.3	4.0	3.95	4.9	3.1
4	5.2	4.6	3.1	2.1	1.24	2.6	5.2	4.6	3.8	4.3	4.6	2.9
5	5.6	3.9	2.9	2.0	1.24	3.0	5.6	4.7	3.6	4.1	4.5	2.8
6	5.2	4.2	3.5	1.9	1.20	3.8	5.6	4.5	3.4	3.9	4.3	2.65
7	5.0	4.0	3.6	1.8	1.34	4.6	5.2	4.7	3.2	3.75	4.4	2.55
8	4.8	3.9	3.2	1.8	1.29	5.1	4.9	5.6	3.05	3.55	4.6	2.4
9	4.6	3.95	3.0	2.0	1.24	5.2	4.5	5.6	3.0	3.25	4.6	2.3
10	4.2	4.2	2.9	3.0	1.29	5.6	4.2	5.6	3.7	3.05	4.6	2.2
11	4.1	4.3	2.9	2.4	1.24	6.0	3.95	6.5	4.6	2.9	4.4	2.1
12	4.7	5.2	2.8	2.1	1.20	6.0	1.97	6.5	4.4	2.8	4.3	2.05
13	5.2	5.6	*2.7	1.9	1.20	6.5	1.75	6.5	4.3	2.65	4.4	1.99
14	4.6	6.0	2.9	1.8	1.20	7.4	3.35	6.5	*4.3	2.55	4.3	1.93
15	4.3	6.0	2.6	1.9	1.20	*7.4	3.2	6.0	4.4	2.4	4.2	1.93
16	4.3	6.0	2.6	1.8	1.20	6.9	3.1	5.8	5.2	2.3	4.6	1.81
17	4.6	6.0	4.2	1.7	1.15	6.9	3.0	5.6	5.2	3.25	4.6	1.81
18	5.0	5.6	4.7	1.7	1.15	6.0	3.0	5.2	4.9	3.45	4.4	1.76
19	5.0	5.6	4.3	1.6	1.15	5.6	2.9	4.9	4.6	3.7	4.8	1.93
20	4.8	5.6	3.7	1.7	1.11	4.9	2.8	4.7	4.3	3.8	4.9	1.81
21	4.5	5.6	4.0	1.8	1.11	4.8	3.3	4.6	4.0	3.6	4.6	1.76
22	4.3	5.6	3.7	1.7	1.06	4.9	3.8	4.5	3.9	3.6	4.3	1.81
23	4.1	5.6	3.3	1.5	1.06	5.1	3.5	4.3	3.9	4.2	4.3	2.05
24	3.95	5.6	3.3	1.5	1.06	4.7	3.1	4.3	3.7	4.6	5.0	2.1
25	4.4	5.1	3.9	1.5	1.01	4.5	3.05	4.3	3.6	5.0	5.2	2.15
26	4.9	4.8	3.4	1.6	1.01	4.3	3.95	4.2	3.25	*5.8	5.2	2.2
27	4.9	4.5	3.2	*1.45	.97	4.3	4.4	4.6	3.1	6.0	4.9	2.35
28	5.6	4.5	3.0	1.39	1.09	4.4	4.5	4.6	3.0	5.6	4.4	2.35
29	6.0	4.5	2.7	1.39	3.65	4.4	4.1	-	2.85	5.6	4.2	2.55
30	5.6	4.3	2.5	1.34	1.96	4.5	3.9	-----	2.7	5.6	3.95	2.6
31	5.0	4.1	-----	1.34	-----	4.5	3.8	-----	2.65	-----	3.75	-----
Total	146.10	152.15	99.5	56.41	38.49	152.31	119.82	140.8	119.40	115.70	142.00	68.74
Mean	4.71	4.91	3.32	1.82	1.28	4.91	3.87	5.03	3.85	3.86	4.58	2.29
cfs	7.29	7.60	5.14	2.82	1.98	7.60	5.99	7.78	5.96	5.97	7.09	3.54
Ac-ft	448	467	305	173	118	467	368	432	368	355	436	211

Calendar year 1954: Max 7.4 Min 0.75 Mean(mgd) 3.23 Mean(cfs) 5.00 Ac-ft 3,620

Fiscal year 1954-55: Max 7.4 Min 0.97 Mean(mgd) 3.70 Mean(cfs) 5.72 Ac-ft 4,150

\* Discharge measurement made on this day.

Note.--No gage-height record Sept. 1 to Oct. 26; discharge estimated on basis of records for nearby stations.

## Hanawi Stream near Nahiku

Location.--Lat 20°48'35", long 156°06'50", on left bank 200 ft upstream from Koolau ditch intake and trail, 1.8 miles southwest of Nahiku, and 4.5 miles southeast of Keanae.

Drainage area.--0.8 sq mi.

Records available.--January 1914 to January 1916, November 1921 to June 1955.

Gage.--Water-stage recorder. Jan. 9, 1914, to Jan. 6, 1916, at site 50 ft downstream in same pool at datum 0.12 ft lower.

Average discharge.--33 years (1922-55), 13.7 mgd (21.2 cfs).

Extremes.--Maximum discharge during year, 1,380 mgd (2,140 cfs) Feb. 7 (gage height, 7.32 ft), from rating curve extended above 260 mgd as explained below; minimum, 1.43 mgd (2.21 cfs) Nov. 26, 27, 28.

1914-16, 1921-55: Maximum discharge, about 3,600 mgd (5,570 cfs) Jan. 18, 1916 (gage height, 11.6 ft at present site), by test on model of station site; minimum, 1.1 mgd (1.7 cfs) Feb. 19, 20, 1944.

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

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7					Feb. 8 to June 30				
0.2	1.43	2.5	54		0.4	2.6	1.6	21.5	
.3	1.98	3.0	85		.5	3.35	2.0	34	
.5	3.4	3.5	125		.7	5.3	2.5	56	
.7	5.3	4.0	176		1.0	10.1	3.0	85	
1.0	9.0	4.5	250		1.3	15.3			
1.3	14.3	5.0	370						
1.6	21	5.5	600						
2.0	35								

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.0	9.7	5.8	3.3	2.15	6.8	66	4.4	9.5	18.0	9.0	5.1
2	66	7.4	5.4	3.15	2.1	31	46	18.1	7.5	15.0	14.0	5.3
3	32	7.5	5.1	3.25	1.98	47	40	45	6.6	13.3	50	4.5
4	38	25.5	4.8	3.3	1.98	5.1	31.5	11.2	5.9	6.6	34.5	4.2
5	20.5	7.4	4.5	3.15	1.92	35	9.9	7.6	6.9	5.6	11.1	3.95
6	12.2	6.8	24	3.0	1.99	45	7.7	5.0	10.4	4.9	9.7	3.6
7	6.9	7.3	12.2	2.85	13.6	113	9.5	171	8.1	4.3	30.5	3.35
8	5.4	7.6	6.2	2.95	3.1	148	7.6	159	16.0	4.4	11.3	3.3
9	5.1	11.3	5.3	4.4	2.35	258	6.4	42	*10.2	4.8	21	3.2
10	8.5	37.5	4.6	11.3	2.9	480	6.1	256	180	4.0	12.7	3.2
11	16.0	15.3	4.3	3.8	2.35	171	5.8	206	114	3.6	9.8	3.05
12	39.5	71	4.0	3.15	2.1	313	5.6	57	67	3.45	12.1	3.05
13	11.9	26	*3.9	2.95	1.98	117	5.7	91	16.4	3.5	17.1	3.1
14	7.0	28.5	5.2	2.85	1.92	172	6.7	33.5	9.2	3.95	11.1	3.0
15	5.8	19.1	4.2	2.95	1.98	15.6	6.2	19.4	75	4.9	8.4	3.2
16	20	27	4.2	2.95	1.92	46	5.4	11.3	204	4.3	12.8	2.8
17	47	15.6	39.5	2.7	1.82	12.2	5.3	13.2	14.2	52	7.8	2.8
18	33	13.6	73	2.8	1.76	7.8	5.6	37.5	9.2	88	8.8	2.75
19	12.9	33	24	2.6	1.70	7.6	4.8	119	8.0	65	16.3	5.8
20	10.9	10.6	7.3	3.2	1.70	10.5	4.3	57	5.9	15.2	9.0	3.9
21	6.3	12.5	13.8	3.8	1.65	104	*64	11.6	5.1	*10.5	7.2	3.6
22	7.5	14.4	6.3	3.0	1.65	48	12.0	9.2	5.3	14	7.7	4.1
23	8.8	32.5	4.9	2.7	1.60	13.4	5.6	13.0	34.5	30	15.4	9.4
24	18.0	9.8	4.9	2.6	1.60	10.0	4.8	11.6	20	30	25.5	4.2
25	29.5	7.6	13.5	2.65	1.54	8.7	4.3	9.4	7.9	40	16.1	3.8
26	44	11.8	6.3	5.5	1.60	19.0	112	10.8	5.1	26.5	13.1	4.2
27	48	8.6	4.5	3.0	1.48	42	39.5	32.5	4.6	11.7	7.7	4.8
28	50	10.0	4.0	2.55	2.7	31.5	11.9	15.0	4.4	10.0	6.3	3.85
29	12.1	12.8	3.7	2.35	50	13.6	5.7	-	4.5	100	5.4	6.8
30	*7.6	8.5	3.5	2.3	3.2	119	4.8	-----	4.2	31	5.0	4.5
31	7.2	6.5	-----	2.25	-----	99	4.4	-----	11.1	-----	5.0	-----
Total	649.6	522.7	312.9	103.30	120.32	2,500.8	555.1	1,477.3	890.7	624.90	431.4	122.40
Mean:												
mgd	21.0	16.9	10.4	3.33	4.01	82.3	17.9	52.8	28.7	20.8	13.9	4.08
cfs	32.5	26.1	16.1	5.15	6.20	127	27.7	81.7	44.4	32.2	21.5	6.31
Ac-ft	1,990	1,600	960	317	369	7,630	1,700	4,530	2,730	1,920	1,320	376

Calendar year 1954: Max 480 Min 1.39 Mean(mgd) 18.3 Mean(cfs) 28.3 Ac-ft 20,520  
Fiscal year 1954-55: Max 480 Min 1.48 Mean(mgd) 22.9 Mean(cfs) 35.4 Ac-ft 25,640

Peak discharge (base, 850 mgd).--Dec. 10 (2:30 p.m.) 1,190 mgd (1,640 cfs), 6.72 ft; Feb. 7 (9 p.m.) 1,380 mgd (2,140 cfs), 7.32 ft; Mar. 16 (3:30 p.m.) 990 mgd (1,530 cfs), 5.95 ft.

\* Discharge measurement made on this day.

## Kapaula Stream near Nahiku

Location.--Lat 20°48'50", long 156°07'05", on right bank 40 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 1.8 miles southwest of Nahiku, and 4 miles southeast of Keanae.

Records available.--November 1921 to June 1955.

Gage.--Water-stage recorder.

Average discharge.--33 years (1922-55), 10.7 mgd (16.6 cfs).

Extremes.--Maximum discharge during year, 1,060 mgd (1,640 cfs) Feb. 7 (gage height, 6.37 ft), from rating curve extended above 220 mgd as explained below; minimum, 0.52 mgd (0.80 cfs) Nov. 27, 28.  
1921-55: Maximum discharge, 1,780 mgd (2,750 cfs) Apr. 6, 1938 (gage height, 8.40 ft), from rating curve extended above 220 mgd by logarithmic plotting; minimum, 0.2 mgd (0.3 cfs) Nov. 23-25, 1933, Oct. 2-5, 1938.

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7				Feb. 8 to June 30	
0.4	0.38	1.4	12.4	1.0	8.6
.5	1.08	1.7	26	1.2	13.4
.6	2.2	2.1	50	1.4	14.7
.7	3.35	2.5	83	1.7	26
.8	4.8	3.0	140		
1.0	8.6	3.5	218		
1.2	11.6				

Note.--Same as preceding table below 1.0 ft and above 1.7 ft.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11.0	8.3	3.0	1.86	0.94	7.4	50	3.3	5.8	14.5	5.7	3.0
2	57	4.8	2.65	1.86	.94	25.5	32	12.2	3.8	14.7	8.8	3.35
3	28.5	5.4	2.55	1.86	.87	42	35.5	26.5	3.25	11.9	41	2.8
4	33	22	2.45	2.1	.87	5.5	23	11.2	3.0	4.8	27	2.55
5	16.4	5.2	2.55	1.86	.87	30.5	6.7	6.0	4.5	3.65	8.3	2.3
6	10.1	4.4	21.5	1.64	1.04	40	4.5	3.5	9.7	3.0	6.6	1.98
7	5.0	4.7	11.0	1.42	1.66	90	6.7	102	7.2	2.65	24.5	1.86
8	3.5	5.3	4.8	1.64	3.3	88	4.6	116	11.6	*2.8	8.9	1.86
9	3.35	8.3	3.25	5.4	1.64	127	3.5	41	9.5	3.1	12.9	1.75
10	7.5	32	2.8	12.0	2.5	211	3.1	184	113	2.55	10.0	1.86
11	16.4	14.6	2.55	3.2	1.42	108	2.9	136	71	2.1	6.9	1.64
12	33	57	2.2	2.2	1.08	165	2.8	46	44	1.98	8.3	1.84
13	11.0	*23	1.98	1.75	.94	92	3.0	69	13.1	1.98	12.4	1.86
14	5.7	23	3.9	1.53	.94	115	4.2	29.5	7.0	3.3	7.9	1.86
15	3.95	13.9	2.8	1.64	.87	*10.0	3.8	19.9	52	4.5	5.7	2.2
16	15.4	22	3.0	1.64	.87	33	3.0	14.5	122	3.6	11.0	1.64
17	37.5	12.0	38	1.30	.80	8.7	2.95	16.2	10.2	41	4.5	1.53
18	30.5	10.6	64	1.42	.73	4.5	3.35	31.5	6.3	71	5.8	1.42
19	9.9	27	20.5	1.30	.73	3.25	2.65	75	5.5	46	12.6	4.4
20	8.6	9.5	5.4	1.99	.73	5.3	2.45	31	4.1	13.0	5.7	2.55
21	4.2	10.4	11.6	2.8	.73	82	53	6.5	3.35	8.5	3.8	2.45
22	5.4	10.8	5.4	1.98	.66	35	9.7	4.2	3.85	8.6	4.6	3.05
23	6.9	29	3.25	1.42	.66	6.9	3.5	11.9	19.8	24	10.7	7.9
24	12.0	7.5	3.55	1.42	.59	4.1	2.8	8.7	13.7	27.5	22.5	2.95
25	20.5	4.8	12.1	1.53	.59	3.35	2.55	5.3	7.0	*36	13.0	2.45
26	36.5	9.3	5.8	5.0	.66	16.5	104	11.5	3.65	28.5	*10.9	2.65
27	41	6.5	3.1	*2.2	.59	37	29	29.5	3.0	8.7	4.7	3.65
28	36	8.4	2.55	1.53	2.2	27	10.6	11.4	2.8	7.4	3.35	2.55
29	8.2	9.5	2.45	1.30	37.5	9.2	3.8	-	2.8	72	2.9	5.8
30	4.5	5.6	2.1	1.19	3.3	72	3.0	-----	2.6	22	2.65	3.0
31	4.5	3.65	-----	1.01	-----	51	3.0	-----	8.9	-----	2.8	-----
Total	527.00	418.45	252.78	70.99	86.16	1,555.70	425.65	1,061.3	577.80	495.31	316.60	80.50
Mean:	17.0	13.5	8.43	2.29	2.87	50.2	13.7	37.9	18.6	16.5	10.2	2.68
cfs	26.3	20.9	13.0	3.54	4.44	77.7	21.2	58.6	28.8	25.5	15.8	4.15
Ac-ft	1,620	1,280	776	218	264	4,770	1,310	3,260	1,770	1,520	972	247

Calendar year 1954: Max 211 Min 0.33 Mean(mgd) 13.0 Mean(cfs) 20.1 Ac-ft 14,520  
Fiscal year 1954-55: Max 211 Min 0.59 Mean(mgd) 16.1 Mean(cfs) 24.9 Ac-ft 18,010

Peak discharge (base, 450 mgd).--Dec. 10 (2:30 p.m.) 719 mgd (1,110 cfs), 5.36 ft; Feb. 7 (9 p.m.) 1,060 mgd (1,640 cfs), 6.37 ft; Mar. 16 (2:30 a.m.) 476 mgd (736 cfs), 4.58 ft.

\* Discharge measurement made on this day.

## Koolau ditch at Nahiku weir, near Nahiku

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

Records available.--February 1919 to June 1955. Gage-height records collected in this vicinity since 1904 are contained in files of East Maui Irrigation Co.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft above mean sea level, datum of 1929. Prior to Apr. 28, 1922, staff gage at same site and datum.

Average discharge.--36 years, 21.8 mgd (33.7 cfs).

Extremes.--1919-55: Maximum daily discharge, 58 mgd (90 cfs) Apr. 11, 1942; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	38	44	26.5	15.1	8.2	23.5	57	21.5	39.5	47	42	21.5
2	52	34.5	24	14.4	8.2	48	57	47	32	50	44	22
3	52	34.5	22	14.4	7.9	48	54	52	28	50	54	19.4
4	54	52	21	14.4	7.6	18.1	54	44	24.5	31.5	52	18.3
5	52	31.5	19.8	13.4	7.4	39.5	47	37	26.5	26.5	42	17.2
6	47	32	44	12.7	8.1	50	39.5	26.5	34.5	23	34.5	*15.8
7	34.5	31.5	41	12.1	36.5	57	44	38.5	27.5	21	54	14.7
8	27.5	32	27.5	12.4	12.8	28.5	34.5	52	39.5	*20.5	44	14.4
9	25	42	23	18.2	9.6	0	29	52	*36	21	47	13.7
10	32.5	42	21	32.5	11.8	0	26	54	46	18.7	44	13.7
11	50	47	19.1	15.4	9.3	0	24	54	54	16.8	37	13.0
12	48	57	18.0	13.0	8.2	0	21.5	52	52	16.8	39.5	12.7
13	50	57	*16.4	11.8	7.9	0	20.5	52	50	15.4	47	12.7
14	34.5	57	20	11.5	7.6	0	25.5	50	39.5	16.8	39.5	12.4
15	29	54	16.8	11.8	7.4	.05	24.5	50	42	18.7	34.5	14.1
16	44	57	16.8	11.2	7.4	.18	22.5	44	54	17.2	47	12.1
17	52	52	48	10.2	7.1	0	21.5	47	47	48	34.5	11.8
18	54	52	57	10.5	6.8	20.5	23	50	42	54	34.5	11.2
19	44	54	52	9.9	6.6	30.5	19.8	52	34.5	54	50	21.5
20	42	50	34.5	12.1	6.3	35.5	18.3	50	28	47	39.5	15.4
21	30	52	39.5	13.4	6.3	57	33	42	24.5	*36	32	14.4
22	32	52	30.5	11.8	6.1	52	37	34.5	24.5	34.5	32	16.2
23	34	54	23.5	10.5	6.1	39.5	24.5	42	42	52	44	32
24	39.5	47	23	10.2	5.8	31	20.5	39	36.5	54	52	19.1
25	47	37	41	10.2	5.8	27.5	19.1	34.5	30	57	50	16.1
26	52	47	27.5	18.6	5.8	33	50	32	21.5	57	*50	16.8
27	52	42	21.5	*11.6	5.6	52	50	50	19.4	50	37	19.8
28	57	44	19.1	9.9	10.7	54	39.5	47	18.3	44	30	16.5
29	50	47	17.8	9.3	47	42	27	-	18.0	57	25.5	27
30	*38.5	37	16.1	9.0	16.0	57	23	-	16.8	54	23	19.4
31	34.5	30.5	-----	8.5	-----	57	21.5	-----	31.5	-----	22	-----
Total	1,328.5	1,402.5	827.7	400.0	307.9	899.33	1,008.2	1,246.5	1,060.0	1,108.4	1,258.0	504.9
Mean:	42.9	45.2	27.6	12.9	10.3	29.0	32.5	44.5	34.2	36.9	40.6	16.8
cfs	66.4	69.9	42.7	20.0	15.9	44.9	50.3	68.9	52.9	57.1	62.8	26.0
Ac-ft	4,080	4,300	2,540	1,230	945	2,760	3,090	3,830	3,250	3,400	3,860	1,550

Calendar year 1954: Max 57 Min 0 Mean(mgd) 25.1 Mean(cfs) 38.8 Ac-ft 28,150  
 Fiscal year 1954-55: Max 57 Min 0 Mean(mgd) 31.1 Mean(cfs) 48.1 Ac-ft 34,840

\* Discharge measurement made on this day.



## Waiohuk Stream near Nahiku

Location.--Lat 20°49'05", long 156°07'40", on left bank 200 ft upstream from intake to Koolau ditch, 300 ft upstream from ditch trail, 2.2 miles southwest of Nahiku, and 3.5 miles southeast of Keanae.

Drainage area.--1.5 sq mi.

Records available.--October 1921 to June 1955.

Gage.--Water-stage recorder.

Average discharge.--33 years (1922-55), 7.62 mgd (11.8 cfs).

Extremes.--Maximum discharge during year, 510 mgd (789 cfs) Feb. 7 (gage height, 5.18 ft), from rating curve extended above 50 mgd as explained below; minimum, 1.80 mgd (2.79 cfs) Nov. 28.

1921-55: Maximum discharge, 760 mgd (1,180 cfs) Apr. 7, 1938 (gage height, 6.24 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 1.36 mgd (2.10 cfs) Oct. 9, 10, 1953.

Remarks.--Records good except those above 50 mgd, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.5	1.61	1.4	16.5
.6	2.25	1.8	24
.7	3.05	1.8	35.5
.8	4.1	2.0	45
1.0	7.0	2.5	84
1.2	11.1		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.4	8.2	4.4	3.15	2.5	4.1	16.2	3.55	5.3	9.2	5.4	3.9
2	23	5.0	4.0	3.05	2.4	10.5	12.0	6.6	4.4	9.6	7.5	4.1
3	11.9	5.8	3.9	3.15	2.4	14.1	13.2	11.4	3.9	8.5	16.3	3.8
4	16.1	12.1	3.8	3.35	2.3	3.05	11.0	6.6	3.55	4.2	11.7	3.55
5	8.9	4.9	3.8	2.95	2.25	11.0	5.1	4.4	4.5	4.1	5.9	3.45
6	6.7	4.9	12.8	2.9	2.85	15.3	4.5	3.7	8.2	3.7	5.4	3.25
7	4.6	4.9	7.2	2.8	10.8	30	5.1	65	5.0	3.45	13.2	3.05
8	4.2	4.9	4.6	2.95	2.95	30.5	4.1	41	8.0	3.55	6.2	3.05
9	4.2	7.1	4.0	3.85	2.55	41	3.7	16.5	5.6	3.9	8.4	2.95
10	7.2	23.5	3.7	7.2	3.2	75	3.45	77	53	3.45	6.0	3.05
11	10.3	11.3	3.45	3.35	2.5	37	3.35	56	24.5	3.15	5.4	2.9
12	17.0	26.5	3.35	2.95	2.4	59	3.25	17.2	15.5	3.05	5.9	2.9
13	7.2	15.3	3.15	2.8	2.3	*34.5	3.35	26	8.0	3.05	7.2	3.05
14	4.9	12.5	3.8	2.7	2.25	66	3.9	11.9	5.3	2.95	5.7	*2.9
15	4.6	10.6	*3.25	2.9	2.25	10.7	3.8	9.2	27	3.25	5.7	3.4
16	8.6	13.1	3.25	2.65	2.25	17.4	3.25	6.4	58	3.35	9.6	2.8
17	16.0	8.5	17.4	2.65	2.15	7.2	3.35	8.8	6.4	20	4.8	2.7
18	13.6	8.7	28	2.7	2.1	5.1	3.55	11.5	5.4	27.5	6.6	2.65
19	6.5	14.2	11.6	2.55	2.1	4.5	3.05	26.5	5.1	19.4	10.1	4.8
20	5.9	7.7	4.5	3.35	2.05	6.6	2.8	13.8	4.5	7.2	5.7	3.4
21	4.4	9.3	8.4	3.05	2.05	28.5	23.5	5.7	4.0	5.3	5.0	3.15
22	5.1	9.1	4.4	2.9	1.98	14.5	10.5	4.9	4.4	5.6	5.4	3.75
23	6.1	15.8	3.9	2.65	1.98	5.7	3.45	7.4	9.5	12.4	8.7	6.6
24	8.5	6.2	4.0	2.65	1.92	4.6	3.15	6.3	7.4	13.7	12.4	3.55
25	14.0	5.4	8.2	2.8	1.92	4.2	3.05	5.2	4.7	19.0	11.0	3.45
26	15.0	8.7	4.5	4.1	1.92	7.2	46	9.5	3.7	21.5	7.3	3.55
27	21	6.0	3.8	2.9	1.86	14.7	11.5	20	3.35	*6.4	5.0	4.4
28	19.7	7.8	3.55	2.65	2.95	11.8	5.5	8.3	3.25	7.0	4.5	3.45
29	6.4	7.4	3.35	*2.55	18.3	5.8	3.7	-	3.35	31	4.1	6.0
30	5.0	5.4	3.25	2.5	2.7	22.5	3.45	-----	3.25	11.5	4.0	3.8
31	5.3	4.6	-----	2.5	-----	16.5	3.45	-----	5.9	-----	4.0	-----
Total	298.3	296.4	181.30	95.20	94.13	618.55	229.25	490.85	314.95	279.95	224.1	107.35
Mean:	9.62	9.56	6.04	3.07	3.14	20.0	7.40	17.5	10.2	9.33	7.23	3.58
mgd	14.9	14.8	9.35	4.75	4.86	30.9	11.4	27.1	15.8	14.4	11.2	5.84
cfs	915	910	556	292	289	1,900	704	1,510	967	859	688	329
Ac-ft												

Calendar year 1954: Max 75 Min 1.51 Mean(mgd) 7.50 Mean(cfs) 11.3 Ac-ft 8,170

Fiscal year 1954-55: Max 77 Min 1.86 Mean(mgd) 8.65 Mean(cfs) 13.7 Ac-ft 9,920

Peak discharge (base, 300 mgd).--Feb. 7 (10 p.m.) 510 mgd (789 cfs), 5.18 ft.

\* Discharge measurement made on this day.

## West Kopiliula Stream near Keanae

Location.--Lat 20°49'10", long 156°08'15", on left bank 600 ft upstream from Koolau ditch crossing and highway bridge and 3 miles southeast of Keanae Post Office.

Drainage area.--3.9 sq mi.

Records available.--January 1914 to September 1917, October 1921 to June 1955.

Gage.--Water-stage recorder. Datum of gage is 1,292.30 ft above mean sea level, datum of 1929. Prior to Dec. 9, 1935, at several sites within 200 ft of present site at various datums.

Average discharge.--33 years (1915-17, 1922-34, 1936-55), 17.8 mgd (27.5 cfs).

Extremes.--Maximum discharge during year, 1,120 mgd (1,730 cfs) Mar. 16 (gage height, 5.30 ft), from rating curve extended above 75 mgd as explained below; minimum daily, 1.2 mgd (1.9 cfs) Nov. 23-25, 27, 1914-17, 1921-55: Maximum discharge, 5,050 mgd (7,810 cfs) Jan. 26, 1948 (gage height, about 9.5 ft), from rating curve extended above 75 mgd by logarithmic plotting; minimum, 0.6 mgd (0.9 cfs) Sept. 15-17, 1917.

Remarks.--Records good except those above 50 mgd and those for periods of no gage-height record, which are poor. Water used for irrigation in central Maui.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.0	1.2	1.3	36
.1	2.1	1.7	66
.2	3.3	2.1	109
.3	4.8	2.5	165
.4	6.7	3.0	260
.6	10.9	3.5	390
.9	19.2		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.2	11.0	5.8	3.3	1.90	6.0	39.5	4.8	9.2	13.9	10.2	4.2
2	55	7.4	5.0	3.05	1.81	17	28.5	10.6	8.7	11.1	12.7	4.4
3	29.5	7.6	4.6	3.15	1.72	35	26	17.1	5.8	10.0	34.5	3.75
4	30.5	22.5	4.5	3.45	1.63	7.0	19.7	9.5	4.8	5.4	27	3.3
5	21	8.5	4.5	2.9	1.63	27	11.9	5.9	7.4	4.6	12.6	3.05
6	13.4	7.1	22.5	2.9	2.25	32	8.0	4.6	14.5	3.9	10.6	2.75
7	8.5	7.4	12.8	2.65	22.5	110	7.5	137	9.8	3.6	20.5	2.65
8	6.3	7.5	6.7	2.75	3.75	140	6.2	130	14.0	3.9	10.7	2.65
9	5.8	11.3	5.2	11.0	2.4	200	5.5	33.5	10.0	4.0	15.1	2.55
10	11.0	31.5	4.4	17.6	3.6	350	5.0	302	162	3.15	11.3	2.55
11	16.0	14.6	4.0	5.0	2.3	180	4.6	225	89	2.75	10.2	2.4
12	37	44	3.75	3.45	2.0	220	4.5	38	44	2.65	11.1	2.3
13	14.7	*20.5	3.45	2.9	1.8	110	4.6	67	16.3	3.15	14.4	2.55
14	9.1	21.5	6.5	2.65	1.7	129	6.5	23.5	*10.5	4.8	10.2	2.3
15	7.1	17.4	*3.8	3.05	1.8	17.6	5.0	17.5	49	6.5	8.1	2.4
16	16.8	22	4.2	2.65	1.7	36	4.0	12.3	207	5.0	11.6	2.1
17	32	15.4	43	2.3	1.6	15.6	3.7	13.6	15.7	33	8.9	2.1
18	28.5	14.2	54	2.55	1.5	9.2	3.5	31	10.9	55	8.0	2.0
19	14.0	26.5	21.5	2.2	1.4	7.5	3.2	94	9.3	52	12.4	5.8
20	13.4	13.1	9.2	3.3	1.3	10.9	2.8	42	7.1	17.8	6.7	3.15
21	7.9	13.8	22.5	3.95	1.3	78	47	13.8	6.1	13.1	5.6	2.65
22	9.5	14.2	9.8	2.55	1.3	33	12.4	9.8	6.5	12.3	5.9	3.25
23	11.9	26	5.9	2.3	1.2	11.9	6.3	16.8	25	22.5	11.9	7.4
24	15.0	11.9	7.1	2.3	1.2	7.5	4.0	13.0	14.6	22.5	18.7	2.9
25	21.5	8.9	15.8	2.55	1.2	6.5	3.6	10.6	10.1	27	12.2	2.65
26	46	12.8	8.2	7.7	1.3	17.7	103	10.4	6.5	19.3	11.3	3.15
27	35	9.6	5.4	2.65	1.2	30.5	32.5	24.5	5.4	10.0	6.5	3.75
28	30.5	11.0	4.4	2.3	1.5	27.5	14.4	*13.2	4.6	9.7	5.4	2.65
29	13.5	13.3	3.9	*2.1	30	13.5	7.5	-	4.5	7.4	4.5	5.7
30	9.6	9.2	3.45	2.0	3.5	75	5.8	-	4.2	21.5	4.0	2.7
31	8.3	8.9	-----	1.90	-----	57	4.8	-----	10.9	-----	4.3	-----
Total	590.5	468.6	315.65	115.10	103.99	2,017.9	441.3	1,331.0	801.4	478.10	355.1	95.75
Mean	19.0	15.1	10.5	3.71	3.47	65.1	14.2	47.5	25.9	15.9	11.5	3.19
mgd	29.4	23.4	16.2	5.74	5.37	101	22.0	73.5	40.1	24.6	17.8	4.94
Ac-ft	1,810	1,440	989	353	319	6,190	1,350	4,080	2,480	1,470	1,090	294

Calendar year 1954: Max 350 Min 0.92 Mean(mgd) 16.3 Mean(cfs) 25.2 Ac-ft 18,220  
Fiscal year 1954-55: Max 350 Min 1.2 Mean(mgd) 19.5 Mean(cfs) 30.2 Ac-ft 21,820

Peak discharge (base, 1,000 mgd).--Dec. 10 (time and discharge unknown); Feb. 7 (10 p.m.) 1,070 mgd (1,680 cfs), 5.20 ft; Mar. 18 (2 a.m.) 1,120 mgd (1,730 cfs), 5.30 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 13 to Dec. 13, Dec. 18, 19, 24, 25, Jan. 6-20, 23, 24; discharge estimated on basis of records for nearby streams.

## East Wailuaiki Stream near Keanae

Location.--Lat 20°49'05", long 156°08'25", on left bank 1,000 ft upstream from Koolau ditch crossing and trail and 3 miles southeast of Keanae Post Office.

Drainage area.--3.7 sq mi.

Records available.--December 1913 to October 1917, July 1922 to June 1955.

Gage.--Water-stage recorder. Dec. 21, 1913, to Oct. 23, 1917, at site 50 ft downstream.

Average discharge.--35 years (1915-17, 1922-55), 19.8 mgd (30.6 cfs).

Extremes.--Maximum discharge during year, 1,620 mgd (2,510 cfs) Dec. 10 (gage height, 7.55 ft), from rating curve extended as explained below; minimum, 1.27 mgd (1.96 cfs) Nov. 27.

1913-17, 1922-55: Maximum discharge, 3,060 mgd (4,730 cfs) Apr. 6, 1938 (gage height, 9.26 ft), from rating curve extended above 310 mgd by logarithmic plotting; minimum, 0.85 mgd (1.32 cfs) Oct. 10, 1953.

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

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1-25

July 26 to June 30

1.0	5.4	0.4	1.37	3.0	88
1.3	9.8	.6	2.5	3.5	138
1.6	16.3	.9	4.9	4.0	213
2.0	28.5	1.2	9.1	4.5	310
2.5	52	1.5	15.1	5.0	425
3.0	88	2.0	29.5	5.5	570
3.5	138	2.5	52		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16.4	14.1	7.1	4.2	2.15	9.4	64	5.3	11.4	21	12.7	6.5
2	91	8.9	6.5	4.0	2.1	37.5	45	9.5	8.5	16.5	19.0	7.1
3	45	9.6	6.0	4.3	2.0	60	46	20.5	7.4	14.6	58	5.5
4	48	34.5	5.7	4.6	1.96	7.3	32.5	10.4	6.7	7.1	45	5.4
5	29	9.1	6.1	3.65	1.90	41	11.9	6.0	10.1	6.7	16.0	4.9
6	15.7	8.1	45	3.65	2.7	55	9.5	4.9	23	5.7	13.1	4.5
7	8.6	8.8	17.7	3.45	47	155	9.1	144	12.7	5.3	36	4.4
8	6.8	8.6	8.3	3.75	4.4	200	7.4	181	18.9	5.8	14.1	4.4
9	6.4	15.4	6.4	11.9	2.85	287	6.5	46	13.1	6.7	25	4.0
10	13.5	44	5.6	21	4.4	507	6.0	354	194	4.9	14.9	4.1
11	23.5	25	5.1	5.1	2.55	247	5.6	302	132	4.4	14.2	3.9
12	50	72	4.8	3.65	2.2	345	5.4	68	76	4.4	15.0	3.75
13	15.7	34.5	4.5	3.45	2.0	168	5.5	121	24	5.0	21.5	*4.0
14	8.1	34.5	6.1	3.2	1.96	205	7.5	44	*12.7	7.4	14.5	3.5
15	6.8	25	*4.9	4.0	2.1	25	6.0	26	57	8.7	11.1	3.75
16	21.5	35.5	5.1	3.35	1.96	63	4.7	15.1	241	6.0	17.0	3.3
17	54	19.9	65	2.9	1.79	21.5	4.8	20.5	21.5	60	9.8	3.55
18	42	17.1	105	3.15	1.74	11.7	4.7	50	12.7	87	11.9	3.2
19	14.6	44	53	2.85	1.64	8.6	4.2	146	11.3	78	24	10.1
20	13.5	15.1	9.2	4.5	1.58	13.5	3.9	68	6.9	24	9.6	5.3
21	7.4	17.9	29	5.6	1.53	143	80	16.7	7.8	14.3	8.5	4.3
22	10.0	19.9	9.6	3.35	1.53	56	16.1	11.5	9.3	13.8	9.3	5.4
23	15.3	46	6.2	2.9	1.42	14.0	5.7	22	35.5	37	21	12.7
24	27	13.1	7.7	2.65	1.37	9.1	*4.7	15.0	20.5	38	34.5	4.4
25	45	10.0	23	3.2	1.37	7.5	4.4	13.1	11.9	54	22.5	4.3
26	63	17.2	8.4	10.1	1.58	25	174	15.0	7.8	34.5	15.6	5.3
27	67	10.7	5.7	3.2	1.37	49	57	45	6.5	13.2	8.6	6.3
28	48	14.5	5.0	2.7	1.89	43	18.7	17.9	6.0	13.4	7.5	4.4
29	15.4	18.1	4.7	*2.45	52	15.6	8.1	-	5.9	114	6.5	9.4
30	10.2	10.8	4.4	2.25	3.75	102	6.1	-----	5.5	37.5	8.1	4.9
31	9.9	8.1	-----	2.2	-----	74	5.4	-----	17.5	-----	6.9	-----
Total	846.3	670.0	462.8	142.05	158.79	3,005.7	670.4	1,798.4	1,037.1	759.9	547.4	156.35
Mean:												
mgd	27.3	21.6	15.4	4.58	5.29	97.0	21.6	64.2	33.5	25.3	17.7	5.21
cfs	42.2	33.4	23.8	7.09	8.18	150	33.4	99.3	51.8	39.1	27.4	8.06
Ac-ft	2,600	2,060	1,420	436	487	9,220	2,060	5,520	3,180	2,350	1,680	480

Calendar year 1954: Max 507 Min 1.03 Mean(mgd) 23.0 Mean(cfs) 35.6 Ac-ft 25,770  
Fiscal year 1954-55: Max 507 Min 1.37 Mean(mgd) 28.1 Mean(cfs) 43.5 Ac-ft 31,470

Peak discharge (base, 600 mgd).--Nov. 29 (4:30 a.m.) 880 mgd (1,360 cfs), 6.33 ft; Dec. 10 (6:30 p.m.) 1,620 mgd (2,510 cfs), 7.55 ft; Feb. 7 (10:30 p.m.) 1,420 mgd (2,200 cfs), 7.34 ft; Feb. 11 (2 a.m.) 880 mgd (1,360 cfs), 6.30 ft; Mar. 10 (9 p.m.) 720 mgd (1,110 cfs), 5.94 ft; Mar. 16 (2 a.m.) 1,130 mgd (1,750 cfs), 6.82 ft.

\* Discharge measurement made on this day.

## West Wailuaiki Stream near Keanae

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

Drainage area.--3.6 sq mi.

Records available.--January 1914 to October 1917, November 1921 to June 1955.

Gage.--Water-stage recorder.

Average discharge.--33 years (1922-55), 24.1 mgd (37.3 cfs).

Extremes.--Maximum discharge during year, 2,680 mgd (4,150 cfs) Dec. 10 (gage height, 10.60 ft), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 1.20 mgd (1.86 cfs) Nov. 27, 28.

1914-17, 1921-55: Maximum discharge, 4,500 mgd (6,960 cfs) Jan. 14, 1923 (gage height, about 13.5 ft, from floodmarks), from rating curve extended above 420 mgd by logarithmic plotting; minimum, 0.3 mgd (0.5 cfs) July 26, 1922.

Remarks.--Records good except those for period of fragmentary gage-height record, which are fair. Water used for irrigation in central Maui.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.20	2.2	51
.5	1.74	2.6	81
.6	2.4	3.0	121
.7	3.15	3.5	185
.8	4.0	4.0	270
1.0	6.3	5.0	510
1.2	9.5	6.0	835
1.4	14.2	7.0	1,190
1.8	29.5		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.6	12.7	6.8	4.2	1.93	8.5	70	5.8	11.8	18.0	13.1	6.0
2	103	48.5	5.9	3.95	1.87	44	52	7.9	9.2	13.3	18.8	6.3
3	52	9.2	5.4	4.1	1.80	70	48	15.1	7.6	12.4	68	5.0
4	56	38	5.2	4.5	1.74	9.4	34	8.4	6.8	7.0	50	4.8
5	37	9.7	5.4	3.65	1.63	44	12.8	5.7	9.9	6.3	16.0	4.5
6	18.0	8.1	43	3.85	2.8	66	9.7	5.0	23.5	5.6	12.7	4.1
7	10.3	8.3	16.6	3.15	54	190	9.0	194	13.7	5.2	35	3.85
8	8.0	8.0	7.8	3.6	5.9	250	7.4	234	15.7	5.6	13.3	3.75
9	7.4	13.2	6.2	11.2	3.5	401	6.8	63	11.4	5.8	30.5	3.6
10	13.7	26	5.4	26	4.6	924	5.9	435	250	4.7	14.5	3.6
11	26	23.5	4.7	5.7	2.75	f284	5.4	394	165	*4.2	14.2	3.4
12	52	78	4.4	3.95	2.4	f291	5.3	80	8.3	4.1	14.6	3.25
13	17.8	36	4.0	3.4	2.2	f228	5.3	137	26.5	5.0	20.5	3.4
14	9.5	38.5	7.4	3.05	2.05	f270	6.8	48	13.4	6.7	13.4	3.05
15	7.8	26	4.5	3.9	2.25	f36.5	5.4	28	73	7.6	10.2	3.25
16	21.5	39.5	5.3	3.25	2.0	77	4.6	16.1	360	5.7	14.4	2.75
17	61	20	79	2.75	1.87	25.5	4.6	21	26.5	59	9.2	2.85
18	49	17.8	119	3.0	1.69	12.8	4.4	66	14.2	106	11.3	2.7
19	18.3	51	40	2.6	1.69	9.5	3.95	188	12.7	99	20.5	8.0
20	14.8	16.1	10.7	3.75	1.58	16.2	3.65	84	9.7	27	8.8	*4.7
21	8.8	17.7	29	5.2	1.52	178	90	18.2	8.3	15.2	7.9	3.85
22	10.9	18.2	10.5	3.3	1.47	66	18.0	11.8	10.9	13.9	8.3	4.1
23	16.4	50	7.0	2.75	1.42	15.5	6.3	23	38	38.5	18.4	9.6
24	28	14.0	8.1	2.7	1.36	10.1	5.0	15.4	19.3	41	34.5	3.95
25	37	9.7	22.5	3.0	1.31	8.3	4.7	10.2	12.1	61	21.5	3.85
26	94	15.5	9.0	5.7	1.63	29.5	165	16.6	8.0	38	14.9	4.5
27	75	10.1	6.4	3.15	1.31	54	67	47	6.9	13.8	8.6	5.1
28	61	13.4	5.6	2.7	1.54	55	21	18.8	6.2	12.7	7.4	3.95
29	18.2	17.5	5.0	*2.35	46	17.2	8.8		5.9	124	6.3	7.3
30	11.1	10.2	4.6	2.2	4.2	106	6.9		5.6	39.5	5.8	4.3
31	9.7	7.5	-----	2.1	-----	80	5.9	-----	14.6	-----	6.2	-----
Total	970.8	671.9	494.2	158.70	162.01	3,877.0	723.40	2,195.0	1,204.7	805.8	548.7	133.15
Mean												
mgd	31.3	21.7	16.5	4.47	5.40	125	23.3	78.4	38.9	26.9	17.7	4.44
cfs	49.4	33.6	25.3	6.82	8.36	193	36.1	121	60.2	41.6	27.4	6.87
Ac-ft	2,980	2,060	1,520	426	497	11,900	2,220	6,740	3,700	2,470	1,680	409
Calendar year 1954: Max	924			Min	1.05	Mean(mgd)	27.8	Mean(cfs)	43.0	Ac-ft	31,150	
Fiscal year 1954-55: Max	924			Min	1.31	Mean(mgd)	32.7	Mean(cfs)	50.8	Ac-ft	36,600	

Peak discharge (base, 1,200 mgd).--Dec. 10 (8 p.m.) 2,680 mgd (4,150 cfs), 10.60 ft; Feb. 8 (1 a.m.) 1,940 mgd (3,000 cfs), 8.91 ft; Feb. 11 (1 a.m.) 1,580 mgd (2,140 cfs), 7.48 ft; Mar. 16 (2 a.m.) 1,620 mgd (2,510 cfs), 8.06 ft.

\* Discharge measurement made on this day.

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

## West Wailuanui Stream near Keanae

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

Drainage area.--0.7 sq mi.

Records available.--December 1913 to May 1917, July 1922 to June 1955.

Gage.--Water-stage recorder and Columbus-type control. Dec. 19, 1913, to May 22, 1917, water-stage recorder at site 100 ft downstream at different datum.

Average discharge.--33 years (1922-55), 8.98 mgd (13.9 cfs).

Extremes.--Maximum discharge during year, 860 mgd (1,330 cfs) Dec. 10 (gage height, 5.89 ft), from rating curve extended above 130 mgd; minimum, 0.61 mgd (0.94 cfs) Nov. 27, 28.  
1913-17, 1922-55: Maximum discharge, 1,730 mgd (2,680 cfs) Jan. 25, 1948 (gage height, 7.32 ft), from rating curve extended above 130 mgd; minimum, 0.2 mgd (0.3 cfs) July 16-21, 1922.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.7	0.61	1.8	22.5
.8	.91	2.0	35.5
.9	1.28	2.3	50
1.0	1.77	2.6	93
1.1	2.6	3.0	151
1.2	3.9	3.5	245
1.4	7.7	4.0	355
1.6	13.5		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.8	7.3	3.2	2.3	0.91	3.35	22.5	2.2	5.7	9.1	6.7	2.5
2	30	*3.95	2.95	2.2	.87	10.6	16.3	3.6	4.0	7.7	6.5	2.85
3	17.9	4.7	2.7	2.2	.84	19.1	21	7.4	5.0	7.3	15.3	2.05
4	19.9	13.6	2.6	2.2	.81	2.85	12.2	4.5	2.3	2.85	14.4	1.96
5	12.6	4.4	2.7	2.05	.78	10.5	5.5	2.6	3.1	2.6	6.9	1.83
6	8.2	3.75	19.6	2.05	1.52	20	4.2	2.3	6.6	2.1	5.5	1.67
7	4.4	3.6	6.8	1.89	17.5	75	3.9	50	4.5	1.89	15.0	1.57
8	3.35	3.75	3.75	1.96	1.77	103	3.2	67	6.4	2.3	6.3	1.52
9	2.95	7.9	2.85	3.4	1.32	151	3.0	21.5	4.7	2.6	9.1	1.47
10	6.7	12.0	2.6	7.1	1.78	310	2.5	154	85	1.63	5.7	1.57
11	9.1	12.0	2.5	2.3	1.16	139	2.2	151	69	1.62	5.5	1.42
12	15.5	28	2.4	1.96	1.04	196	2.0	30	36	1.57	6.2	1.32
13	7.5	19.0	2.3	1.77	1.00	88	2.8	51	12	1.72	7.7	1.52
14	4.1	13.9	3.8	1.62	.97	99	2.8	20	6.0	2.05	6.0	1.32
15	3.35	11.5	2.4	1.83	1.00	16	2.6	12	25.5	2.55	5.1	1.52
16	6.7	15.2	2.4	1.52	.94	38.5	2.1	7.0	105	1.79	9.7	*1.16
17	15.5	8.5	22.5	1.32	.87	12.6	2.0	9.0	12.7	22	4.2	1.16
18	15.4	6.3	45	1.42	.84	6.3	2.3	23	7.1	32	6.0	1.08
19	6.9	16.8	16.6	1.24	.78	4.4	1.9	100	6.2	42	11.8	3.75
20	5.2	7.5	4.7	2.05	.75	7.9	1.8	43	4.1	10.0	4.5	1.89
21	3.5	10.5	8.5	2.1	.75	58	38	12	3.35	6.1	3.75	1.52
22	4.4	9.8	4.4	1.37	.72	25	8.1	6.0	5.0	5.3	4.5	1.89
23	7.0	18.4	2.95	1.20	.69	7.3	2.8	10	13.8	13.0	9.8	6.4
24	12.6	6.3	3.1	1.20	.66	4.5	2.1	7.5	5.3	15.7	13.2	1.72
25	16.3	4.7	7.9	1.53	.66	3.75	1.9	6.5	4.4	27.5	12.3	1.62
26	23	8.1	3.6	4.2	.72	12.3	*73	14	2.85	27	6.5	2.1
27	32	5.1	2.7	1.37	.63	20	31.5	23.5	2.3	7.0	3.9	2.9
28	27.5	7.4	2.6	1.0	.74	23.5	9.3	10	2.1	7.1	3.2	1.67
29	8.4	7.5	2.5	.97	17.1	8.4	4.2	-	2.2	44	2.7	5.0
30	5.1	5.1	2.4	.84	1.52	30	3.1	-----	1.38	16.6	2.5	2.05
31	4.7	3.5	-----	.91	-----	27	2.5	-----	7.0	-----	2.85	-----
Total	347.75	292.35	195.00	61.17	61.64	1,532.85	293.3	850.6	457.18	326.87	223.30	62.00
Mean:												
mgd	11.2	9.43	6.50	1.97	2.05	49.4	9.46	30.4	14.7	10.9	7.20	2.07
cfs	17.3	14.6	10.1	3.05	3.17	76.4	14.6	47.0	22.7	16.9	11.1	3.20
Ac-ft	1,070	897	598	188	189	4,700	900	2,610	1,400	1,000	685	190
Calendar year 1954:	Max	310			Min	0.52	Mean(mgd)	10.4	Mean(cfs)	16.1	Ac-ft	11,660
Fiscal year 1954-55:	Max	310			Min	0.63	Mean(mgd)	12.9	Mean(cfs)	20.0	Ac-ft	14,430

Peak discharge (base, 300 mgd).--Dec. 10 (6:30 p.m.) 860 mgd (1,330 cfs), 5.89 ft; Feb. 7 (12 p.m.) 680 mgd (1,050 cfs), 5.27 ft; Feb. 11 (12:30 a.m.) 355 mgd (549 cfs), 3.98 ft; Mar. 16 (2:30 a.m.) 330 mgd (511 cfs), 3.88 ft.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 28, 29, Dec. 15, Jan. 8-20, 23-25, Jan. 30 to Feb. 2, Feb. 4-6, 15-17, 21-26, Feb. 28 to Mar. 9, Mar. 13, 14; discharge estimated on basis of records for nearby streams.

## East Wailuanui Stream near Keanae

Location.--Lat 20°49'25", long 156°08'40", on left bank 125 ft upstream from Koolau ditch intake, 250 ft upstream from trail, and 2.5 miles south of Keanae.

Drainage area.--0.6 sq mi.

Records available.--January 1914 to October 1917, November 1921 to June 1955.

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

Average discharge.--33 years (1922-55), 5.56 mgd (8.60 cfs).

Extremes.--Maximum discharge during year, 860 mgd (1,330 cfs) Feb. 7 (gage height, 5.76 ft), from rating curve extended above 50 mgd by logarithmic plotting; minimum, 0.49 mgd (0.76 cfs) Nov. 27, 28.

1914-17, 1921-55: Maximum discharge, 1,050 mgd (1,620 cfs) Feb. 12, 1925 (gage height, 6.96 ft), from rating curve extended above 100 mgd; minimum, 0.1 mgd (0.2 cfs) Apr. 11, 1926.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.33	0.8	9.1
.4	.89	1.1	22
.5	2.05	1.5	45
.6	3.8	2.0	86

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.5	6.2	2.35	1.17	0.73	3.3	13.9	1.51	3.4	8.0	3.6	2.05
2	18.0	*3.2	2.05	1.07	.73	9.3	9.9	2.8	2.55	6.6	4.4	2.2
3	8.5	3.7	1.77	1.17	.67	15.1	16.8	6.6	2.2	7.0	7.4	1.63
4	14.5	10.4	1.77	1.27	.67	2.35	10.5	3.55	1.91	2.55	5.4	1.63
5	9.8	3.25	1.85	1.07	.67	10.3	3.4	1.91	2.2	2.2	3.4	1.51
6	6.2	2.85	19.5	.97	1.37	10.7	2.55	1.63	5.3	1.77	3.25	1.39
7	3.4	2.85	5.6	.89	15.9	18.9	2.35	63	2.35	1.63	12.1	1.27
8	2.7	3.05	2.55	.97	1.51	26.5	1.91	32	5.4	1.91	4.5	1.17
9	2.55	6.8	1.91	2.15	1.17	25.5	1.77	13.2	3.35	2.2	6.9	1.17
10	5.8	12.7	1.63	3.8	1.60	40	1.51	57	38	1.63	3.8	1.17
11	7.7	10.5	1.63	1.07	1.07	17.0	1.39	39.5	9.7	1.39	4.0	1.07
12	12.0	27.5	1.63	.97	.89	39	1.39	11.6	12.0	1.27	4.7	.97
13	5.2	17.5	1.39	.89	.89	41	1.39	19.5	6.2	1.51	5.8	1.17
14	3.05	12.6	3.65	.89	.81	41	1.77	11.6	3.05	1.51	4.5	.97
15	2.85	9.5	1.63	1.07	.81	*5.9	1.63	6.2	17.0	2.1	3.8	1.07
16	5.2	13.6	1.51	.89	.81	15.3	1.17	3.6	48	1.63	8.2	.89
17	11.5	6.9	13.3	.73	.73	4.7	1.27	5.4	4.2	18.0	3.6	.89
18	11.3	6.4	26.5	.89	.67	2.85	1.17	10.3	2.85	22.5	5.4	.81
19	4.6	13.1	9.6	.73	.67	2.35	1.07	16.8	2.9	14.4	10.8	3.6
20	3.6	5.1	2.7	1.38	.61	5.5	.97	7.7	2.2	3.4	3.6	1.91
21	2.7	8.7	5.1	1.57	.61	30	24	3.25	1.91	2.55	3.25	1.39
22	3.6	8.1	2.35	.97	.55	13.6	3.05	2.55	2.85	2.85	3.4	2.05
23	5.8	15.3	1.91	.73	.55	3.4	1.63	3.35	4.4	10.4	7.6	6.6
24	11.8	4.2	2.05	.81	.55	2.35	1.39	2.85	2.05	14.5	12.9	2.05
25	14.0	3.4	6.3	1.06	.55	2.05	1.17	3.05	1.77	23.5	10.7	1.91
26	13.3	6.4	2.65	3.45	.61	7.1	38	10.0	1.51	25.5	5.3	2.55
27	24	3.6	1.77	.97	.55	9.3	8.3	18.6	1.39	5.6	3.25	3.1
28	18.8	6.2	1.63	.81	.72	10.5	3.2	7.3	1.27	5.5	2.55	2.05
29	4.8	6.0	1.39	.73	19.4	3.25	2.05	-	1.51	24	2.2	4.9
30	3.4	4.0	1.27	.73	1.63	20	1.77	-----	1.39	9.0	2.05	2.55
31	3.4	2.7	-----	.73	-----	9.8	1.63	-----	5.9	-----	2.2	-----
Total	247.35	246.30	130.94	36.60	58.70	447.90	164.00	366.45	200.71	226.80	164.55	57.69
Mean	7.98	7.95	4.36	1.18	1.96	14.4	5.29	13.1	6.47	7.55	5.31	1.92
mgd	12.3	12.3	6.75	1.83	3.03	22.3	8.18	20.3	10.0	11.7	8.22	2.97
cfs	759	756	402	112	180	1,370	503	1,120	616	695	505	177

Calendar year 1954: Max 41 Min 0.41 Mean(mgd) 5.46 Mean(cfs) 8.45 Ac-ft 6,120  
Fiscal year 1954-55: Max 63 Min 0.55 Mean(mgd) 6.43 Mean(cfs) 9.95 Ac-ft 7,200

Peak discharge (base, 300 mgd).--Feb. 7 (11 p.m.) 860 mgd (1,330 cfs), 5.76 ft.

\* Discharge measurement made on this day.

## Taro patch feeder ditch at Keanae

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

Records available--September 1934 to June 1955.

Gage--Water-stage recorder and Parshall flume.

Average discharge--20 years (1935-55), 2.26 mgd (3.50 cfs).

Extremes--1934-55: 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 excellent. Ditch diverts water from Palauhulu Stream, 80 ft above station, for irrigation of taro lands at Keanae.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.15	2.55	2.5	2.6	2.1	1.61	3.55	2.05	2.65	2.95	3.15	2.6
2	3.0	2.45	2.45	2.6	2.1	2.85	3.3	2.2	2.6	2.95	3.25	2.6
3	2.7	2.4	2.4	2.6	2.1	3.8	3.15	2.4	2.4	2.95	3.7	2.6
4	2.75	3.1	2.3	2.6	2.05	1.90	2.95	2.2	2.35	2.7	3.55	2.55
5	2.6	2.55	2.25	2.6	2.05	2.45	2.15	2.05	2.3	2.6	3.05	2.55
6	2.4	2.5	2.2	2.55	2.1	3.25	2.05	2.05	2.6	2.6	3.0	2.5
7	2.3	2.45	2.6	2.55	3.9	4.6	1.99	4.2	2.35	2.55	3.6	2.45
8	2.2	2.4	2.3	2.55	2.2	5.7	1.95	3.5	2.35	2.55	3.0	2.45
9	2.2	2.65	2.25	2.55	2.1	6.4	1.85	2.75	2.2	2.5	3.35	2.4
10	2.35	3.2	2.2	2.8	2.05	*7.8	1.80	7.9	5.3	2.5	3.05	2.4
11	2.6	2.7	2.15	2.5	1.99	4.5	1.75	6.4	4.5	2.45	3.0	2.35
12	3.05	3.95	2.1	2.45	1.99	5.6	1.95	3.3	4.0	2.4	2.95	2.35
13	2.5	3.15	2.1	2.45	1.99	5.6	2.6	4.4	2.9	2.4	3.2	2.35
14	2.35	3.2	2.15	2.45	1.99	5.5	2.55	2.85	2.5	2.4	2.95	*2.25
15	2.25	2.9	2.1	2.45	1.99	1.07	2.5	2.25	3.85	2.35	2.8	2.25
16	2.55	3.25	2.1	2.4	1.95	2.95	2.45	1.95	5.8	2.35	3.1	2.25
17	3.0	2.8	3.05	2.35	1.95	2.25	2.45	1.95	1.84	3.95	2.9	2.2
18	3.15	2.7	3.7	2.35	1.95	2.05	2.45	3.2	3.15	4.6	2.9	2.15
19	2.45	3.4	2.8	2.35	1.95	2.1	2.4	4.7	3.2	4.4	3.55	2.35
20	2.55	2.65	2.3	2.35	1.90	2.25	2.4	3.1	3.1	2.9	2.8	2.1
21	2.3	2.8	2.4	2.3	1.95	5.6	4.0	2.35	3.05	2.65	2.75	2.05
22	2.4	2.9	2.25	2.3	1.90	3.6	1.65	2.6	3.05	2.6	2.75	2.05
23	2.6	3.45	2.15	2.3	1.90	2.2	1.39	2.6	3.3	3.55	3.05	2.3
24	2.9	2.75	2.15	2.25	1.90	2.05	2.1	2.55	3.0	3.5	3.8	2.1
25	2.95	2.6	2.5	2.25	1.85	1.95	2.1	2.45	*2.95	4.4	3.2	2.05
26	3.5	2.7	2.15	2.5	1.90	2.3	5.6	2.65	2.8	4.4	3.15	1.99
27	3.6	2.6	2.1	2.25	1.85	3.2	3.6	4.4	2.75	3.2	2.9	1.99
28	3.55	2.6	2.05	2.25	1.95	3.05	2.55	2.9	2.7	3.15	2.8	1.95
29	2.65	2.8	*2.05	*2.2	3.1	2.05	2.15	-	2.65	5.5	2.75	2.05
30	2.5	2.6	*2.3	2.15	1.66	3.55	2.1	-----	2.6	3.7	2.7	1.99
31	2.45	2.55	-----	2.1	-----	3.45	2.1	-----	2.8	-----	2.65	-----
Total	82.50	87.30	70.10	74.95	62.36	107.23	77.58	87.90	93.59	93.50	95.15	68.22
Mean:												
mgd	2.66	2.82	2.34	2.42	2.08	3.46	2.50	3.14	3.02	3.12	3.07	2.27
cfs	4.12	4.36	3.62	3.74	3.22	5.35	3.87	4.86	4.67	4.83	4.75	3.51
Ac-ft	253	268	215	230	191	329	238	270	287	287	292	209
Calendar year 1954:	Max 7.8	Min 1.07	Mean(mgd) 2.43	Mean(cfs) 3.76	Ac-ft 2,720							
Fiscal year 1954-55:	Max 7.9	Min 1.07	Mean(mgd) 2.74	Mean(cfs) 4.24	Ac-ft 3,070							

\* Discharge measurement made on this day.

## Koolau ditch near Keanae

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

Records available--January 1910 to December 1912, November 1917 to June 1955. Gage-height records collected in this vicinity since 1904 are contained in files of East Maui Irrigation Co.

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

Average discharge--37 years (1918-55), 66.8 mgd (103 cfs).

Extremes--1910-12, 1917-55: Maximum daily discharge, 172 mgd (266 cfs) Apr. 19, 1935; no flow at times.

Remarks--Records good except those for period of no gage-height record, which are fair. \* Flow regulated by gates and spillways. Ditch diverts water at altitude 1,200 ft from nearly all streams from the Makapipi west to the Alo for power and irrigation in central Maui. No diversion above station except from several spillways.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	119	128	73	43	23.5	83	120	56	50	109	120	65
2	128	93	65	40	23.5	131	121	106	21	109	117	69
3	134	95	58	40	23.5	127	126	120	30	106	130	54
4	130	127	56	45	22	66	128	106	22.5	77	130	51
5	134	*92	53	38	22	114	123	61	60	69	123	47
6	129	88	122	38	25.5	129	74	60	91	58	102	43
7	98	88	117	34	127	120	102	88	76	54	127	40
8	77	88	82	36	45	134	84	118	106	58	120	40
9	73	119	65	78	30	134	69	113	102	60	*125	38
10	96	109	56	112	43	134	65	117	110	49	122	38
11	131	114	51	49	28	106	58	106	123	45	112	36
12	119	125	47	38	*25.5	124	54	102	120	*43	124	34
13	135	129	45	34	23.5	120	54	113	120	45	133	36
14	97	128	71	32	23.5	127	73	109	113	56	120	34
15	81	132	49	36	23.5	78	64	109	105	64	99	38
16	121	122	49	34	23.5	99	54	106	127	54	133	32
17	124	132	124	28	22	71	51	106	120	122	94	32
18	130	136	126	30	20.5	82	56	109	113	130	104	30
19	127	124	135	28	20.5	84	47	113	109	133	125	73
20	118	133	100	41	19.2	97	43	113	84	127	108	50
21	84	129	103	50	18.0	120	76	109	73	120	87	40
22	97	133	94	34	18.0	128	100	98	70	113	95	46
23	110	124	65	30	18.0	95	60	109	113	127	130	108
24	105	128	73	28	18.0	66	51	113	95	127	126	50
25	128	102	118	31	18.0	77	47	95	*92	130	119	44
26	127	125	86	76	18.0	79	130	84	65	133	129	52
27	128	112	60	34	18.0	130	133	130	56	127	98	63
28	120	120	54	28	26	128	118	130	51	117	81	47
29	134	128	48	26.5	118	*126	81	-	54	133	69	92
30	110	106	45	26.5	45	128	65	-----	49	130	65	54
31	128	81	-----	25	-----	121	60	-----	102	-----	84	-----
Total	3,572	3,590	2,290	1,243.0	929.7	3,358	2,465	2,919	2,622.5	2,825	3,431	1,476
Mean:												
mgd	115	116	76.3	40.1	31.0	108	80.2	104	84.6	94.2	111	49.2
cfs	178	179	118	62.0	48.0	167	124	161	131	146	172	76.1
Ac-ft	10,960	11,020	7,030	3,610	2,850	10,310	7,650	8,960	8,050	8,670	10,530	4,530
Calendar year 1954:	Max 136		Min 14.1		Mean(mgd) 73.0		Mean(cfs) 113		Ac-ft 81,850			
Fiscal year 1954-55:	Max 136		Min 18.0		Mean(mgd) 84.2		Mean(cfs) 130		Ac-ft 94,350			

\* Discharge measurement made on this day.

Note.--No gage-height record Feb. 9 to Mar. 3; discharge estimated on basis of records for station at Haipuaena.



## Kula diversion from Haipuaena Stream near Olinda

Location.--Lat 20°48'15", long 156°13'30", on left bank 3.7 miles east of Olinda and 6.2 miles south of Kailua.

Records available.--July 1945 to June 1955.

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

Average discharge.--9 years (1946-55), 0.440 mgd (0.681 cfs).

Extremes.--1945-55: 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 and 1954.

Remarks.--Records good except those for period of no gage-height record, which are fair. Kula diversion flume diverts water 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 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.98	0.48	0.16	0.09	0.05	0.40	1.10	0.21	0.34	0.67	0.57	0.19
2	1.71	.35	.11	.07	.04	1.27	1.03	.19	.22	.51	.55	*.18
3	1.22	.27	.09	.06	.03	1.40	.86	.30	.17	.79	1.59	.19
4	1.65	1.35	.07	.03	.02	.64	.97	.22	.14	.60	1.26	.62
5	1.02	.75	.06	.10	.02	.62	.49	.15	.26	.30	.67	.73
6	.56	.40	.25	.09	.04	1.45	.30	.14	1.28	.26	.40	.32
7	.32	.30	.73	.09	1.09	1.18	.23	.48	.87	.19	.85	.21
8	.22	.30	.42	.08	.50	1.35	.18	1.40	.38	.15	.46	.17
9	.18	.34	.40	1.06	.21	.78	.14	1.14	.28	.12	.68	.19
10	.74	.48	*.25	1.23	.49	.48	.10	1.53	1.02	.09	.66	.28
11	.91	.51	.14	.53	.21	.10	.09	.78	1.72	.08	.42	.27
12	1.03	1.21	.09	.23	.10	.17	.07	.52	1.45	.07	.40	.26
13	.88	.96	.06	.15	.08	.06	.08	.54	1.00	.07	.56	.26
14	.63	1.25	.08	.10	.06	.07	.14	.44	.66	.14	.40	.21
15	.35	.96	.12	.14	.05	.58	.18	.42	.60	.27	.34	.41
16	1.03	1.16	.14	.28	.04	1.22	.12	.38	1.42	.26	.67	.64
17	1.61	1.06	1.35	.12	.04	.76	.09	.40	.79	.89	.51	.48
18	1.30	.90	.88	.09	.03	.52	.08	1.26	.45	1.56	.36	.22
19	.94	1.28	.68	.08	.02	.32	.06	1.38	.30	1.54	.84	.74
20	.91	1.06	.52	.22	.02	.34	.05	.76	.74	1.04	1.25	.44
21	.44	.97	.44	.70	.02	1.02	.61	.59	.66	.96	.98	.25
22	.64	.61	.52	.23	.02	.97	.72	.42	.45	1.00	.84	.19
23	1.34	1.39	.32	.12	.02	.73	.34	.89	1.35	1.04	.88	.36
24	a1.4	.74	.48	.09	.02	.44	.21	.96	.52	1.08	1.22	.32
25	a1.2	.38	.99	.08	.01	.28	.16	.57	.28	1.24	.89	.22
26	a1.5	.74	.68	*.75	.01	.53	1.65	.34	.19	1.20	1.00	.25
27	*a1.4	.66	.36	.52	.01	1.32	1.01	1.26	.15	1.04	.90	.18
28	1.43	.40	.22	.19	.01	1.47	.83	.62	.12	.68	.63	.19
29	1.35	.85	.16	.11	.55	.88	.42	-----	.10	1.67	.48	.54
30	1.04	.38	.11	.09	.31	1.10	.28	-----	.09	1.12	.30	.48
31	.56	.22	-----	.06	-----	1.12	.28	-----	.31	-----	.23	-----
Total	30.69	22.71	10.88	7.84	4.12	23.57	12.85	18.29	18.31	20.63	21.57	9.99
Mean:	0.990	0.733	0.363	0.253	0.137	0.760	0.415	0.653	0.591	0.668	0.696	0.333
mgd	1.53	1.13	0.562	0.391	0.212	1.18	0.642	1.01	0.914	1.06	1.08	0.515
cfs	94	70	35	24	13	72	39	56	56	63	66	31
Ac-ft												
Calendar year 1954:	Max	1.76	Min	0.01	Mean(mgd)	0.474	Mean(cfs)	0.733	Ac-ft	530		
Fiscal year 1954-55:	Max	1.72	Min	0.01	Mean(mgd)	0.552	Mean(cfs)	0.854	Ac-ft	617		

\* Discharge measurement made on this day.

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

## Haipuaena diversion ditch at Kolea Gulch, near Keanae

Location.--Lat 20°50'50", long 156°11'40", on right bank 15 ft downstream from end of tunnel in Kolea Gulch, 3.1 miles southwest of Keanae, and 3.7 miles southeast of Kailua.

Records available.--March 1938 to June 1955.

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

Average discharge.--17 years, 2.04 mgd (3.16 cfs).

Extremes.--1938-55: Maximum daily discharge, 11.4 mgd (17.6 cfs) Aug. 14, 1950; minimum daily, 0.19 mgd (0.29 cfs) Jan. 30, 31, 1947.

Remarks.--Records excellent. Ditch diverts water from Haipuaena Stream for East Maui Irrigation Co.'s hydroelectric plant about 1 mile downstream, from where it discharges into Koolau ditch for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.25	2.1	1.76	1.42	*0.93	1.76	2.85	1.56	2.2	2.2	1.96	1.76
2	3.8	1.96	1.69	1.42	.90	2.75	2.7	1.62	2.1	1.96	2.05	1.69
3	2.8	1.90	1.62	1.42	.85	3.0	2.8	1.90	2.05	2.05	2.7	1.82
4	3.0	3.05	1.56	1.49	.80	1.83	2.5	1.62	1.96	1.69	2.6	1.69
5	2.7	1.96	1.56	1.36	.80	2.05	1.96	1.49	2.1	1.62	1.96	1.76
6	2.25	1.90	2.9	1.36	1.20	2.7	1.83	1.49	2.75	1.56	1.96	1.56
7	1.96	1.83	2.2	1.31	3.4	3.95	1.76	4.3	2.3	1.49	2.5	1.49
8	1.83	1.83	1.90	1.36	1.69	4.2	1.69	4.7	2.3	1.56	2.05	1.42
9	1.76	2.2	1.76	2.05	1.49	4.7	1.62	3.2	2.2	1.49	2.4	1.49
10	2.05	2.2	1.69	2.4	1.62	8.6	1.56	6.6	5.6	1.42	2.05	1.56
11	2.2	2.6	1.56	1.62	1.36	7.6	1.56	5.8	4.0	1.36	1.96	1.49
12	2.65	3.8	1.56	1.36	1.31	9.2	1.49	3.5	3.65	1.36	2.1	1.42
13	2.2	3.0	1.49	1.36	1.19	9.0	1.56	4.2	2.8	1.42	2.25	1.42
14	1.90	2.85	1.76	1.31	1.13	9.1	1.62	3.1	2.4	1.69	2.1	1.36
15	1.76	2.55	1.56	1.42	1.19	3.15	1.56	2.95	3.15	1.76	1.96	1.36
16	2.2	2.85	1.60	1.42	1.07	3.2	1.42	2.55	5.6	1.56	2.2	1.33
17	3.0	2.4	3.15	1.31	1.02	2.3	1.42	2.5	2.15	2.9	1.96	1.36
18	2.85	2.4	3.5	1.31	.90	1.96	1.36	3.4	1.90	3.3	2.05	1.31
19	2.2	3.05	2.4	1.25	.90	1.76	1.31	4.4	1.83	3.2	2.4	1.96
20	2.2	2.3	1.90	1.49	.85	1.99	1.31	3.2	2.05	2.2	2.2	1.76
21	1.83	2.5	1.76	1.76	.80	4.4	2.9	2.4	1.83	1.96	2.1	1.56
22	2.05	2.4	1.76	1.31	.80	2.9	2.15	2.2	1.76	1.96	1.96	1.62
23	2.4	3.4	1.62	1.19	.75	2.05	1.62	2.3	2.2	2.5	2.25	2.05
24	2.85	2.2	1.69	1.19	.70	1.83	1.49	2.3	1.76	2.6	2.7	1.69
25	2.6	1.96	2.25	1.19	.64	1.76	1.56	2.1	1.62	3.1	2.5	1.62
26	3.2	2.25	1.83	1.94	.75	1.91	4.2	2.25	1.56	3.35	2.4	1.69
27	3.35	2.05	1.62	1.42	.64	2.3	*2.9	3.8	1.49	2.3	2.1	1.76
28	*3.45	2.1	1.56	1.25	.59	2.5	2.2	2.4	1.49	*2.15	1.90	1.52
29	2.55	2.3	1.56	1.13	2.35	2.05	1.76	-	1.49	3.65	1.76	2.05
30	2.1	2.05	1.49	1.07	1.49	2.9	1.69	-----	1.49	2.5	1.69	1.83
31	2.05	1.83	-----	.96	-----	2.6	1.62	-----	2.1	-----	1.90	-----
Total	75.99	73.77	56.26	43.85	34.11	112.20	59.97	83.83	73.88	63.86	66.67	48.32
Mean	2.45	2.38	1.88	1.41	1.14	3.62	1.93	2.99	2.38	2.13	2.15	1.61
mgd	3.79	3.68	2.91	2.18	1.76	5.60	2.99	4.63	3.68	3.30	3.33	2.49
cfs	233	226	173	135	105	344	184	257	227	196	205	148
Ac-ft												
Calendar year 1954: Max	9.2			Min 0.49		Mean(mgd)	1.96	Mean(cfs)	3.03	Ac-ft	2,200	
Fiscal year 1954-55: Max	9.2			Min 0.59		Mean(mgd)	2.17	Mean(cfs)	3.36	Ac-ft	2,430	

\* Discharge measurement made on this day.

Haipuaena Stream above Spreckels ditch, near Huelo  
(Formerly published as Haipuaena Stream near Huelo)

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

Drainage area.--1.1 sq mi.

Records available.--October 1913 to June 1955. Prior to July 1954, published as Haipuaena Stream near Huelo. December 1910 to September 1913 at site 600 ft downstream; records not equivalent owing to inflow from Spreckels ditch.

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

Average discharge.--39 years (1916-55), 9.75 mgd (15.1 cfs).

Extremes.--Maximum discharge during year, 470 mgd (727 cfs) Dec. 10 (gage height, 5.25 ft), from rating curve extended above 32 mgd by logarithmic plotting; minimum daily, 0.31 mgd (0.48 cfs) Nov. 28.  
1913-55: Maximum discharge, 6,100 mgd (9,440 cfs) Aug. 12, 1940 (gage height, 6.91 ft), from rating curve extended above 150 mgd; minimum, slightly less than 0.1 mgd (about 0.2 cfs) several days during January, February, May, June 1945 and October 1953.

Remarks.--Records fair except those for periods of indefinite stage-discharge relation, which are poor. Haipuaena diversion ditch diverts water above station (see preceding page).

Rating table, fiscal year 1954-55, except periods of indefinite stage-discharge relation (gage height, in feet, and discharge, in million gallons a day)

1.4	0.21	2.3	12.0
1.5	.58	2.5	19.1
1.6	1.03	2.7	28.5
1.7	1.73	3.0	46
1.8	2.6	3.5	94
1.9	3.8	4.0	166
2.1	7.2	4.5	265

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.5	6.2	2.35	e0.88	e0.45	2.25	21	*1.03	3.05	7.9	5.0	2.35
2	44	3.55	1.89	e.82	*e.43	27	17.1	1.55	2.15	5.9	5.7	2.35
3	19.9	3.5	1.57	e.82	e.42	23.5	19.2	3.6	1.65	6.1	*18.6	1.73
4	22.5	20.5	1.36	e.95	e.40	2.8	14.5	1.92	1.36	2.6	15.2	2.3
5	15.6	4.3	1.29	e.80	e.38	6.1	4.5	1.03	2.15	1.89	5.1	3.05
6	8.5	3.15	17.8	e.70	e1.5	17.9	3.05	.83	8.1	1.43	4.0	e1.4
7	4.5	2.9	6.7	e.66	30.5	50	2.4	44	5.1	1.15	14.9	e1.1
8	3.05	3.6	3.65	e.75	2.15	65	1.81	51	3.15	1.48	5.5	e1.1
9	2.5	*6.8	2.4	3.65	e.82	95	1.50	17.0	3.1	1.29	11.9	e1.1
10	5.0	6.2	1.81	9.1	e.98	189	e1.3	129	57	e.98	6.0	e1.8
11	8.6	14.0	1.36	1.30	e.70	71	e1.2	113	46	e.92	4.9	e1.2
12	15.5	36	1.09	e.76	e.60	117	e1.1	27	28	e.95	5.0	e1.0
13	6.2	19.7	.83	e.68	e.54	87	e1.2	48	9.6	e.93	8.8	e1.1
14	3.8	18.9	2.7	e.64	e.52	98	e1.6	15.8	4.6	1.89	6.2	e.85
15	2.5	11.9	1.13	e.75	e.55	10.4	e1.3	12.2	17.9	2.1	4.6	e1.0
16	7.5	17.9	1.14	e.77	e.50	44	e1.0	6.4	80	1.47	9.2	e.72
17	21.5	10.3	27.5	e.62	e.46	9.0	e.90	5.5	7.0	24.5	4.6	e.70
18	20	8.3	33.5	e.64	e.44	3.9	e.85	21.5	3.65	33	5.7	e.66
19	6.5	23	12.5	e.60	e.42	2.6	e.80	47	2.8	38	12.8	5.3
20	6.9	7.5	3.4	e1.2	e.39	*5.3	e.77	20.5	4.5	7.2	8.1	1.91
21	2.95	11.5	*2.6	e2.0	e.37	83	35.5	5.3	2.85	4.6	5.7	1.15
22	5.3	10.2	1.97	e.80	e.35	30	5.4	3.3	2.1	4.2	5.0	1.34
23	9.8	26.5	1.36	e.58	e.36	4.9	1.36	4.3	8.2	14.1	10.5	5.4
24	16.6	6.8	1.70	e.55	e.34	2.95	.88	4.7	2.4	14.2	18.2	1.78
25	17.0	4.2	8.5	e.58	e.33	2.35	.94	2.7	1.65	32.5	15.0	1.29
26	31.5	7.9	2.95	e3.8	e.38	6.5	72	3.1	e1.4	42	10.4	1.99
27	30	5.3	1.57	e1.2	e.33	12.9	20.5	24.5	e1.3	9.7	5.7	2.3
28	32	6.4	1.15	e.60	e.31	11.4	6.7	5.7	e1.2	7.9	3.65	1.43
29	11.3	8.8	e.98	e.55	e9.9	4.8	2.4	t	e1.1	52	2.6	4.7
30	5.4	4.8	e.92	e.50	.70	30	1.73	-----	e1.1	14.8	2.15	2.8
31	3.95	2.95	-----	e.47	-----	17.3	1.36	-----	6.3	-----	2.45	-----
Total	397.85	322.95	149.67	38.72	56.52	1,132.85	246.05	621.46	320.46	337.58	244.15	57.10
Mean:												
mgd	12.8	10.4	4.99	1.25	1.88	36.5	7.94	22.2	10.3	11.3	7.88	1.90
cfs	19.8	16.1	7.72	1.93	2.91	56.5	12.3	34.3	15.9	17.5	12.2	2.94
Ac-ft	1,220	991	459	119	173	3,480	755	1,910	983	1,040	749	175

Fiscal year 1954: Max 189 Min 0.11 Mean(mgd) 9.04 Mean(cfs) 14.0 Ac-ft 10,120  
Fiscal year 1954-55: Max 189 Min 0.31 Mean(mgd) 10.8 Mean(cfs) 16.7 Ac-ft 12,050

Peak discharge (base, 750 mgd).--No peak above base.

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge estimated on basis of probable decrease or increase in flow and records for nearby streams.

## Spreckels ditch at Haipuaena weir, near Huelo

Location.--Lat 20°51'20", long 156°11'25", on left bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.5 miles west of Keanae, 3.5 miles southeast of Kailua, and 4.5 miles southeast of Huelo.

Records available.--April 1922 to June 1955 in reports of Geological Survey. May 1919 to April 1922 in files of East Maui Irrigation Co.

Gage.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,470.96 ft above mean sea level (East Maui Irrigation Co. benchmark). Apr. 29, 1922, to Feb. 19, 1930, at same site at different datum. Feb. 20, 1930, to Oct. 25, 1935, at site 100 ft upstream at different datum.

Average discharge.--32 years (1922-29, 1930-55), 13.3 mgd (20.6 cfs).

Extremes.--1922-55: Maximum daily discharge, 97 mgd (150 cfs) Feb. 10, 1955; no flow at times.

Remarks.--Records excellent. Flow regulated by gates and spillways. Spreckels ditch diverts water from all streams between Nuaailua and Kailua Streams, above Koolau ditch east of Puohokamoa and below Koolau ditch west of Puohokamoa. About 4 mgd is diverted from Spreckels ditch to East Maui Irrigation Co.'s hydroelectric plant at Kolea Gulch. Water used for irrigation in central Maui.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	23.5	23.5	11.7	4.0	0.78	10.7	35.5	*6.1	13.3	19.8	18.1	11.0
2	*62	16.6	9.9	3.6	.40	29.5	30.5	9.0	9.9	21	21	11.0
3	37	16.3	8.5	3.75	.30	44	33	18.5	7.8	19.9	*58.5	8.3
4	42	42	7.8	5.3	.26	13.9	26.5	11.4	6.4	11.2	33.5	8.8
5	32	18.5	7.4	3.9	.23	22.5	13.9	6.4	9.2	8.6	20	12.6
6	23.5	15.4	37	3.2	4.7	36.5	12.0	5.3	21	6.4	16.0	6.6
7	18.1	13.9	23.5	2.65	51	65	10.7	33	14.7	5.3	34	5.1
8	14.4	15.0	17.3	3.2	9.9	66	8.8	52	13.6	7.2	21	4.7
9	12.6	23	12.6	17.3	3.9	70	7.3	35	13.2	6.7	29.5	5.2
10	16.5	20.5	9.9	25	7.8	69	6.2	97	59	4.4	21	8.4
11	23	28.5	7.8	7.3	3.65	41	5.3	80	*55	3.05	18.8	5.8
12	32.5	56	6.6	3.9	2.15	40	4.7	38.5	47	2.5	22.5	3.9
13	19.8	36	5.5	2.8	1.55	47	5.8	54	24.5	4.1	27	5.5
14	15.8	35.5	13.1	2.3	1.28	47	10.2	24.5	16.2	9.5	23.5	3.5
15	13.3	27	7.2	4.1	1.45	21	7.8	20.5	24	9.8	19.0	4.2
16	27	34	7.2	4.5	1.05	29	4.4	13.3	66	7.2	30	2.9
17	44	24.5	48	2.15	.61	*24.5	3.75	12.4	13.6	37.5	19.4	2.65
18	42	22	56	2.8	.46	18.9	3.6	38.5	9.6	48	23	3.05
19	24	38.5	32.5	2.1	.34	12.6	2.9	68	8.3	46	30.5	17.5
20	24	20.5	14.1	6.8	.30	17.2	2.4	37	9.5	16.9	24.5	9.9
21	13.9	25.5	14.0	11.9	.26	79	35.5	17.7	8.1	15.4	20	6.5
22	21.5	23.5	10.7	3.35	.36	42	12.6	11.8	6.9	17.3	20	8.3
23	30	44	7.6	2.05	.26	13.6	6.6	15.8	14.3	34	27.5	23
24	34	18.1	9.6	1.75	.23	11.3	5.3	17.3	7.6	38	35.5	8.9
25	38	15.0	25	1.80	.20	10.2	5.3	12.3	6.2	55	33	7.2
26	47	20	14.0	15.0	.26	16.1	80	15.1	5.1	59	24.5	11.2
27	50	16.6	8.0	4.9	.23	34	38.5	37	4.4	22.5	20	12.5
28	59	18.0	6.4	2.65	.20	29.5	22	19.4	3.75	26	14.7	7.5
29	29.5	21	5.3	1.85	20.5	19.5	11.4	-	4.4	67	11.0	20.5
30	21	15.8	4.7	1.45	6.1	42	8.8	-----	4.2	32.5	9.9	11.9
31	17.7	13.3	-----	1.20	-----	32	7.6	-----	12.1	-----	11.5	-----
Total	908.6	758.0	448.9	158.55	120.71	1,054.5	468.85	806.8	518.85	661.95	718.4	258.10
Mean:	29.3	24.5	15.0	5.11	4.02	34.0	15.1	28.8	16.7	22.1	23.2	8.60
mgd	45.3	37.9	23.2	7.91	6.22	52.6	23.4	44.6	25.8	34.2	35.9	13.3
cfs	2,790	2,330	1,380	487	370	3,240	1,440	2,480	1,590	2,030	2,200	792
Ac-ft												
Calendar year 1954:	Max	79	Min	0.17	Mean(mgd)	16.7	Mean(cfs)	25.8	Ac-ft	18,740		
Fiscal year 1954-55:	Max	97	Min	0.20	Mean(mgd)	18.9	Mean(cfs)	29.2	Ac-ft	21,130		

\* Discharge measurement made on this day.

## Koolau ditch at Haipuaena, near Huelo

Location.--Lat 20°51'15", long 156°11'15", on right bank 1,000 ft upstream from intake at Puohokamoa Stream, 3.5 miles southeast of Kailua, and 4.7 miles southeast of Huelo.

Records available.--April 1932 to June 1955.

Gage.--Water-stage recorder and Parshall flume. 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.--23 years, 79.5 mgd (123 cfs).

Extremes.--1932-55: Maximum daily discharge, 193 mgd (299 cfs) Jan. 17, 1946; no flow Feb. 14-28, Mar. 7-18, 1933, Feb. 26 to Mar. 22, 1935.

Remarks.--Records excellent. Flow regulated by floodgates. Water used for domestic supply and irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	137	144	76	44	26.5	87	183	59	54	137	125	67
2	181	95	67	42	25	162	176	105	24.5	121	125	67
3	176	100	63	42	25	171	176	128	36.5	116	156	57
4	183	172	59	46	23.5	70	169	107	27	80	156	55
5	176	98	56	39	23.5	118	131	80	63	72	125	52
6	149	89	160	39	32	154	77	63	109	59	104	46
7	103	90	132	35.5	166	183	103	104	*87	55	156	44
8	80	90	85	37	47	148	85	143	108	59	125	42
9	76	143	69	80	32.5	155	72	137	103	63	144	41
10	114	122	59	126	45	129	67	143	131	52	127	42
11	162	135	52	50	31	117	59	136	164	46	115	39
12	148	183	50	41	28	128	55	121	158	44	130	37
13	155	183	46	35.5	26.5	122	55	137	149	46	153	39
14	103	176	72	34	25	137	72	131	119	59	126	37
15	80	169	50	39	25	85	63	131	116	66	101	42
16	133	183	52	35.5	25	101	55	125	167	56	161	35.5
17	159	162	156	31	23.5	78	52	125	143	152	99	34
18	169	162	183	32.5	22	81	59	131	125	158	109	32.5
19	134	176	156	31	22	89	49	137	113	158	146	84
20	129	155	98	41	20.5	102	44	137	94	*148	119	52
21	85	176	105	52	20.5	190	112	125	76	119	94	44
22	108	169	94	35.5	19.4	176	116	108	70	113	99	48
23	126	183	67	31	19.4	106	63	129	138	154	153	117
24	128	143	72	31	19.4	78	55	133	94	169	166	52
25	153	108	132	*33.5	18.1	80	50	110	92	163	142	46
26	162	149	85	94	19.4	86	175	100	67	160	153	55
27	162	126	59	35.5	18.1	169	176	170	59	150	104	65
28	182	135	55	31	23	169	128	149	55	127	85	48
29	155	152	52	28	142	137	80	-	58	157	72	101
30	119	118	48	28	48	170	67	-----	53	142	67	55
31	101	85	-----	26.5	-----	176	63	-----	125	-----	67	-----
Total	4,228	4,372	2,510	1,327.0	1,041.8	3,954	2,887	3,404	2,975.0	3,201	3,804	1,576.0
Mean:	136	141	83.7	42.8	34.7	128	93.1	122	96.0	107	123	52.5
cfs	210	218	130	66.2	53.7	198	144	189	149	166	190	81.2
Ac-ft	12,980	13,420	7,700	4,070	3,200	12,130	8,860	10,450	9,130	9,820	11,670	4,840
Calendar year 1954: Max	190			Min	14.3	Mean(mgd)	84.4	Mean(cfs)	131	Ac-ft	94,570	
Fiscal year 1954-55: Max	190			Min	18.1	Mean(mgd)	96.7	Mean(cfs)	150	Ac-ft	108,300	

\* Discharge measurement made on this day.

Puohokamoa Stream above Spreckels ditch, near Huelo  
(Formerly published as Puohokamoa Stream near Huelo)

Location.--Lat 20°51'20", long 156°11'25", on right bank 650 ft upstream from Spreckels ditch inflow and trail crossing, 3.2 miles southeast of Kailua, and 4.4 miles south-east of Huelo.

Drainage area.--2.6 sq mi.

Records available.--June 1913 to June 1955. Prior to July 1954, published as Puohokamoa Stream near Huelo. December 1910 to May 1913 at site 700 ft downstream; records not equivalent due to inflow of Spreckels ditch.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,322.04 ft above mean sea level (East Maui Irrigation Co. benchmark). Prior to May 31, 1934, water-stage recorder at site 130 ft downstream at different datum.

Average discharge.--38 years (1917-55), 20.9 mgd (32.3 cfs).

Extremes.--Maximum discharge during year, 1,060 mgd (1,640 cfs) Dec. 10 (gage height, 6.26 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum, 0.88 mgd (1.36 cfs) Nov. 28.

1913-55: Maximum discharge 1,600 mgd (2,480 cfs) Aug. 12, 1940 (gage height, 7.81 ft), from rating curve extended above 400 mgd by logarithmic plotting; minimum, 0.1 mgd (0.2 cfs) Nov. 17, 1929.

Remarks.--Records good except those above 400 mgd, which are fair. Kula pipeline diverts small amount of water above station, at altitude 4,300 ft, for domestic supply.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.56	0.88	1.4	28
.6	1.19	1.8	63
.7	2.05	2.2	115
.8	3.2	2.5	165
.9	5.0	3.0	252
1.0	8.7	3.5	340
1.2	15.5		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	22	19.4	7.9	3.1	1.59	7.8	59	*5.4	11.2	23	17.2	8.6
2	98	12.4	6.0	2.85	*1.51	45	47	7.0	9.0	17.9	17.9	8.2
3	50	12.0	5.0	2.85	1.51	63	58	12.2	6.8	17.9	45	6.0
4	57	52	4.8	3.35	1.43	9.4	40	7.1	5.6	9.3	39	6.4
5	43	12.9	4.3	2.85	1.35	17.3	15.1	4.5	8.4	6.8	15.5	8.4
6	25	10.9	4.2	2.6	5.4	39	11.5	4.1	20	5.6	12.5	4.8
7	14.0	9.7	19.2	2.25	7.4	109	9.6	101	14.7	4.8	42	4.3
8	10.9	10.3	10.1	2.5	5.8	148	7.6	118	10.7	5.9	16.1	4.1
9	9.3	18.1	7.6	10.1	2.95	172	6.4	46	10.4	5.0	31.5	3.95
10	14.8	15.4	5.6	2.4	3.75	325	5.4	275	161	3.95	17.6	5.0
11	24	40	4.3	4.9	2.7	158	4.8	237	99	3.65	14.8	4.3
12	38	95	3.8	2.85	2.15	217	4.3	73	78	3.5	17.7	3.65
13	18.3	51	3.5	2.5	1.97	209	4.8	116	29.5	3.95	27.5	3.8
14	12.2	49	7.8	2.15	1.87	222	7.6	45	15.8	6.8	18.6	3.35
15	9.3	32	3.8	2.7	1.97	33	5.4	34	42	7.7	13.8	3.65
16	19.8	49	3.95	2.7	1.77	103	3.8	19.4	187	5.7	25.5	2.95
17	59	27.5	58	2.15	1.68	29	3.65	17.4	22.5	71	13.6	*2.95
18	52	22.5	71	2.4	1.59	14.6	3.35	55	13.6	87	15.5	2.7
19	18.5	56	29	2.15	1.51	11.5	3.2	100	10.9	97	35.5	15.3
20	20.5	20	10.1	4.3	1.43	16.4	2.95	51	14.7	20.5	19.1	7.6
21	10.3	30	*7.9	8.0	1.35	179	.82	16.6	10.9	14.8	15.7	4.8
22	16.7	26.5	6.8	2.6	1.27	71	16.1	12.9	8.6	14.0	14.8	5.5
23	25.5	69	5.0	2.05	1.27	16.5	6.4	15.4	21.5	39.5	28.5	17.0
24	48	18.2	5.4	1.97	1.19	11.8	4.5	16.4	11.0	46	46	6.4
25	41	12.9	22.5	2.05	1.19	10.3	5.5	11.2	7.9	80	43	5.0
26	78	21.5	9.1	12.1	1.43	19.2	158	13.6	6.0	106	28	7.2
27	75	15.5	5.0	3.2	1.19	31.5	48	71	5.0	28	15.8	7.7
28	77	17.8	4.1	2.15	1.11	28.5	20	17.2	4.8	23	11.8	4.8
29	27.5	21.8	3.65	1.97	3.11	14.3	10.0		5.0	122	9.6	13.6
30	16.6	13.6	3.2	1.77	3.75	70	7.6		4.5	42	6.2	8.6
31	14.1	9.6		1.68		43	6.4		18.5		8.9	
Total	1,045.3	873.5	380.40	124.79	163.68	2,444.1	668.95	1,502.4	874.5	922.25	684.2	190.60
Mean												
mgd	33.7	28.2	12.7	4.03	5.46	78.8	21.6	53.7	28.2	30.7	22.1	6.35
cfs	52.1	43.6	19.6	6.24	8.45	122	33.4	83.1	43.6	47.5	34.2	9.82
Ac-ft	3,210	2,680	1,170	383	502	7,500	2,050	4,610	2,680	2,830	2,100	585
Calendar year 1954	Max	325	Min	0.76	Mean(mgd)	22.3	Mean(cfs)	34.5	Ac-ft	25,020		
Fiscal year 1954-55	Max	325	Min	1.11	Mean(mgd)	27.1	Mean(cfs)	41.9	Ac-ft	30,300		

Peak discharge (base, 750 mgd).--Dec. 10 (8 a.m.) 1,060 mgd (1,640 cfs), 6.26 ft.

\* Discharge measurement made on this day.

## Manuel Luis ditch at Puohokamoa Gulch, near Huelo

Location.--Lat 20°51'50", long 156°11'00", on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.1 miles west of Keanae, 3 miles southeast of Kailua, and 4.4 miles southeast of Huelo.

Records available.--December 1917 to June 1955.

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

Average discharge.--36 years (1918-24, 1925-55), 5.70 mgd (8.82 cfs).

Extremes.--1917-55: Maximum daily discharge, 68 mgd (105 cfs) for one or more days in 1938, 1941-42, 1947-48, 1950; no flow at times.

Remarks.--Records good except those for periods of fragmentary or no gage-height record, which are fair. Ditch is extension of Center ditch and picks up water at altitude of 500 ft from streams between the Kolea and Waiakamoi Streams. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	2.25	4.9	1.46	0.62	0.39	0.89	8.4	1.38	4.6	3.8	3.65	0.62	
2	*15.3	2.35	1.23	.56	.39	4.9	6.0	2.35	3.6	6.2	3.55	.62	
3	5.8	2.25	1.08	.62	.34	12.3	12.7	3.15	2.75	5.4	4.1	.56	
4	10.1	13.6	1.00	.74	.34	1.79	8.4	1.82	2.35	2.45	4.1	.56	
5	6.1	3.0	.85	.62	.34	4.7	2.75	1.23	2.65	2.1	2.9	.56	
6	4.6	2.6	8.9	.51	1.09	6.2	2.15	1.08	4.1	1.89	2.45	.86	
7	2.35	2.15	3.35	.45	13.3	16.4	1.89	19.4	*2.85	1.70	6.4	1.15	
8	1.89	2.1	1.84	.39	.93	46	1.46	42	2.65	1.99	3.0	1.15	
9	1.70	*4.7	1.19	1.08	.56	50	1.23	30	2.45	1.70	3.95	1.00	
10	2.4	2.8	1.00	3.25	.74	63	1.08	64	33	1.46	3.3	1.23	
11	3.75	5.6	.79	.74	.51	50	.93	54	20	1.31	2.45	1.00	
12	10.7	24	.74	.56	.45	48	1.00	36.5	8.9	1.00	2.55	.93	
13	3.4	12.5	.68	.51	.39	60	1.00	42	5.3	1.08	3.0	.85	
14	2.15	9.5	1.57	.45	.39	58	1.61	31.5	3.45	1.31	2.55	.85	
15	2.1	5.9	.74	.56	.39	15.8	1.15	33	9.3	1.38	2.45	1.15	
16	3.65	8.0	.68	.56	.39	32.5	.79	17.0	44	1.38	6.4	.79	
17	6.4	5.0	9.1	.45	.34	17.8	.74	17.9	6.7	10.6	f1.17	.79	
18	6.9	3.6	12.1	.51	.28	8.0	.74	30.5	3.75	11.9	a.20	.74	
19	3.45	8.7	7.3	.45	.28	5.4	*.62	40	3.0	13.5	f.56	2.1	
20	3.85	2.75	2.1	.71	.25	4.5	.56	50	2.95	*2.3	.85	1.38	
21	2.1	7.4	1.80	.98	.22	35	22.5	7.6	2.35	2.15	.68	1.08	
22	6.1	5.6	1.38	.45	.28	18.1	3.55	3.0	2.2	2.65	.62	1.23	
23	3.85	18.6	1.15	.39	.20	8.5	1.61	3.45	3.95	7.6	1.99	4.1	
24	6.6	3.9	1.15	.34	.20	5.1	1.31	3.60	2.45	8.6	4.3	1.62	
25	5.9	2.75	3.6	.39	.20	2.55	1.23	2.55	1.99	18.5	3.05	1.23	
26	15.9	4.3	1.56	2.95	.22	3.1	42	8.0	1.80	33	2.35	1.38	
27	24.5	2.65	1.00	.62	.20	7.8	8.9	24	1.61	7.8	1.53	1.90	
28	25.5	3.85	.85	.51	.17	5.7	3.65	7.6	1.53	5.3	1.15	1.23	
29	7.0	3.6	.74	.39	7.6	3.45	2.15	-	1.61	23.5	1.00	3.75	
30	4.2	2.25	.68	.39	.84	12.0	1.70	-----	1.46	5.9	.79	1.91	
31	2.9	1.61	-----	.39	-----	6.4	1.61	-----	2.7	-----	.74	-----	
Total	203.39	182.51	71.61	22.12	32.22	613.88	145.41	558.61	192.00	189.45	77.78	38.22	
Mean	6.56	5.89	2.39	0.714	1.07	19.8	4.69	20.0	6.19	6.32	2.51	1.27	
cfs	10.1	9.11	3.70	1.10	1.66	30.6	7.25	30.9	9.58	9.78	3.88	1.96	
Ac-ft	624	560	220	68	99	1,880	446	1,710	589	581	239	117	
Calendar year 1954: Max	63			Min	0.17		Mean(mgd)	4.88		Mean(cfs)	7.55	Ac-ft	5,460
Fiscal year 1954-55: Max	64			Min	0.17		Mean(mgd)	6.38		Mean(cfs)	9.87	Ac-ft	7,130

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of engineer's notes.

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

## Waiakamoi Stream above Wailoa ditch, near Huelo

Location.--Lat 20°51'45", long 156°11'55", on left bank 500 ft up-stream from intake of Wailoa ditch, 0.2 mile upstream from Spreckels ditch trail, 2.5 miles southeast of Kailua, and 3.8 miles southeast of Huelo.

Drainage area.--4.4 sq mi.

Records available.--January 1922 to June 1955.

Gage.--Water-stage recorder. Datum of gage is 1,293.59 ft above mean sea level, datum of 1929.

Average discharge.--33 years, 16.3 mgd (25.2 cfs).

Extremes.--Maximum discharge during year, 3,140 mgd (4,860 cfs) Dec. 10 (gage height, 9.20 ft), from rating curve extended above 370 mgd as explained below; minimum, 0.35 mgd (0.54 cfs) Nov. 5, 6, 28, 29.

1922-55: Maximum discharge, 7,040 mgd (10,900 cfs) Jan. 26, 1948 (gage height, 12.76 ft), from rating curve extended above 370 mgd on basis of area-mean-depth study; minimum, 0.10 mgd (0.16 cfs) Oct. 10, 1953.

Remarks.--Records good. Haleakala Ranch and Kula pipelines divert small quantities of water above station. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 615: 1922-24. WSP 740: 1922-31(M). WSP 1155: 1948(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.6	0.27	2.1	27
.7	.45	2.5	52
.8	.70	3.0	102
.9	1.00	3.5	175
1.1	1.70	4.0	274
1.3	3.2	4.5	400
1.5	6.3	5.0	565
1.8	14.4	6.0	1,000

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.6	10.8	5.1	1.80	0.54	5.7	48	3.3	6.3	13.1	10.1	5.4
2	115	7.3	4.1	1.58	.47	39.5	39	3.85	5.1	10.0	9.6	5.4
3	51	6.3	5.2	1.58	*.43	47	57.5	6.0	4.9	10.2	48	4.7
4	52	41	2.95	2.05	.39	7.2	35	4.9	4.3	6.0	*38	4.7
5	32.5	10.6	2.75	1.85	.37	12.1	10.1	3.6	6.1	4.7	11.2	7.1
6	16.2	7.4	17.7	1.43	.99	27.5	7.4	3.05	17.3	4.1	8.3	4.4
7	8.8	6.3	11.3	1.19	54	111	6.3	70	15.0	3.6	27	3.7
8	6.8	6.7	6.3	1.18	6.2	170	5.4	89	7.0	3.85	11.1	3.6
9	6.1	9.3	5.1	7.4	2.5	305	4.5	39	6.3	3.45	22.5	*3.45
10	9.2	8.8	4.3	19.5	2.65	882	4.1	288	102	2.85	13.4	4.3
11	16.1	21.5	3.6	5.1	2.85	237	3.6	276	106	2.4	10.6	3.7
12	32	68	3.05	2.95	1.98	332	2.95	58	68	2.3	11.9	3.2
13	12.7	29.5	2.65	2.4	.99	167	3.6	105	19.6	2.75	18.3	3.3
14	8.6	38.5	3.95	2.1	.78	220	4.1	33.5	10.1	4.5	11.5	2.75
15	6.0	22	2.45	2.2	.78	25.5	4.0	26	29.5	5.2	8.8	2.1
16	14.2	30.5	2.25	2.4	.67	136	3.05	13.4	180	4.5	14.4	1.80
17	51	18.2	53	2.25	.54	29.5	2.65	10.9	16.6	46	9.1	1.90
18	52	15.7	63	2.0	.45	10.7	1.80	56	8.8	76	8.8	2.4
19	13.4	42	25	1.23	.41	7.4	1.54	143	6.8	87	18.2	13.1
20	16.8	14.8	*6.4	1.48	.45	8.6	1.36	67	9.2	14.9	17.7	5.6
21	7.4	19.4	4.9	6.8	.54	*175	67	13.0	8.9	10.4	12.9	4.0
22	11.2	14.4	4.5	2.9	.50	67	17.3	8.1	5.8	9.6	10.4	3.8
23	20.5	.50	3.7	2.1	.43	10.9	4.4	10.0	21.5	28	18.0	8.9
24	30.5	12.8	4.3	1.85	.39	7.9	2.95	12.3	9.3	29	38	4.9
25	35	8.1	15.3	1.79	.37	6.0	3.05	7.6	5.6	55	28	3.7
26	72	12.7	6.6	6.8	.50	6.9	129	8.7	4.3	73	24.5	4.3
27	49	10.1	4.5	3.6	.43	25	52	62	3.85	20	14.7	4.3
28	75	9.8	3.7	2.25	.37	25	17.4	11.0	3.6	14.0	9.3	3.05
29	31.5	17.5	3.3	1.06	13.8	14.1	5.8	-	3.45	101	6.3	7.2
30	14.6	8.5	2.75	.78	3.7	62	4.3	-----	2.75	33	5.4	5.9
31	8.8	6.0	-----	.62	-----	42	3.85	-----	8.3	-----	5.4	-----
Total	891.5	582.5	281.70	94.22	99.47	3,222.5	531.00	1,432.20	686.25	680.40	501.4	136.65
Mean:												
mgd	28.8	18.8	9.39	3.04	3.32	104	17.1	51.2	22.1	22.7	16.2	4.56
cfs	44.6	29.1	14.5	4.70	5.14	161	26.5	79.2	34.2	35.1	25.1	7.06
Ac-ft	2,740	1,790	865	289	305	9,890	1,630	4,400	2,110	2,090	1,540	419

Calendar year 1954: Max 882 Min 0.21 Mean(mgd) 20.8 Mean(cfs) 32.2 Ac-ft 23,560  
Fiscal year 1954-55: Max 882 Min 0.37 Mean(mgd) 25.0 Mean(cfs) 38.7 Ac-ft 28,070

Peak discharge (base, 900 mgd).--Dec. 10 (8 p.m.) 3,140 mgd (4,860 cfs), 9.20 ft.

\* Discharge measurement made on this day.



## Alo Stream near Huelo

Location.--Lat 20°51'50", long 156°11'45", on right bank just upstream from Spreckels ditch inflow, trail crossing, and Wailoa ditch intake, 2.5 miles southeast of Kailua and 3.8 miles southeast of Huelo.

Drainage area.--0.2 sq mi.

Records available.--December 1910 to June 1955.

Gage.--Water-stage recorder. Datum of gage is 1,248.38 ft above mean sea level, datum of 1929. Prior to June 18, 1914, staff gage at site 300 ft downstream at different datum.

Average discharge.--44 years (1911-55), 4.81 mgd (7.44 cfs).

Extremes.--Maximum discharge during year, 306 mgd (473 cfs) Apr. 26 (gage height, 3.48 ft), from rating curve extended above 130 mgd; minimum, 0.35 mgd (0.54 cfs) Nov. 28, 1910-55: Maximum discharge, 1,600 mgd (2,480 cfs) Nov. 18, 1930 (gage height, 6.90 ft), from rating curve extended above 130 mgd; minimum, 0.2 mgd (0.3 cfs) Nov. 22, 23, 1932.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.5	0.39	1.1	4.6
.6	.70	1.3	9.7
.7	1.07	1.5	18.5
.8	1.58	1.7	31
.9	2.3	2.0	55

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.3	8.9	*2.0	0.88	0.58	1.91	9.4	1.38	2.6	7.8	3.7	2.1
2	14.2	2.8	1.65	.85	.54	5.6	6.6	3.0	2.0	8.6	3.55	2.3
3	7.2	3.6	1.48	.88	*.51	13.6	13.6	5.1	1.65	7.6	4.5	1.58
4	13.4	14.2	1.32	1.17	.48	2.05	8.6	2.5	1.43	2.4	4.1	2.2
5	7.3	3.1	1.25	.88	.45	8.3	3.2	1.32	2.55	2.35	3.1	1.53
6	6.8	3.15	15.0	.77	2.9	8.3	2.5	1.22	2.85	1.53	2.85	1.22
7	3.1	2.6	5.0	.67	15.9	13.2	2.1	37	1.80	1.32	10.8	1.07
8	2.5	2.95	3.1	.72	1.22	28	1.58	26	2.85	2.05	3.9	*1.07
9	2.25	6.6	1.80	3.7	.88	13.9	1.38	10.8	2.35	1.48	6.4	1.17
10	3.35	3.0	1.48	5.1	1.16	31	1.22	40	36	1.17	4.4	1.95
11	7.1	7.5	1.27	1.03	.77	9.2	1.07	31.5	9.0	1.00	2.9	1.50
12	11.8	20.5	1.12	.81	.70	23	1.03	9.6	7.3	.96	3.05	1.07
13	4.0	16.6	1.00	.74	.64	24.5	1.42	12.8	4.7	1.12	4.6	1.45
14	2.4	9.9	3.5	.70	.64	31	2.95	6.3	2.7	1.34	3.1	1.17
15	2.3	9.0	1.17	.85	.67	5.2	1.86	6.2	6.9	1.22	4.3	1.92
16	5.5	11.0	1.18	.74	.61	23.5	1.00	3.7	45	1.03	11.7	1.00
17	9.3	6.9	15.6	.67	.54	4.9	.96	4.2	3.55	13.7	3.6	1.00
18	9.3	5.1	12.6	.81	.51	3.0	.96	11.3	*2.45	9.9	7.8	.92
19	4.6	8.6	8.1	.70	.51	2.3	.85	15.5	2.25	9.8	12.0	4.5
20	4.6	4.4	2.3	1.69	.48	4.6	.77	6.2	3.3	2.3	5.2	1.99
21	2.25	11.8	1.80	1.52	.45	*24	28	3.2	1.80	2.1	4.0	1.71
22	8.8	7.7	1.43	.70	.42	12.6	3.3	2.6	2.05	2.6	4.9	3.3
23	4.2	20	1.22	.67	.42	3.1	1.58	4.9	4.1	10.1	11.9	8.3
24	5.4	4.2	1.48	.67	.39	2.25	1.22	4.2	4.1	12.0	16.0	2.3
25	7.3	3.1	6.2	.70	.39	2.0	2.6	2.4	1.80	28	17.7	1.94
26	13.4	6.9	2.2	5.6	.48	3.5	34.5	10.0	1.43	54	7.3	2.3
27	21.5	3.9	1.27	.88	.39	8.4	7.1	24.5	1.22	5.8	4.1	3.45
28	24.5	7.1	1.07	.74	.39	6.1	3.15	5.2	1.07	8.9	3.1	1.80
29	4.5	5.4	1.00	.67	12.7	3.0	1.94	5	1.48	22.5	2.6	7.3
30	3.2	3.65	.92	.64	1.07	8.2	1.58	-----	1.32	6.7	2.25	2.55
31	3.15	2.4	-----	.61	-----	6.7	1.58	-----	4.4	-----	2.3	-----
Total	223.50	226.55	100.71	37.76	47.79	336.91	149.60	292.62	168.00	231.17	181.70	67.64
Mean:												
mgd	7.21	7.31	3.36	1.22	1.59	10.9	4.83	10.5	5.42	7.71	5.86	2.25
cfs	11.2	11.3	5.20	1.89	2.46	16.9	7.47	16.2	8.39	11.9	9.07	3.48
Ac-ft	686	695	309	116	147	1,030	459	898	516	709	558	208

Calendar year 1954: Max 33.5 Min 0.32 Mean(mgd) 4.61 Mean(cfs) 7.13 Ac-ft 5,160  
Fiscal year 1954-55: Max 54 Min 0.39 Mean(mgd) 5.65 Mean(cfs) 8.74 Ac-ft 6,330

Peak discharge (base, 250 mgd).--Apr. 26 (9:30 a.m.) 306 mgd (473 cfs), 3.48 ft.

\* Discharge measurement made on this day.

## Kaaiea Stream near Huelo

Location.--Lat 20°52'05", long 156°12'15", on left bank 700 ft upstream from Hamakua ditch trail crossing, 2 miles southeast of Kailua, 3.2 miles southeast of Huelo, and 3.5 miles west of Keanae.

Drainage area.--0.5 sq mi.

Records available.--December 1921 to June 1955.

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

Average discharge.--33 years (1922-55), 4.58 mgd (7.09 cfs).

Extremes.--Maximum discharge during year, 251 mgd (388 cfs) Apr. 26 (gage height, 3.34 ft); minimum, 0.36 mgd (0.56 cfs) Nov. 28.

1921-55: 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; minimum, 0.22 mgd (0.34 cfs) June 1, 1945.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.2	0.27	0.8	9.0
.3	.63	.9	12.5
.4	1.34	1.0	16.5
.5	2.45	1.2	26.5
.6	4.1	1.4	37
.7	6.3	1.7	56

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	8.1	1.84	0.80	0.50	2.1	10.2	1.25	2.2	8.0	3.4	1.84
2	15.0	2.75	1.63	.74	.50	6.3	8.2	2.15	1.73	8.0	3.25	1.95
3	8.6	3.0	1.43	.80	*.46	14.8	14.2	*4.7	1.34	8.1	4.6	1.43
4	12.5	14.2	1.34	.94	.46	2.3	10.7	2.2	1.17	2.45	*4.6	1.73
5	8.0	3.1	1.31	.74	.42	7.0	3.1	1.25	2.05	1.95	3.1	1.53
6	7.0	2.75	15.6	.63	2.8	9.1	2.2	1.09	2.2	1.63	2.45	1.17
7	3.1	2.2	4.9	.58	17.9	13.6	1.84	36.5	1.74	1.34	10.8	1.01
8	2.2	2.35	2.85	.63	1.53	28	1.53	26.5	2.55	1.68	3.75	1.09
9	1.95	6.2	1.73	3.0	1.01	16.6	1.25	8.9	2.2	1.53	6.0	1.09
10	2.85	2.9	1.53	5.4	1.17	a30	1.17	41	31	1.25	4.1	1.73
11	6.6	8.0	1.25	1.09	.80	a8.5	1.09	34.5	10.1	1.01	2.6	1.43
12	11.0	22	1.09	.80	.68	a24	1.01	9.8	9.5	.94	2.65	1.01
13	3.9	16.2	1.01	.68	.63	a26	1.25	15.7	4.7	1.17	5.0	1.34
14	2.3	11.9	3.4	.63	.63	a34	2.6	6.7	2.3	1.53	3.4	1.09
15	2.05	8.5	1.17	.80	.63	a5.0	1.73	6.0	7.3	1.42	3.3	1.53
16	5.1	12.0	1.17	.74	.58	a25	1.09	3.25	44	1.17	9.8	.94
17	10.4	6.9	15.0	.58	.54	a4.5	.94	3.55	3.55	13.6	3.1	.94
18	10.9	4.7	12.4	.68	.50	a3.0	.87	11.6	2.05	12.5	5.3	.80
19	4.0	9.4	6.9	.63	.46	a2.2	.80	15.9	1.63	11.2	13.4	4.1
20	4.6	4.0	*2.1	1.55	.46	a4.0	.74	6.6	2.4	2.45	4.8	*1.84
21	2.05	11.8	1.63	1.56	.42	a24	28	2.9	1.43	2.2	3.5	1.63
22	7.3	8.5	1.34	.68	.42	a13	3.6	2.06	1.46	2.45	3.95	2.5
23	4.7	18.3	1.17	.63	.42	a3.0	1.63	3.0	4.2	10.4	9.1	8.2
24	5.7	4.3	1.34	.58	.39	2.05	1.25	3.5	5.0	12.6	14.0	2.35
25	7.4	2.9	6.2	.68	.39	1.73	1.20	1.95	1.95	28	16.5	1.84
26	13.7	6.3	1.95	5.3	.46	4.1	33.5	6.6	1.43	52	6.3	2.3
27	19.9	3.95	1.25	.87	.39	7.3	8.3	25.5	1.25	6.1	3.55	3.55
28	23	5.9	1.09	.74	.39	6.4	3.55	4.6	1.09	7.1	2.45	1.84
29	4.8	5.7	.94	.63	13.4	3.1	1.84	1.25	23	1.09	2.05	6.4
30	2.9	3.95	.87	.58	1.25	9.1	1.53	-----	1.09	7.4	1.84	2.65
31	2.25	2.2	-----	.54	-----	7.3	1.43	-----	4.9	-----	1.84	-----
Total	220.45	224.75	97.43	35.23	50.59	347.08	152.34	289.24	160.76	234.17	164.48	62.65
Mean:												
mgd	7.11	7.25	3.25	1.14	1.69	11.2	4.91	10.3	5.19	7.81	5.31	2.09
cfs	11.0	11.2	5.03	1.76	2.61	17.3	7.69	15.9	8.03	12.1	8.22	3.23
Ac-ft	677	690	299	108	155	1,070	468	886	493	719	505	192
Calendar year 1954:	Max	34	Min	0.30	Mean(mgd)	4.64	Mean(cfs)	7.18	Ac-ft	5,210		
Fiscal year 1954-55:	Max	52	Min	0.39	Mean(mgd)	5.59	Mean(cfs)	8.65	Ac-ft	6,260		

Peak discharge (base, 250 mgd).--Apr. 26 (1:30 p.m.) 251 mgd (388 cfs), 3.34 ft.

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Alo Stream.

## Oopuola Stream near Huelo

Location.--Lat 20°52'15", long 156°12'30", on left bank 100 ft upstream from Wailoa ditch intake, 300 ft upstream from ditch trail, 1.8 miles southeast of Kailua, 3 miles southeast of Huelo, and 3.8 miles west of Keanae.

Drainage area.--0.2 sq mi.

Records available.--August 1930 to June 1955. December 1910 to June 1915, at site half a mile downstream; records not equivalent.

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

Average discharge.--24 years (1931-55), 1.74 mgd (2.69 cfs).

Extremes.--Maximum discharge during year, 288 mgd (446 cfs) Feb. 7 (gage height, 4.65 ft), from rating curve extended above 20 mgd as explained below; minimum, 0.14 mgd (0.22 cfs) Nov. 25, 26, 27, 28, 1954.  
1930-55: Maximum discharge, 340 mgd (526 cfs) Jan. 22, 1946 (gage height, 5.54 ft), from rating curve extended above 20 mgd by test on model of station site; minimum, 0.04 mgd (0.06 cfs) Oct. 29, 30, 1943, June 1, 1945.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.6	0.05	2.1	3.75
1.7	.23	2.2	5.7
1.8	.65	2.3	8.2
1.9	1.32	2.5	14.7
2.0	2.35	2.8	30

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.62	3.6	0.60	0.25	0.19	0.76	3.55	0.60	1.41	2.8	1.18	0.65
2	3.85	1.02	.55	.25	.19	2.2	2.4	1.57	1.10	4.4	1.10	.75
3	2.6	1.22	.45	.28	.18	6.3	4.2	2.5	.87	3.85	1.56	.55
4	5.6	4.6	.50	.55	.18	.81	3.6	1.15	.81	1.10	1.32	.82
5	2.3	1.18	.49	.32	.18	3.75	1.18	.65	1.34	.81	1.02	.65
6	2.35	1.25	4.7	.25	.56	5.2	.81	.55	1.25	.65	.81	.40
7	.94	1.02	1.78	.21	5.7	6.1	.70	25	1.02	.50	3.4	.36
8	.70	1.14	1.20	.23	.55	8.9	.55	13.4	1.50	.65	1.18	.40
9	.70	3.8	.60	1.56	.32	5.8	.50	5.5	1.32	.55	2.15	.40
10	1.25	1.25	.50	2.45	.52	10.3	.45	15.5	15.8	.45	1.59	.70
11	2.15	1.43	.45	.45	.28	2.05	.36	10.5	4.3	.36	.81	.55
12	4.9	7.3	.36	.28	.23	6.8	.36	4.2	3.2	.32	.81	.36
13	1.51	5.5	.32	.25	.21	7.5	.54	5.5	2.35	.50	1.05	.50
14	.81	4.6	1.15	.25	.21	11.0	1.38	2.45	1.25	.50	.70	.45
15	1.05	3.25	.45	.28	.23	1.80	.81	2.65	3.65	.40	1.07	1.04
16	2.45	3.4	.45	.25	.21	10.0	.40	1.61	24.5	.36	3.95	.36
17	3.7	2.1	6.1	.21	.19	1.73	.36	1.88	1.58	4.8	.87	.32
18	3.15	1.61	4.6	.25	.19	.94	.36	5.1	.94	3.95	1.75	.32
19	1.58	1.93	2.85	.23	.19	.70	.28	5.8	.70	2.3	2.65	1.47
20	1.98	1.46	.87	.64	.18	1.45	.25	2.65	.70	.75	1.89	.65
21	.81	4.3	.65	.73	.18	7.2	16.1	1.41	.60	.75	1.02	.65
22	3.7	2.7	.55	.25	.18	4.7	1.56	1.10	*.72	1.08	1.29	1.18
23	1.85	6.8	.45	.21	.16	1.18	.75	2.0	1.82	3.85	3.75	3.35
24	1.34	1.41	.50	.21	.16	.81	.55	2.25	2.35	3.65	6.4	.89
25	2.45	1.02	2.0	.23	.18	.75	.55	1.41	.75	7.9	5.3	.65
26	5.2	2.6	.82	2.35	.18	1.50	12.8	8.2	.55	26.5	2.9	.65
27	6.7	1.34	*.45	.32	.16	3.15	3.05	14.9	.45	2.4	1.44	1.19
28	10.8	2.5	.36	.25	.14	2.75	1.41	3.0	.40	2.85	.94	.65
29	2.0	1.97	.32	.21	5.3	1.44	.81	-	.55	6.5	.87	3.1
30	1.18	1.31	.28	.19	.55	3.2	.65	-----	.45	2.5	.70	.94
31	.87	.75	-----	.19	-----	2.65	.70	-----	1.39	-----	.65	-----
Total	82.09	79.36	35.35	14.58	17.86	123.42	61.97	143.03	79.63	89.98	55.92	24.95
Mean;												
mgd	2.65	2.56	1.18	0.470	0.595	3.98	2.00	5.11	2.57	3.00	1.80	0.832
cfs	4.10	3.96	1.83	0.727	0.921	6.16	3.09	7.91	3.98	4.64	2.79	1.23
Ac-ft	252	244	108	45	55	379	190	439	244	276	172	77

Calendar year 1954: Max 25.5 Min 0.14 Mean(mgd) 1.80 Mean(cfs) 2.79 Ac-ft 2,010  
Fiscal year 1954-55: Max 28.5 Min 0.14 Mean(mgd) 2.21 Mean(cfs) 3.42 Ac-ft 2,480

Peak discharge (base, 130 mgd).--Jan. 21 (3 p.m.) 244 mgd (378 cfs), 4.28 ft; Feb. 7 (10 p.m.) 288 mgd (446 cfs), 4.65 ft; Feb. 26 (11 p.m.) 191 mgd (293 cfs), 4.04 ft; Mar. 16 (1:30 a.m.) 144 mgd (223 cfs), 3.81 ft; Apr. 26 (9 a.m.) 262 mgd (405 cfs), 440 ft.

\* Discharge measurement made on this day.

## Naillilihaele Stream near Huelo

Location--Lat 20°52'30", long 156°13'05", on left bank 200 ft upstream from Walloa ditch intake, 700 ft upstream from New Hamakua ditch trail, 1.5 miles south of Kailua, and 2.5 miles southeast of Huelo.

Drainage area--2.8 sq mi.

Records available--December 1910 to December 1911, October 1913 to June 1918, August 1919 to June 1955. July to December 1912, at site 700 ft downstream; records not equivalent due to diversion.

Gage--Water-stage recorder and masonry control. Dec. 9, 1910, to Dec. 31, 1911, staff gage at site 300 ft downstream at different datum. Oct. 8, 1913, to Mar. 20, 1922, at present site at datum 0.50 ft higher.

Average discharge--34 years (1920-24, 1925-55), 24.5 mgd (37.9 cfs).

Extremes--Maximum discharge during year, 1,940 mgd (3,000 cfs) Feb. 26 (gage height, 6.62 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 2.5 mgd (3.9 cfs) Nov. 25, 26, 27, 28, 1954.  
1910-18, 1919-55: Maximum discharge, 8,100 mgd (12,500 cfs) Apr. 27, 1950 (gage height, 10.36 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 0.45 mgd (0.70 cfs) July 14, 1920.

Remarks--Records good except those above 120 mgd, which are fair. Water used for irrigation in central Maui.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.8	1.50	2.7	39.5
1.9	2.9	3.0	75
2.0	5.0	3.5	159
2.2	10.8	4.0	290
2.4	19.0	4.5	470

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24.5	33.5	12.7	5.5	3.3	11.2	78	8.6	15.9	36	22	12.7
2	101	16.8	10.8	5.3	3.1	41	57	10.8	13.1	35.5	20.5	12.7
3	55	17.4	10.2	5.3	2.9	81	110	19.9	11.2	35	37.5	10.2
4	74	77	9.6	6.4	2.75	11.6	64	11.6	10.2	13.8	39	10.8
5	48	17.7	9.2	5.3	2.75	26.5	21	8.5	13.6	11.2	19.5	10.5
6	33	16.4	64	4.6	9.1	51	16.4	7.7	14.6	9.9	16.8	8.6
7	19.0	14.2	20.5	4.2	105	102	13.8	288	14.2	8.9	62	7.7
8	15.0	14.9	13.7	4.4	9.1	167	11.9	182	14.5	9.6	21.5	7.7
9	13.8	25.5	10.2	13.3	6.1	144	10.5	66	14.6	9.2	35	7.7
10	17.0	15.5	9.2	25.5	6.9	346	9.6	326	224	8.0	23	9.6
11	27.5	70	8.3	7.2	5.0	117	8.9	264	97	6.9	17.2	8.3
12	56	132	7.4	5.3	4.4	225	9.3	75	92	6.6	20	6.9
13	20.5	86	7.2	4.6	4.2	251	8.9	123	32	7.7	32.5	7.7
14	14.6	67	13.5	4.4	3.95	268	13.9	53	17.7	10.2	22.5	6.6
15	13.5	43	7.7	4.8	3.95	38.5	10.5	40	70	9.6	20	8.3
16	24	*69	7.4	4.6	3.75	171	7.7	23	342	8.3	44	5.8
17	72	40	82	3.95	3.3	33.5	6.9	21	24	112	17.7	5.8
18	68	29	55	4.4	3.1	19.0	6.6	73	16.8	94	30.5	5.3
19	22	59	27	4.2	2.9	15.5	6.1	107	13.8	97	75	19.4
20	25.5	25	11.9	7.2	2.9	24.5	5.5	44	14.7	17.2	25	10.2
21	14.2	50	10.2	9.7	2.75	218	183	21	11.9	14.6	19.6	8.9
22	30.5	38	8.9	4.6	2.75	89	18.9	16.8	*11.3	15.5	20	11.1
23	29	108	8.0	3.95	2.6	19.6	9.9	18.7	26	62	43	33.5
24	47	27	8.6	3.75	2.6	15.0	8.3	22	30.5	66	68	11.2
25	42	20	20.5	3.95	2.6	13.1	7.9	14.2	13.1	159	89	9.2
26	90	32	11.2	20	2.9	25	206	94	10.2	316	34.5	11.2
27	112	21.5	8.0	5.5	2.6	41	53	196	8.9	42	20.5	13.7
28	115	27	7.2	4.4	2.5	35.5	21	24	8.3	36	16.4	9.6
29	29.5	30	6.6	3.95	67	18.6	11.9	-	6.6	186	13.8	26.5
30	20.5	19.9	6.1	3.55	6.9	81	10.5	-----	7.7	52	12.3	12.7
31	18.6	14.6	-----	3.55	-----	47	9.9	-----	23.5	-----	12.3	-----
Total	1,290.2	1,256.9	492.8	197.35	283.65	2,747.1	1,015.8	2,158.6	1,226.1	1,495.7	950.6	330.1
Mean	41.6	40.5	16.4	6.37	9.46	88.6	32.8	77.1	39.6	49.9	30.7	11.0
cfs	64.4	62.7	25.4	9.86	14.6	137	50.7	119	61.3	77.2	47.5	17.0
Ac-ft	3,960	3,860	1,510	606	870	8,430	3,120	6,620	3,760	4,590	2,920	1,010

Calendar year 1954: Max	346	Min	2.05	Mean(mgd)	28.9	Mean(cfs)	44.7	Ac-ft	32,330
Fiscal year 1954-55: Max	346	Min	2.5	Mean(mgd)	36.8	Mean(cfs)	56.9	Ac-ft	41,260

Peak discharge (base, 1,250 mgd).--Dec. 10 (8:30 a.m.) 1,740 mgd (2,690 cfs), 6.41 ft; Jan. 21 (2:30 p.m.) 1,310 mgd (2,030 cfs), 5.87 ft; Feb. 7 (11 p.m.) 1,840 mgd (2,850 cfs), 6.47 ft; Feb. 26 (12 p.m.) 1,940 mgd (3,000 cfs), 6.62 ft; Mar. 16 (2 a.m.) 1,560 mgd (2,410 cfs), 6.20 ft; Apr. 26 (1 p.m.) 1,740 mgd (2,690 cfs), 6.40 ft.

\* Discharge measurement made on this day.

## Kailua Stream near Huelo

Location.--Lat 20°52'35", long 156°13'25", on left bank just upstream from Walloa ditch intake, 1.2 miles southwest of Kailua, and 2.5 miles south of Huelo.

Drainage area.--3.0 sq mi.

Records available.--December 1910 to December 1911, June 1913 to June 1918, July 1919 to June 1955. July 1912 to May 1913 at site 1 mile downstream; records not equivalent.

Gage.--Water-stage recorder and masonry control. Datum of gage is 1,252.99 ft above mean sea level, datum of 1929. Prior to Dec. 31, 1911, staff gage 400 ft downstream at different datum. June 17 to Sept. 30, 1913, staff gage at present site and datum.

Average discharge.--36 years (1919-55), 18.9 mgd (29.2 cfs).

Extremes.--Maximum discharge during year, 2,830 mgd (4,380 cfs) Dec. 10 (gage height, 8.21 ft), from rating curve extended above 650 mgd; minimum, 0.93 mgd (1.44 cfs) Nov. 28.

1910-11, 1913-18, 1919-55: Maximum discharge, 4,920 mgd (7,610 cfs) Dec. 17, 1946 (gage height, 9.27 ft), from rating curve extended above 650 mgd; minimum, 0.07 mgd (0.11 cfs) June 27, 1921.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.6	0.40	3.0	48
1.7	1.00	3.5	97
1.8	2.05	4.0	163
1.9	3.4	4.5	253
2.1	7.4	5.0	370
2.4	16.4	5.5	525
2.7	29	6.0	750

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.6	15.7	7.2	3.0	1.61	5.7	68	5.0	10.0	15.4	14.7	7.0
2	121	10.3	*6.3	2.85	1.50	42	57	5.0	7.9	13.8	12.2	7.0
3	72	9.5	5.4	2.85	1.50	56	85	7.8	7.0	12.7	45	5.6
4	59	48	5.0	3.0	1.40	9.9	51	5.6	6.1	7.0	45	5.6
5	47	12.5	4.8	2.55	1.30	10.8	16.1	4.3	8.0	5.6	15.9	6.3
6	25.5	9.7	20.5	2.45	2.45	30.5	11.2	3.95	13.6	4.8	11.5	4.8
7	13.3	8.4	11.1	2.3	59	123	9.0	*101	14.9	4.1	39.5	4.3
8	9.7	8.4	6.7	2.3	7.2	186	7.7	125	7.9	4.3	14.8	4.1
9	8.4	a13	5.2	4.9	3.4	266	6.5	42	7.9	4.1	22	3.95
10	8.7	a9.0	4.7	19.1	3.25	630	5.9	325	110	3.6	16.5	4.3
11	16.1	a26	4.1	5.3	2.85	232	5.0	330	121	3.25	12.6	3.95
12	32.5	a80	3.75	3.1	2.3	295	4.7	69	90	3.1	15.8	3.4
13	14.6	a55	3.4	2.55	1.94	212	4.7	132	27	3.4	25	3.6
14	9.2	a40	5.3	2.45	1.94	270	6.1	47	13.3	4.8	16.7	3.25
15	7.7	a27	3.75	2.45	1.83	43	4.8	36.5	37	5.0	12.0	3.4
16	13.9	44	3.25	2.55	1.72	161	3.95	18.9	222	4.5	20.5	3.0
17	69	26	41	2.2	1.50	45	3.75	14.7	28.5	56	10.6	2.85
18	65	16.8	55	2.2	1.40	17.4	3.25	62	12.7	83	12.4	2.7
19	17.4	45	24.5	2.05	1.30	11.5	3.1	141	9.5	113	32.5	10.1
20	21	17.2	7.9	2.85	1.30	11.1	3.0	69	8.4	17.8	16.1	*5.8
21	10.3	24.5	5.9	5.8	1.20	214	87	18.9	8.4	12.4	13.0	3.95
22	13.9	19.3	4.8	2.7	1.20	89	21	12.1	7.0	10.9	11.2	4.1
23	23.5	57	4.1	2.2	1.10	18.7	6.5	12.1	22.5	42	19.5	13.0
24	42	17.4	4.1	2.05	1.10	11.5	4.8	14.8	22.5	45	39	5.2
25	37	11.8	12.9	1.94	1.00	9.2	4.3	9.7	9.8	75	38	3.95
26	83	15.7	6.5	7.3	1.20	12.5	149	13.9	6.7	110	28	4.3
27	56	13.1	*4.5	3.1	1.00	24.5	66	130	5.6	29	15.0	4.8
28	88	12.9	3.95	2.45	93	28	23	16.0	5.0	16.8	11.0	4.1
29	33.5	21	3.4	1.94	18.4	16.3	9.2	-	4.8	113	8.7	6.4
30	18.9	11.5	3.1	1.83	3.6	74	7.0	-	4.3	42	7.4	6.1
31	12.7	8.4	-----	1.72	-----	58	5.9	-----	3.3	-----	7.0	-----
Total	1,067.4	734.1	282.10	106.03	131.42	3,213.6	721.45	1,772.25	866.6	865.35	609.1	152.90
Mean:												
mgd	34.4	23.7	9.40	3.42	4.38	104	23.3	63.3	28.0	28.8	19.6	5.10
cfs	53.2	36.7	14.5	5.29	6.78	161	36.1	97.9	43.3	44.6	30.3	7.89
Ac-ft	3,280	2,250	866	325	403	9,860	2,210	5,440	2,680	2,660	1,870	469
Calendar year 1954: Max	630				Min 0.86	Mean(mgd)	23.3	Mean(cfs)	36.1	Ac-ft	26,140	
Fiscal year 1954-55: Max	630				Min 0.93	Mean(mgd)	28.8	Mean(cfs)	44.6	Ac-ft	32,290	

Peak discharge (base, 1,300 mgd).--Dec. 10 (8:30 a.m.) 2,830 mgd (4,380 cfs), 8.21 ft.

\* Discharge measurement made on this day.

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

## Hoolawanui Stream near Huelo

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

Records available.--December 1910 to June 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,219.42 ft above mean sea level (East Maui Irrigation Co. benchmark). Prior to June 20, 1914, staff gage at site 180 ft downstream at different datum. June 20, 1914, to Oct. 24, 1933, water-stage recorder at site 80 ft downstream at datum 4.43 ft lower.

Average discharge.--43 years (1911-15, 1916-55), 7.79 mgd (12.1 cfs).

Extremes.--Maximum discharge during year, 440 mgd (681 cfs) Feb. 27 (gage height, 3.02 ft), from rating curve extended above 100 mgd by logarithmic plotting; minimum, 0.72 mgd (1.11 cfs) Nov. 27, 28.

1910-55: Maximum discharge, 3,240 mgd (5,010 cfs) Apr. 27, 1950 (gage height, 5.94 ft), from rating curve extended above 100 mgd by logarithmic plotting; minimum, 0.15 mgd (0.23 cfs) Oct. 25, 1917.

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.3	0.59	1.0	19.0
.4	1.39	1.1	24.5
.5	2.7	1.2	31
.6	4.5	1.4	47
.7	7.5	1.6	67
.8	10.7	1.9	112
.9	14.2		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.7	10.3	5.2	1.97	0.94	1.60	18.5	4.5	8.5	8.4	11.0	*5.0
2	21.5	6.8	4.8	1.84	.94	6.0	18.5	4.8	7.2	8.0	10.1	4.8
3	17.2	6.8	4.3	1.84	.94	11.1	28.5	5.8	6.1	7.8	11.9	4.1
4	18.9	14.6	4.3	1.97	.86	2.9	26	4.3	*5.2	4.5	12.2	4.5
5	15.7	6.8	3.9	1.72	.86	4.4	12.1	3.5	6.8	4.1	9.1	3.9
6	13.2	6.1	9.5	1.60	1.95	9.0	9.7	3.5	5.5	3.7	8.1	3.35
7	9.1	5.5	5.4	1.49	13.4	*17.4	8.1	62	5.2	3.35	15.2	3.0
8	7.2	5.2	4.5	1.60	2.15	27	6.8	49	5.0	3.5	8.5	3.0
9	6.4	6.4	*3.7	2.7	1.49	35.5	5.8	16.8	4.8	3.2	10.0	3.0
10	6.8	5.2	3.35	4.8	1.60	94	5.2	98	37.5	2.85	8.5	3.35
11	7.7	13.0	3.2	1.84	1.19	54	4.8	104	18.7	2.7	6.8	2.7
12	11.4	24.5	3.0	1.60	1.10	70	4.3	30	22.5	2.55	7.2	2.55
13	6.8	17.8	2.7	1.39	1.10	79	4.3	45	12.1	3.0	9.2	2.55
14	5.5	16.9	3.35	1.39	1.10	97	4.8	22	9.1	3.0	8.1	2.4
15	5.2	13.2	2.55	1.49	1.10	24.5	4.1	17.6	22	2.85	7.1	2.7
16	6.9	15.6	2.55	1.39	1.02	63	3.35	13.2	86	2.55	10.7	2.1
17	17.5	12.4	12.2	1.29	.94	21.5	3.2	11.4	15.6	17.0	5.8	1.97
18	16.4	9.7	9.9	1.29	.94	13.5	3.0	17.8	10.7	16.9	7.2	1.97
19	9.9	13.6	5.8	1.19	.94	10.1	2.85	28.5	8.5	22	19.4	4.4
20	9.7	9.8	3.5	1.71	.86	9.7	2.7	18.2	7.2	7.2	8.4	2.7
21	6.8	12.8	3.2	1.60	.86	47	46	12.4	6.1	5.8	6.4	2.4
22	8.5	10.2	2.85	1.19	.79	34	7.4	9.7	6.8	5.5	6.6	2.85
23	8.5	22	2.7	1.10	.79	13.0	4.3	9.6	8.8	14.8	10.0	7.2
24	11.3	9.7	2.85	1.10	.79	9.7	3.9	9.5	9.7	16.5	12.6	3.0
25	12.3	8.1	4.4	1.10	.79	8.1	3.5	7.5	5.8	32	18.1	2.55
26	*23.5	9.3	2.85	2.8	.86	8.1	38	24	4.8	64	10.9	2.7
27	22.5	7.8	2.55	1.19	.79	10.8	15.4	69	4.3	16.6	8.1	3.3
28	23	9.2	2.4	1.10	.79	10.5	10.6	10.7	4.1	13.6	6.8	2.4
29	12.6	8.9	2.25	1.10	9.8	8.0	7.2	-	3.9	38.5	5.8	5.0
30	9.7	6.8	2.1	1.02	1.49	16.8	5.8	-----	3.7	16.4	5.2	3.0
31	8.5	5.5	-----	.94	-----	15.3	5.2	-----	5.8	-----	5.2	-----
Total	366.9	330.3	125.85	50.35	55.17	832.50	323.90	712.3	368.0	352.85	290.2	98.24
Mean:	11.8	10.7	4.20	1.62	1.77	26.9	10.4	25.4	11.9	11.8	9.36	3.27
cfs	18.3	16.6	6.50	2.51	2.74	41.6	16.1	39.3	18.4	18.3	14.5	5.06
Ac-ft	1,130	1,010	386	155	163	2,550	994	2,190	1,130	1,080	891	301

Calendar year 1954: Max 97 Min 0.49 Mean(mgd) 7.94 Mean(cfs) 12.3 Ac-ft 8,890  
Fiscal year 1954-55: Max 104 Min 0.79 Mean(mgd) 10.7 Mean(cfs) 16.6 Ac-ft 11,980

Peak discharge (base, 300 mgd).--Dec. 10 (9 a.m.) 360 mgd (557 cfs), 2.79 ft; Dec. 14 (10:30 a.m.) 308 mgd (477 cfs), 2.87 ft; Jan. 21 (2:30 p.m.) 308 mgd (477 cfs), 2.67 ft; Feb. 8 (2 a.m.) 380 mgd (588 cfs), 2.87 ft; Feb. 11 (2 a.m.) 380 mgd (588 cfs), 2.83 ft; Feb. 27 (1:30 a.m.) 440 mgd (681 cfs), 3.02 ft; Apr. 26 (1 p.m.) 360 mgd (557 cfs), 2.78 ft.

\* Discharge measurement made on this day.

## Hoolawalilili Stream near Huelo

Location.--Lat 20°53'15", long 156°14'35", on right bank just upstream from Wailoa ditch intake, 2 miles west of Kailua and 2 miles southwest of Huelo.

Records available.--April 1911 to June 1955.

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

Average discharge.--43 years (1911-15, 1916-55), 4.71 mgd (7.29 cfs).

Extremes.--Maximum discharge during year, 180 mgd (279 cfs) Feb. 26 (gage height, 3.86 ft), from rating curve extended above 90 mgd by broad-crested weir formula; minimum, 0.98 mgd (1.52 cfs) Nov. 28.  
1911-55: Maximum discharge, 787 mgd (1,220 cfs) Feb. 7, 1939 (gage height, 5.42 ft), from rating curve extended above 220 mgd by broad-crested weir formula; minimum, 0.2 mgd (0.3 cfs) June 8, 1926.

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

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

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.3	0.80	1.8	8.7
1.4	1.50	2.1	19.4
1.5	2.7	2.4	34.5
1.6	4.2	2.7	54

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.9	6.3	3.4	1.71	1.26	1.60	7.4	3.0	4.6	4.3	5.8	3.0
2	6.8	4.2	3.1	1.71	1.19	2.85	6.0	3.1	3.9	6.4	5.2	3.1
3	6.3	4.4	3.0	1.71	1.19	5.7	9.1	4.0	3.55	6.2	5.5	2.7
4	9.6	7.7	3.0	1.82	1.19	2.3	11.8	3.1	*3.4	3.7	4.8	3.0
5	7.1	4.4	2.7	1.71	1.12	3.15	5.6	2.7	3.7	3.1	4.2	2.55
6	6.4	4.2	5.3	1.60	1.45	6.5	4.6	2.55	3.4	3.0	4.0	2.4
7	4.6	3.7	3.7	1.50	5.3	9.7	3.9	36.5	3.0	2.7	7.3	2.15
8	3.9	3.55	3.25	1.60	1.71	13.8	3.55	29	3.1	2.7	4.6	2.15
9	3.7	4.6	*2.7	2.0	1.50	11.8	3.1	9.6	3.0	2.4	5.0	2.15
10	3.9	3.55	2.4	2.8	1.71	23	2.85	35	16.5	2.5	4.4	2.3
11	4.0	4.2	2.3	1.71	1.42	9.3	2.55	26	8.8	2.3	3.7	2.05
12	6.9	10.2	2.15	1.60	1.42	14.8	2.4	11.6	6.7	2.15	3.55	1.93
13	3.9	9.7	2.05	1.50	1.34	16.5	2.4	15.4	5.2	2.3	3.95	1.93
14	3.4	11.2	2.4	1.50	1.34	28.5	2.7	8.4	4.2	2.15	3.55	1.93
15	3.35	7.5	2.05	1.50	1.34	9.6	2.3	7.2	5.8	2.05	3.4	2.3
16	4.0	8.6	2.05	1.42	1.34	25	2.05	6.0	38.5	1.93	5.8	1.82
17	6.8	6.6	4.6	1.34	1.26	9.6	2.05	5.6	7.4	5.8	3.55	1.71
18	7.6	5.2	4.9	1.42	1.26	6.2	*1.93	7.1	5.4	6.1	3.9	1.71
19	4.6	5.6	3.8	1.34	1.26	5.0	1.82	11.6	4.6	6.5	7.7	2.65
20	5.1	5.0	2.55	1.60	1.19	5.1	1.82	7.5	3.9	3.1	4.6	2.05
21	3.7	8.1	2.4	1.50	1.19	13.6	23.5	5.2	3.55	2.85	3.7	1.82
22	4.8	6.2	2.15	1.34	1.12	11.3	4.6	4.6	3.8	3.0	3.7	2.15
23	4.2	12.0	2.05	1.34	1.12	5.6	3.1	4.6	4.6	7.0	5.6	4.2
24	4.0	5.8	2.15	1.34	1.12	4.6	2.85	4.9	3.9	6.5	8.4	2.55
25	4.7	4.8	2.55	1.34	1.12	4.0	2.7	4.1	3.1	17.6	9.7	2.15
26	*9.6	5.4	2.05	2.1	1.19	4.4	19.3	14.3	2.85	41	6.7	2.05
27	11.5	4.6	2.05	1.34	1.05	5.9	7.2	24	2.7	10.1	4.8	2.4
28	16.5	5.7	1.93	1.34	.88	5.3	5.0	5.9	2.4	7.8	4.2	2.05
29	7.2	5.2	1.82	1.34	5.1	4.4	3.9	-	2.4	19.0	3.71	3.6
30	5.4	4.6	1.82	1.34	1.60	7.1	3.4	-----	2.3	8.8	3.4	2.55
31	4.8	3.7	-----	1.26	-----	6.8	3.25	-----	3.1	-----	3.25	-----
Total	182.25	186.50	82.37	48.67	46.38	283.00	158.72	302.55	173.35	194.93	151.66	71.10
Mean:												
mgd	5.88	6.02	2.75	1.57	1.55	9.13	5.12	10.8	5.59	6.50	4.89	2.37
cfs	9.10	9.31	4.25	2.43	2.40	14.1	7.92	16.7	8.65	10.1	7.57	3.67
Ac-ft	559	572	253	149	142	868	487	928	532	598	465	218

Calendar year 1954: Max 29.5 Min 0.68 Mean(mgd) 4.11 Mean(cfs) 6.36 Ac-ft 4,600  
Fiscal year 1954-55: Max 41 Min 0.98 Mean(mgd) 5.15 Mean(cfs) 7.98 Ac-ft 5,770

Peak discharge (base, 150 mgd).--Feb. 7 (6 p.m.) 165 mgd (255 cfs), 3.75 ft; Feb. 26 (12 p.m.) 180 mgd (279 cfs), 3.86 ft; Apr. 26 (12:30 p.m.) 158 mgd (244 cfs), 3.68 ft.

\* Discharge measurement made on this day.

## Honopou Stream near Huelo

Location.--Lat 20°53'20", long 156°15'05", on left bank just upstream from Wailoa ditch intake, 2.2 miles southwest of Huelo and 2.2 miles west of Kailua.

Drainage area.--1.0 sq mi.

Records available.--December 1910 to June 1955.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,250 ft (from topographic map). Prior to June 19, 1914, staff gage at same site and datum.

Average discharge.--42 years (1911-14, 1916-55), 3.06 mgd (4.73 cfs).

Extremes.--Maximum discharge during year, 155 mgd (240 cfs) Feb. 7 (gage height, 3.02 ft), from rating curve extended above 70 mgd as explained below; minimum, 0.30 mgd (0.46 cfs) Nov. 5, 6.

1910-55: 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. Water used for irrigation in central Maui.

Revisions (fiscal years).--WSP 1219: 1913-50(M). WSP 1249: 1948-50(P).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.4	0.03	0.9	5.0
.5	.48	1.1	8.6
.6	1.26	1.4	15.7
.7	2.3	1.7	25
.8	3.55	2.0	37

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.05	4.6	2.2	0.76	0.36	0.60	6.0	2.3	4.4	3.15	5.7	2.2
2	4.4	3.2	2.05	.68	.36	1.89	5.8	*2.3	4.0	3.9	4.9	2.05
3	3.95	3.05	1.96	.76	.36	3.3	8.3	2.9	3.4	3.8	5.0	1.86
4	6.5	5.2	1.86	.84	.36	1.00	11.3	2.2	3.2	2.05	4.3	1.96
5	4.7	2.8	1.76	.76	*.30	1.48	6.2	1.96	3.4	1.96	3.4	1.66
6	4.4	2.7	3.75	.60	.59	3.9	5.0	1.66	2.8	1.86	3.3	1.46
7	3.4	2.4	2.05	.60	3.65	5.6	4.5	22.5	2.4	1.76	5.6	1.46
8	3.05	2.2	1.96	.60	.68	9.3	3.7	18.2	2.4	1.76	3.3	1.46
9	2.8	2.8	1.66	1.09	.54	7.8	3.2	7.1	2.3	1.66	3.75	1.46
10	2.8	2.05	1.56	1.60	.60	19.4	2.7	31	10.9	1.56	3.2	1.46
11	2.8	*2.65	1.46	.60	.48	9.0	2.55	26	6.4	1.46	2.7	1.26
12	4.2	7.1	1.26	.60	.48	12.8	2.2	12.4	5.2	1.36	2.7	1.16
13	2.4	7.1	1.16	.54	.48	15.7	2.05	15.4	4.3	1.46	3.05	1.08
14	2.05	7.7	1.56	.54	.48	27.5	2.3	9.2	3.55	1.46	2.4	1.08
15	1.96	5.7	1.16	.60	.54	10.7	1.96	7.8	4.7	1.36	2.35	1.26
16	2.4	6.3	1.06	.54	.42	23	1.66	6.5	31.5	1.16	4.0	.92
17	4.7	4.9	2.6	.48	.42	10.7	1.56	5.7	7.5	4.5	2.3	.92
18	4.7	4.4	2.95	.48	.42	7.1	1.46	6.4	5.5	4.3	2.7	.84
19	2.9	4.4	1.86	.48	.48	5.5	1.36	9.3	4.6	5.1	6.6	1.64
20	3.35	4.1	1.36	.60	.48	5.2	1.26	6.7	4.0	2.05	3.3	1.00
21	2.4	6.0	1.26	.60	.48	11.8	15.8	5.3	3.4	1.96	2.8	.92
22	3.0	4.2	1.08	.42	.42	10.4	3.15	4.7	3.4	*2.05	2.7	1.16
23	2.55	8.4	1.08	.42	.48	5.8	2.05	4.6	4.0	5.9	4.0	2.85
24	2.45	4.3	1.08	.42	.48	4.9	1.96	4.8	3.2	4.5	5.5	1.16
25	2.85	3.85	1.36	.42	.48	4.3	1.76	3.7	2.7	13.0	6.9	1.00
26	6.5	4.1	1.00	.92	.54	4.7	12.5	7.5	2.3	31.5	4.7	1.00
27	7.0	3.3	.92	.42	.48	5.3	5.1	17.8	2.05	9.0	3.85	1.16
28	9.4	4.0	.92	.42	.48	4.7	3.85	5.5	1.96	6.9	3.3	.92
29	4.8	3.55	.84	.36	4.1	3.85	3.2	-	1.96	15.7	2.9	2.1
30	4.1	2.9	.84	.38	.60	6.1	2.7	-----	1.76	7.5	2.7	1.08
31	3.7	2.55	-----	.36	-----	5.2	2.55	-----	2.2	-----	2.4	-----
Total	118.36	132.50	47.44	18.87	21.02	248.52	129.48	251.42	145.38	145.68	116.30	41.54
Mean												
mgd	3.82	4.27	1.58	0.609	0.701	8.02	4.18	8.98	4.69	4.86	3.75	1.38
cfs	5.91	6.61	2.44	0.942	1.08	12.4	6.47	13.9	7.25	7.52	5.80	2.14
Ac-ft	363	407	146	58	65	763	397	772	446	447	357	127

Calendar year 1954: Max 27.5 Min 0.30 Mean(mgd) 2.87 Mean(cfs) 4.44 Ac-ft 3,210

Fiscal year 1954-55: Max 31.5 Min 0.30 Mean(mgd) 3.88 Mean(cfs) 6.00 Ac-ft 4,350

Peak discharge (base, 100 mgd).--Feb. 7 (5:30 p.m.) 155 mgd (240 cfs), 3.02 ft; Feb. 27 (1:30 a.m.) 110 mgd (170 cfs), 2.78 ft.

\* Discharge measurement made on this day.



## Wailoa ditch at Honopou, near Huelo

Location.--Lat 20°53'20", long 156°15'05", on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mile west of Lupi, 2.2 miles southwest of Huelo, and 2.2 miles west of Kailua.

Records available.--November 1922 to June 1955.

Gage.--Water-stage recorder.

Average discharge.--32 years (1923-55), 113 mgd (175 cfs).

Extremes.--1922-55: Maximum daily discharge, 195 mgd (302 cfs) for several days in 1954, 1955; no flow Jan. 24-27, 1923.

Remarks.--Records excellent. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from Alo Stream west to Halehaku Stream at altitude of about 1,200 ft. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	194	195	140	72	41	129	76	101	101	194	195	136
2	195	190	116	69	41	*183	78	120	93	194	195	140
3	195	185	116	72	41	194	76	124	98	194	195	112
4	195	195	108	79	38	135	104	120	82	154	195	112
5	195	190	101	69	*37	171	106	116	118	132	195	116
6	195	180	195	66	55	194	108	101	148	112	190	93
7	192	168	190	59	194	195	116	116	132	101	195	*84
8	160	171	164	59	100	195	112	116	128	111	195	79
9	152	194	128	137	63	195	112	176	132	108	195	79
10	164	185	112	184	80	162	112	183	173	90	195	92
11	195	192	97	95	56	90	104	104	169	79	190	82
12	195	195	90	69	50	82	97	79	132	76	194	72
13	194	195	82	63	44	82	101	69	132	82	195	79
14	180	195	133	59	44	86	120	72	167	108	194	69
15	155	195	90	66	44	79	112	76	177	116	185	83
16	194	195	90	63	41	66	93	82	195	102	195	66
17	195	195	183	53	38	66	86	101	195	183	185	66
18	195	195	194	56	38	72	90	104	194	195	190	59
19	195	195	192	53	36.5	76	76	93	176	195	195	137
20	195	195	166	72	35	76	72	86	167	194	195	109
21	164	195	156	110	33.5	69	82	93	148	190	190	86
22	181	195	146	63	33.5	69	106	97	133	*190	192	98
23	190	195	111	53	32	63	116	101	195	195	195	187
24	190	195	116	53	30.5	69	80	108	180	195	195	112
25	195	194	185	52	30.5	72	59	132	160	195	195	91
26	195	195	150	138	34	69	62	108	120	195	195	112
27	195	195	108	68	30.5	82	59	108	108	195	194	125
28	195	194	93	53	31	125	86	104	97	195	176	94
29	*195	195	86	47	171	97	72	-	101	195	152	165
30	195	192	79	47	83	90	76	-----	90	195	136	126
31	194	160	-----	44	-----	76	76	-----	186	-----	136	-----
Total	5,819	5,905	3,917	2,243	1,626.0	3,409	2,805	2,990	4,427	4,660	5,819	3,061
Mean	188	190	131	72.4	54.2	110	90.5	107	143	155	186	102
cfs	291	294	203	112	83.9	170	140	166	221	240	291	158
Ac-ft	17,860	18,120	12,020	6,880	4,990	10,460	8,610	9,180	13,590	14,300	17,860	9,390
Calendar year 1954: Max	195			Min	26	Mean(mgd)	121	Mean(cfs)	187	Ac-ft	135,300	
Fiscal year 1954-55: Max	195			Min	30.5	Mean(mgd)	128	Mean(cfs)	198	Ac-ft	143,300	

\* Discharge measurement made on this day.

## New Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'30", long 156°15'10", on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing, 2.1 miles southwest of Huelo, and 2.3 miles west of Kailua.

Records available.--January 1918 to June 1955.

Gage.--Water-stage recorder. Prior to May 15, 1921, at site 300 ft upstream at different datum.

Average discharge.--37 years, 26.6 mgd (41.2 cfs).

Extremes.--1918-55: Maximum daily discharge, 116 mgd (179 cfs) Feb. 13, 14, 27, 1932; no flow at times.

Remarks.--Records good. Ditch diverts water from streams between Waiakamoi and Halehaku Streams above Center and Lowrie ditches. Flow regulated by gates and spillways. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	57	71	7.8	0.62	0.24	12.0	0.47	4.9	10.2	11.4	16.9	0.82
2	87	20	12.9	.55	.24	*65	.43	*6.3	5.4	16.3	10.9	.82
3	98	7.7	1.99	.55	.24	88	.43	6.7	5.2	14.6	23.5	.77
4	98	90	1.90	.62	.24	15.9	.43	6.3	1.69	1.87	21	.82
5	98	36.5	1.69	.51	.24	42	.43	4.5	14.7	.98	9.1	.71
6	90	14.9	64	.43	.28	84	.39	1.99	35.5	.82	2.6	.66
7	32	5.5	57	.39	.88	94	.39	4.2	27.5	.77	31.5	.55
8	11.3	10.2	8.6	.36	8.6	96	.39	2.8	44	.71	9.7	.51
9	2.7	67	1.76	1.82	.55	78	.39	.13	45	.66	13.8	.51
10	18.5	32.5	1.55	.59	.62	21.5	.39	.09	*50	.66	10.1	.51
11	84	*38	1.20	1.26	.39	1.15	.39	.03	66	.66	3.15	.47
12	76	98	1.09	.58	.28	1.15	.39	.03	92	.62	5.6	.47
13	76	96	1.04	.47	.26	.45	.39	.03	76	.62	12.5	.43
14	22	98	8.0	.45	.26	.08	.39	14.9	29	.58	6.5	.39
15	2.95	96	1.09	.39	.26	.06	.39	25.5	10.3	.62	2.45	.66
16	61	96	1.04	.39	.24	21.5	.39	25.5	86	.58	19.4	.39
17	76	96	56	.36	.24	.43	.39	3.15	29.5	23	1.88	.36
18	98	90	88	.36	.24	.43	.39	.28	9.3	31.5	5.3	.32
19	66	96	73	.36	.21	18.6	.39	.28	4.0	33.5	25.5	3.05
20	70	82	10.6	.39	.21	35.5	.39	.19	2.95	5.8	10.2	.47
21	15.0	98	6.0	2.25	.21	24.5	.32	.15	1.96	1.56	2.85	.36
22	49	96	4.9	.32	.19	.66	.26	.24	1.44	1.20	1.96	.36
23	60	96	1.27	.26	.19	.66	.26	.26	12.9	27	16.6	6.8
24	46	84	1.20	.28	.17	.66	.26	.21	8.3	27	30.5	.66
25	86	29.5	38.5	.26	.19	.62	8.4	.24	1.88	65	34.5	.43
26	96	68	2.8	.25	.21	.55	13.2	.29	.98	94	22	.36
27	86	58	1.09	.51	.21	.55	13.2	.32	.93	42	8.3	.39
28	101	57	.88	.28	.19	.55	13.2	.21	.82	24	1.27	.36
29	*94	83	.77	.28	.57	.51	13.2	-	.82	67	1.09	4.3
30	52	45	.66	.26	2.25	.51	13.2	-----	.71	38	1.04	.63
31	17.9	11.4	-----	.26	-----	.47	13.2	-----	2.95	-----	93	-----
Total	1,927.35	1,966.2	458.32	99.80	162.65	703.99	96.74	109.72	677.93	533.01	362.62	28.34
Mean	62.2	63.4	15.3	3.22	5.42	22.7	3.12	3.92	21.9	17.8	11.7	0.945
cfs	96.2	98.1	23.7	4.98	8.39	35.1	4.83	6.07	33.9	27.5	18.1	1.46
Ac-ft	5,910	6,030	1,410	306	499	2,160	297	337	2,080	1,640	1,110	87
Calendar year 1954: Max	103			Min	0.06	Mean(mgd)	27.2	Mean(cfs)	42.1	Ac-ft	30,500	
Fiscal year 1954-55: Max	101			Min	0.03	Mean(mgd)	19.5	Mean(cfs)	30.2	Ac-ft	21,870	

\* Discharge measurement made on this day.

## Old Hamakua ditch at Honopou, near Huelo

Location.--Lat 20°53'30", long 156°15'05", on right bank 400 ft downstream from Honopou Stream and Wailoa ditch trail crossing in Honopou Gulch, 2.0 miles southwest of Huelo, 2.3 miles west of Kailua, and 5.0 miles east of Haiku.

Records available.--January 1918 to June 1922, November 1936 to June 1955.

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

Average discharge.--22 years (1918-22, 1937-55), 2.38 mgd (3.68 cfs).

Extremes.--1918-22, 1936-55: Maximum daily discharge, 39.5 mgd (61.1 cfs) Apr. 7, 1938; no flow at times.

Remarks.--Records good. Wailoa and New Hamakua ditches divert most of flow above this station. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.21	1.94	0.08	0.03	0.03	0.06	0.08	0.11	0.25	0.12	0.15	0.05
2	11.8	.17	.07	.03	.03	.24	.07	*26.5	.16	.30	.13	.08
3	14.1	.13	.06	.03	.02	*4.6	.08	17.4	.15	.25	.13	.05
4	15.6	9.3	.05	.04	.02	.16	.07	.08	.12	.15	.12	.06
5	15.0	.25	.05	.04	.02	.14	.06	.10	.12	.10	.12	.06
6	9.4	.15	3.45	.04	.04	5.1	.06	.12	.10	.08	.10	.05
7	.17	.12	.32	.04	7.1	8.6	.06	.14	.10	.07	.21	.04
8	.12	.10	.10	.04	.13	.46	.07	.09	.12	.07	.15	.04
9	.08	.31	.07	.04	.06	.41	.07	.06	.15	.06	.12	.04
10	.08	.16	.05	.21	.07	.40	.07	.08	*14.8	.05	.12	.04
11	.25	1.92	.04	.07	.05	.17	.07	.07	3.4	.05	.10	.04
12	6.1	18.3	.04	.04	.04	.17	.07	.06	4.8	.05	.08	.04
13	.30	14.2	.03	.04	.03	.19	.07	.06	.29	.05	.07	.04
14	.15	18.4	.04	.03	.03	.20	.08	.05	.16	.05	.07	.03
15	.10	11.3	.03	.03	.03	.08	2.65	.06	2.75	.05	.07	.08
16	.21	19.0	.03	.02	.02	.10	.92	.06	30.5	.05	.15	.05
17	10.8	10.0	3.25	.02	.02	.07	.78	.07	.31	3.1	.10	.04
18	14.3	.39	6.8	.02	.03	.06	.74	.07	.19	2.5	.13	.04
19	.29	10.4	2.1	.03	.03	.05	.62	.08	.16	4.6	3.35	.08
20	4.1	.79	.16	.04	.02	.05	.52	.06	.15	.12	.10	.05
21	.15	11.8	.08	.03	.02	.08	21.5	.05	.12	.08	.08	.05
22	1.34	6.0	.06	.02	.02	.07	18.1	.05	.12	.07	.07	.05
23	1.10	16.0	.05	.02	.02	.05	1.39	.06	.15	1.60	.38	.10
24	3.15	2.15	.04	.02	.02	.05	.08	.06	.13	.73	.74	.08
25	3.95	.15	.07	.02	.02	.05	.07	.06	.10	10.4	3.25	.06
26	11.7	.91	.06	.06	.02	.06	.08	.09	.08	29	.27	.06
27	9.0	.26	.05	.06	.03	.07	.05	.06	.07	.38	.13	.06
28	22.5	.48	.04	.04	.03	.06	.05	.04	.06	.35	.08	.05
29	5.0	4.1	.04	.04	3.2	.07	.05	---	.07	11.0	.07	.08
30	.25	.20	.04	.12	.10	.10	.08	---	.06	.77	.06	.07
31	.17	.10	-----	.03	-----	.08	.10	-----	.07	-----	.06	-----
Total	161.47	159.48	17.35	1.26	11.32	22.05	48.76	45.79	59.81	66.25	10.76	1.64
Mean:												
mgd	5.21	5.14	0.578	0.041	0.377	0.711	1.57	1.64	1.93	2.21	0.347	0.055
cfs	8.06	7.95	0.894	0.063	0.583	1.10	2.43	2.54	2.99	3.42	0.537	0.085
Ac-ft	496	490	53	3.9	35	68	150	141	184	203	33	5.0
Calendar year 1954: Max	35.5			Min	0.02	Mean(mgd)	2.04	Mean(cfs)	3.16	Ac-ft	2,280	
Fiscal year 1954-55: Max	30.5			Min	0.02	Mean(mgd)	1.66	Mean(cfs)	2.57	Ac-ft	1,860	

\* Discharge measurement made on this day.

## Lowrie ditch at Honopou Gulch, near Huelo

Location.--Lat 20°54'55", long 156°15'05", on left bank 0.2 mile downstream from siphon across Honopou Stream, 1.6 miles west of Huelo, and 2.5 miles northwest of Kailua.

Records available.--January 1910 to March 1927, February 1930 to June 1955. Published as "at Opāna Weir" 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.--41 years (1910-26, 1930-55), 28.5 mgd (44.1 cfs).

Extremes.--1910-27, 1930-55: Maximum daily discharge, 75 mgd (116 cfs) Oct. 31, 1921; no flow at times.

Remarks.--Records good. Lowrie ditch diverts water from all streams between Kailua and Halehaku Streams. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	34.5	57	24	8.2	3.9	15.3	1.21	30	34	47	52	16.1
2	50	42	21.5	7.8	3.7	42	1.13	40	42	47	40	12.5
3	55	35	20	8.0	3.55	51	1.30	42	32.5	52	55	11.1
4	55	57	16.6	9.1	3.4	21	1.21	27.5	26	19.2	55	12.9
5	46	36	13.2	7.8	*3.2	21.5	1.05	14.2	30	12.0	47	14.0
6	4.3	30	32.5	7.3	3.6	50	1.05	12.8	32	15.9	25	15.0
7	18.1	26	44	6.5	45	57	22	29	39	14.1	52	14.3
8	19.0	24	22.5	6.3	18.9	26.5	28.5	27	25	9.1	50	11.8
9	21.5	50	19.0	8.4	16.8	6.9	17.8	3.1	30.5	8.4	47	11.3
10	27.5	38	17.8	31.5	19.0	4.2	19.0	3.4	36	9.0	52	10.6
11	50	32.5	13.0	8.9	7.8	1.39	26	2.45	52	16.6	34	9.9
12	50	57	11.3	14.7	4.3	1.49	25	2.35	52	15.2	47	9.5
13	50	52	17.8	13.7	3.9	1.21	26	1.96	52	8.7	55	9.1
14	26	57	16.6	8.6	3.9	1.49	21.5	1.83	42	7.6	48	8.8
15	22.5	*57	15.2	6.7	4.0	1.13	14.2	1.71	25.5	7.4	20	11.6
16	45	57	10.2	5.9	3.9	3.1	10.8	32	60	7.1	53	8.8
17	45	57	35.5	5.4	3.55	1.49	11.7	52	55	40	32.5	8.0
18	57	55	55	5.8	3.25	1.21	12.3	22	52	52	47	7.4
19	45	57	52	5.4	3.1	1.13	9.7	3.25	42	52	55	29.5
20	50	38.5	23.5	6.1	3.1	.97	9.3	2.7	32.5	47	50	10.6
21	26	55	16.6	7.3	2.95	1.30	18.2	2.45	25	32.5	33.5	8.8
22	43	55	16.6	5.2	2.85	.97	7.3	2.35	23	30	44	9.1
23	45	57	15.2	5.0	2.7	1.14	6.5	2.35	*61	44	53	42
24	39	52	16.1	5.0	2.6	.85	6.3	2.15	32.5	55	57	14.7
25	55	40	36.5	4.6	2.45	.56	7.1	1.82	21	55	55	8.0
26	57	47	15.4	20	3.1	.73	11.8	2.6	12.3	57	57	7.4
27	52	48	17.8	8.2	2.6	.93	2.7	1.83	11.6	55	50	12.7
28	60	41	19.0	9.1	2.45	1.53	2.45	1.21	30.5	52	22.5	14.7
29	57	52	15.8	6.0	36.5	1.64	2.35	-	15.6	57	16.6	34.5
30	57	38.5	15.0	4.2	14.0	1.49	2.35	-----	9.1	55	22.5	18.5
31	52	24	-----	4.0	-----	1.39	2.35	-----	25	-----	25	-----
Total	1,314.4	1,424.5	665.2	260.7	234.05	322.54	330.15	368.01	1,048.6	979.8	1,352.6	413.2
Mean:	42.4	46.0	22.2	8.41	7.80	10.4	10.6	13.1	33.8	32.7	43.6	13.8
mgd	65.6	71.2	34.3	13.0	12.1	16.1	16.4	20.3	52.3	50.6	67.5	21.4
cfs	4,030	4,370	2,040	800	718	990	1,010	1,130	3,220	3,010	4,150	1,270
Ac-ft												
Calendar year 1954:	Max	60	Min	0.56	Mean(mgd)	22.1	Mean(cfs)	34.2	Ac-ft	24,780		
Fiscal year 1954-55:	Max	60	Min	0.56	Mean(mgd)	23.9	Mean(cfs)	37.0	Ac-ft	26,740		

\* Discharge measurement made on this day.

## Haiku ditch at Honopou Gulch, near Kailua

Location.--Lat 20°55'05", long 156°14'55", on right bank of ditch and west side of Honopou Gulch, 160 ft below new Government Road, 2.5 miles northwest of Kailua, and 5 miles east of Haiku.

Records available.--January 1910 to December 1928, February 1930 to June 1955. Published as "at Peahi weir" January 1910 to June 1919, as "at Manawai Gulch" July 1919 to December 1928, and as "at Kapalalaea Gulch" February 1930 to January 1940.

Gage.--Water-stage recorder and concrete control. Datum of gage is 421.54 ft above mean sea level, 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.--43 years (1910-28, 1930-55), 20.8 mgd (32.2 cfs).

Extremes.--1910-28, 1930-55: Maximum daily discharge, 135 mgd (209 cfs) Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

Remarks.--Records good. Haiku ditch diverts water from all streams between Kailua Stream and Maliko Gulch. Flow regulated by gates. Water used for irrigation in central Maui.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.15	32	1.50	0.40	0.09	0.10	0.22	7.0	16.6	7.7	7.7	0.54
2	41	6.4	1.36	.37	.10	*25	.22	11.8	5.1	32	1.64	.52
3	58	3.8	1.29	.40	.14	54	.22	49	3.6	28.5	45	.34
4	44	50	1.22	.44	.20	2.6	.24	39	*3.1	2.35	57	.34
5	56	15.6	1.10	.44	.12	.85	.24	11.3	4.0	1.74	6.0	.28
6	63	2.9	.25	.37	.12	40	.24	2.9	6.4	1.64	1.15	.24
7	13.5	2.55	25.5	.30	51	*57	30	6.1	22.5	1.57	51	.22
8	1.15	2.35	1.43	.37	2.1	15.2	27	.24	5.0	1.29	10.4	.22
9	1.00	15.7	1.13	.50	.34	.62	6.9	41	4.1	1.10	19.7	.20
10	1.39	2.8	1.05	8.7	.85	.85	7.6	13.8	39	1.05	19.0	.18
11	4.4	5.0	.90	.65	.26	.22	2.8	.40	73	1.00	1.18	.12
12	34.5	69	.80	.40	.16	.18	2.6	.34	73	.90	5.4	.14
13	13.6	55	.75	.30	.09	.18	2.7	.30	52	.85	21.5	.09
14	1.43	67	.75	.28	.09	.18	11.7	.28	7.1	.80	6.1	.10
15	1.23	40	.70	.40	.14	.12	1.51	.28	7.7	.80	.80	.10
16	4.6	67	.70	.28	.10	.32	1.64	22	79	.75	40	.10
17	38.5	42	14.2	.22	.08	.20	1.50	33.5	45	44	2.8	.08
18	69	5.7	87	.24	.08	.16	1.44	12.8	15.4	53	10.0	.08
19	7.0	52	42	.22	.08	.18	1.22	.48	4.7	60	31.5	14.5
20	28.5	21.5	1.52	.33	.08	.20	1.15	.37	3.6	5.6	6.6	1.19
21	2.1	43	1.00	.26	.08	.22	3.3	.30	3.1	1.22	3.55	.43
22	21.5	41	.85	.22	.08	.20	28	.28	1.26	1.36	1.07	.09
23	24.5	53	.70	.24	.08	.20	33.5	.26	.70	38.5	15.6	21
24	18.6	19.1	.78	.26	.08	.22	7.4	.26	.70	60	64	.66
25	44	2.55	4.8	.24	.09	.22	.65	.26	.62	70	31	.12
26	57	8.0	.90	.79	.09	.20	.54	.41	2.1	70	48	.10
27	26	9.6	.62	.18	.08	.20	.34	.20	2.35	55	12.7	.14
28	73	4.0	.54	.14	.10	.20	.30	.18	1.13	18.6	1.38	.10
29	*87	27	.51	.10	26.5	.20	.28	-	.65	70	.75	9.3
30	41	2.2	.48	.09	.56	.22	.28	-----	1.19	55	.62	1.47
31	18.0	1.71	-----	.08	-----	.22	14.0	-----	2.35	-----	.62	-----
Total	867.65	769.46	201.08	18.21	83.96	199.96	189.73	255.04	486.05	686.32	521.76	52.79
Mean	28.0	24.8	6.70	0.587	2.80	6.45	6.12	9.11	15.7	22.9	16.8	1.76
mgd	43.3	38.4	10.4	0.908	4.33	9.98	9.42	14.1	24.3	35.4	26.0	2.72
Ac-ft	2,660	2,360	617	56	258	614	582	783	1,490	2,110	1,600	162
Calendar year 1954: Max	73			Min	0.01	Mean(mgd)	10.7	Mean(cfs)	16.6	Ac-ft	11,960	
Fiscal year 1954-55: Max	79			Min	0.08	Mean(mgd)	11.9	Mean(cfs)	18.4	Ac-ft	15,290	

\* Discharge measurement made on this day.

## Kahakuloa Stream near Honokohau

Location.--Lat 20°58'50", long 156°33'25", on right bank just downstream from Kapuna Stream, 1.3 miles south of Kahakuloa, 2 miles west of Puu Makawana, and 4.3 miles southeast of Honokohau.

Drainage area.--3.4 sq mi.

Records available.--July 1939 to August 1943, September 1947 to June 1955. Records for January 1913 to December 1914 (fragmentary), at site 1 mile upstream, not equivalent owing to difference in drainage area.

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

Average discharge.--10 years (1940-43, 1948-55), 11.5 mgd (17.8 cfs).

Extremes.--Maximum discharge during year, 660 mgd (1,020 cfs) Feb. 7 (gage height, 7.00 ft), from rating curve extended above 50 mgd on basis of slope-area determination at gage height 8.35 ft; minimum, 3.2 mgd (5.0 cfs) Nov. 23-28.  
1939-43, 1947-55: 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.

Rating tables, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

July 1 to Feb. 7

Feb. 7 to June 30

2.8	2.55	3.7	36	2.9	4.4	3.6	30
2.9	4.0	4.0	59	3.0	6.5	4.0	59
3.1	8.2	4.5	116	3.3	15.5	4.5	116
3.4	19.0						

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	10.8	12.9	5.1	4.0	3.65	4.7	9.0	5.5	12.4	6.1	6.8	6.1
2	34	7.5	4.9	3.8	3.65	7.6	8.4	5.1	8.5	9.5	10.0	7.3
3	14.9	8.5	4.7	4.5	3.65	23.5	10.7	4.9	7.5	12.5	10.5	6.1
4	23	34	4.5	5.1	3.5	5.5	11.7	4.7	7.5	6.8	7.9	11.1
5	12.2	12.5	4.5	4.5	3.5	12.3	6.6	6.8	13.4	6.7	6.8	9.8
6	7.1	9.5	16.4	4.0	7.6	20	5.7	5.9	8.9	6.3	*6.1	6.1
7	5.5	6.8	16.2	3.8	51	86	6.0	91	7.7	5.7	10.6	5.5
8	5.3	6.6	11.8	3.8	6.9	31	5.7	59	6.3	5.7	7.0	5.7
9	4.7	23.5	6.3	7.9	5.3	25	5.1	35.5	6.5	5.5	7.8	5.9
10	12.0	*14.2	6.1	28.5	6.7	54	4.9	62	64	5.3	10.8	10.8
11	9.6	10.6	5.3	6.6	4.5	19.4	4.7	51	19.3	5.3	8.9	7.0
12	28	16.4	4.7	4.5	4.0	36	4.5	24.5	10.3	5.3	7.0	6.1
13	10.5	10.2	4.5	4.1	3.8	30	4.5	30	12.1	5.5	6.1	7.0
14	6.6	13.2	4.5	4.4	3.65	50	5.5	18.0	8.9	5.3	5.9	5.5
15	5.7	13.0	4.4	7.2	4.2	12.8	4.9	17.1	26.5	5.5	6.0	5.3
16	8.5	15.8	4.5	7.8	5.0	92	4.9	14.2	74	5.3	11.1	5.3
17	9.7	8.6	19.4	4.5	4.0	18.2	4.5	14.4	13.3	9.9	6.9	5.1
18	17.9	7.9	22.5	5.4	3.65	9.5	4.4	15.4	9.0	12.4	10.4	4.9
19	6.8	10.3	9.6	4.7	3.65	7.7	4.2	34.5	8.6	6.3	26	20.5
20	21	14.3	5.7	26.5	3.5	13.3	4.2	29	7.8	5.3	15.2	6.2
21	6.4	15.6	8.3	11.0	3.35	59	48	11.4	*7.0	5.3	10.0	6.7
22	15.4	10.4	*6.8	5.3	3.35	*24.5	11.1	8.8	12.8	8.9	12.4	6.0
23	23	38	4.9	4.5	3.2	9.2	5.9	11.9	19.4	12.2	16.8	18.7
24	12.9	10.4	4.7	4.4	3.2	7.7	5.3	16.4	8.2	11.9	25	7.4
25	16.6	7.0	10.4	4.0	3.2	7.0	10.7	8.5	7.2	20.5	12.9	9.6
26	19.8	14.5	5.4	5.2	3.2	6.6	64	10.3	6.5	65	15.5	7.8
27	41	7.2	4.5	4.4	3.2	21.5	24.5	27	6.3	21.5	13.1	11.4
28	108	12.6	4.5	4.0	3.2	26.5	10.4	29	6.1	9.8	9.6	6.7
29	19.4	9.1	4.4	3.8	53	12.0	6.6	-	6.5	18.2	8.2	34
30	11.1	9.4	4.0	3.65	6.9	9.0	9.0	-----	6.1	9.4	6.8	12.2
31	9.6	5.5	-----	4.4	-----	9.0	8.4	-----	6.8	-----	6.1	-----
Total	536.0	396.0	223.5	200.25	221.20	750.5	324.0	651.8	425.9	318.9	324.2	267.8
Mean:	17.3	12.8	7.45	6.46	7.37	24.2	10.5	23.3	13.7	10.6	10.5	8.93
mgd	26.8	19.8	11.5	10.0	11.4	37.4	16.2	36.1	21.2	16.4	16.2	13.8
cfs	1,640	1,220	686	615	679	2,300	994	2,000	1,510	979	995	822
Ac-ft												

Calendar year 1954: Max 108 Min 1.95 Mean(mgd) 10.5 Mean(cfs) 16.2 Ac-ft 11,800  
Fiscal year 1954-55: Max 108 Min 3.2 Mean(mgd) 12.7 Mean(cfs) 19.6 Ac-ft 14,240

Peak discharge (base, 400 mgd).--Dec. 7 (3:30 p.m.) 430 mgd (665 cfs), 6.04 ft; Dec. 16 (9 a.m.) 476 mgd (736 cfs), 6.22 ft; Feb. 7 (4:30 p.m.) 660 mgd (1,020 cfs), 7.00 ft.  
\* Discharge measurement made on this day.

## Honokohau Stream near Honokohau

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

Drainage area.--4.2 sq mi.

Records available.--March 1913 to September 1920, May 1922 to June 1955.

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

Average discharge.--37 years (1916-20, 1922-55), 25.2 mgd (39.0 cfs).

Extremes.--Maximum discharge during year, 1,220 mgd (1,890 cfs) Dec. 7 (gage height, 6.46 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 10.4 mgd (16.1 cfs) Nov. 24-29.

1913-20, 1922-55: Maximum discharge, 2,420 mgd (3,740 cfs) Dec. 14, 1942 (gage height, 8.40 ft), from rating curve extended above 120 mgd by logarithmic plotting; minimum, 5.4 mgd (8.4 cfs) May 1, 1945, Jan. 5, 1946.

Remarks.--Records good.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.9	7.3	2.9	67
2.2	17.1	3.5	147
2.5	34.5	4.0	250

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	29.5	51	16.7	14.0	11.6	13.4	29.5	14.4	17.1	22.5	17.6	18.7
2	86	17.6	16.3	14.0	11.6	44	22	14.8	16.3	82	24	22.5
3	18.3	35.5	15.9	14.4	11.6	110	70	16.6	15.9	60	25	16.3
4	95	110	15.9	20	11.6	14.9	43	15.5	15.9	23	24	23.5
5	24.5	22.5	16.3	14.4	11.6	71	17.4	14.9	20.5	28.5	15.9	21
6	13.4	28	49	14.0	12.7	45	15.2	14.0	20.5	18.6	15.8	15.5
7	11.6	18.9	32	13.2	67	180	15.5	100	17.9	16.3	35.5	14.8
8	12.3	18.4	19.8	14.0	52	14.4	70	17.1	16.3	19.4	14.8	14.8
9	15.5	35	17.6	28	*18.4	76	14.4	48	18.6	16.3	25	16.9
10	26	30	17.1	53	26.5	179	14.4	148	139	16.3	26	25.5
11	22.5	39.5	15.9	15.5	12.6	54	14.4	142	48	15.9	17.7	17.1
12	44	61	15.9	13.6	11.6	136	14.4	56	54	15.9	14.8	16.3
13	28	59	15.5	13.2	11.6	112	14.4	88	32	17.9	16.3	19.2
14	12.6	65	15.9	13.2	11.3	162	26	47	19.6	17.1	15.9	18.1
15	19.7	36	15.5	24	14.0	25.5	17.1	42	53	18.1	15.2	19.1
16	21	65	15.9	17.4	24	169	14.8	26.5	128	16.3	25.5	15.5
17	62	25.5	58	13.2	12.3	24.5	14.4	26.5	22	43	14.8	15.2
18	33.5	*24	57	17.4	11.0	18.1	14.4	26	17.6	54	19.0	14.4
19	34	33	22	14.6	11.0	16.3	14.0	80	16.3	19.3	72	54
20	25	32.5	16.3	57	10.7	18.3	13.6	43	16.3	16.3	51	15.9
21	12.6	61	16.3	24	10.7	129	83	20.5	15.9	16.7	24.5	*18.4
22	27	65	16.3	14.0	10.7	61	20.5	18.6	17.0	24	31	21
23	44	100	15.2	13.2	10.7	21	14.8	21	39	37.5	51	76
24	53	25.5	15.9	12.6	10.7	18.9	14.0	26.5	*17.1	31	48	19.6
25	48	21	45	18.5	10.4	15.9	15.4	18.1	16.3	71	53	28.5
26	26.5	51	16.3	18.2	10.7	16.7	85	20	15.9	165	45	22
27	106	23	15.2	14.0	10.7	45	50	31	15.9	48	24	31.5
28	234	43	14.4	12.6	10.4	54	20	25.5	15.9	37	27.5	16.7
29	26.5	46	14.4	12.3	10.6	21.5	15.2	-	16.7	103	22.5	56
30	18.1	29.5	14.0	12.3	13.4	24.5	16.1	-----	16.3	55	18.1	31
31	17.9	17.6	-----	12.3	-----	25	15.9	-----	32	-----	16.7	-----
Total	1,248.0	1,290.0	647.5	562.1	531.1	1,953.5	763.2	1,214.4	923.6	1,121.8	851.7	723.0
Mean	40.3	41.6	21.6	18.1	17.7	63.0	24.6	43.4	29.8	37.4	27.5	24.1
mgd	62.4	64.4	33.4	28.0	27.4	97.5	38.1	67.1	46.1	57.9	42.5	37.3
cfs	3,830	3,960	1,990	1,730	1,630	6,000	2,340	3,730	2,830	3,440	2,610	2,220

Calendar year 1954: Max 234 Min 6.9 Mean(mgd) 26.2 Mean(cfs) 40.5 Ac-ft 29,390

Fiscal year 1954-55: Max 234 Min 10.4 Mean(mgd) 32.4 Mean(cfs) 50.1 Ac-ft 36,310

Peak discharge (base, 700 mgd).--Dec. 5 (6:30 p.m.) 800 mgd (1,240 cfs), 5.63 ft; Dec. 7 (1:30 p.m.) 1,220 mgd (1,890 cfs), 6.46 ft; Dec. 16 (9 a.m.) 885 mgd (1,370 cfs), 5.79 ft.

\* Discharge measurement made on this day.

## Honokowai ditch near Lahaina

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

Records available.--July 1912 to June 1955.

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

Average discharge.--36 years (1919-55), 5.91 mgd (9.14 cfs).

Extremes.--1912-55: Maximum daily discharge, 43 mgd (66 cfs) June 30, 1930; no flow at times.

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

Cooperation.--Records of daily discharges since July 1932 furnished by Pioneer Mill Co.

Discharge, in million gallons a day, fiscal year July 1951 to June 1952

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.6	5.9	5.7	6.1	3.95	3.6	4.7	12.2	6.2	4.7	6.4	4.6
2	4.6	5.9	4.4	4.7	3.8	3.3	3.35	5.9	3.9	4.3	3.05	5.3
3	4.5	4.9	4.2	4.8	3.65	3.3	9.5	3.3	3.55	4.4	12.6	3.9
4	4.9	7.2	4.2	3.85	3.65	5.5	11.7	3.15	8.1	3.75	6.9	3.05
5	8.4	10.9	5.7	3.75	6.0	4.9	4.4	3.15	7.2	6.0	4.8	6.8
6	11.0	14.2	9.3	3.8	4.5	3.5	3.4	3.35	3.7	5.2	6.9	10.5
7	6.4	18.8	5.6	7.8	6.3	3.25	4.6	3.5	6.1	4.7	4.6	7.7
8	5.0	10.9	4.4	3.85	8.3	3.2	5.65	3.25	11.4	7.0	3.25	7.2
9	4.7	8.5	4.4	3.9	4.7	3.15	12.5	3.15	9.3	6.0	3.1	12.1
10	12.1	6.5	4.2	3.8	3.6	3.15	4.5	3.25	14.4	4.6	2.9	10.5
11	12.3	5.2	4.2	3.75	3.4	7.0	4.8	3.45	10.4	3.95	2.9	14.0
12	5.7	4.9	4.2	3.75	3.2	12.7	6.2	3.2	7.7	3.75	2.9	10.9
13	6.6	4.6	4.2	3.75	8.2	8.4	4.1	3.65	11.5	12.3	2.9	8.0
14	5.7	4.6	4.2	3.75	7.5	6.3	9.2	4.9	8.4	5.4	2.9	13.8
15	5.1	4.6	4.1	3.65	3.9	4.6	4.3	3.6	6.4	3.6	2.9	13.8
16	5.0	4.5	4.1	3.65	4.7	3.5	4.0	3.35	4.6	3.4	2.9	11.8
17	7.5	4.4	4.1	3.65	3.6	3.3	3.55	3.25	8.8	3.4	2.9	4.1
18	5.0	4.4	4.1	3.65	7.5	3.25	3.25	3.2	4.4	3.95	4.2	13.9
19	6.5	4.4	4.1	3.65	16.1	3.25	8.1	14.8	3.15	4.2	10.4	9.5
20	5.9	8.5	4.1	7.7	16.6	4.7	11.7	7.2	3.05	6.6	4.4	8.9
21	4.8	6.2	4.1	7.1	13.2	3.8	6.4	4.0	3.05	9.2	3.4	15.1
22	5.0	4.5	4.1	4.0	9.5	3.3	4.0	3.6	5.5	4.5	11.1	6.8
23	7.1	6.5	3.8	6.4	5.0	5.6	3.4	11.0	5.7	5.4	10.1	4.9
24	10.3	8.1	3.65	4.0	5.1	4.6	3.4	8.1	5.8	3.4	4.1	5.5
25	5.7	10.3	3.65	3.85	3.95	3.65	3.4	4.3	5.6	5.1	4.4	5.0
26	6.9	4.7	3.75	3.85	12.8	3.4	3.25	4.8	6.0	3.35	3.25	4.2
27	4.8	4.4	3.75	3.65	10.3	3.4	3.15	3.75	6.8	12.1	6.1	16.9
28	7.3	5.5	4.5	6.4	6.5	3.5	3.15	5.8	6.6	4.1	9.6	9.1
29	9.3	4.6	8.5	5.0	4.2	6.4	3.4	6.6	3.8	3.3	6.8	15.0
30	12.0	4.2	5.3	6.1	3.7	12.9	3.4	-	3.5	9.8	4.7	9.9
31	10.5	6.5	-----	2.9	-----	11.2	3.4	-----	3.4	-----	3.8	-----
Total	215.2	209.3	138.60	140.55	197.40	155.60	161.85	146.75	198.00	161.45	160.15	272.75
Mean:	6.94	6.75	4.62	4.53	6.58	5.02	5.22	5.06	6.39	5.39	5.17	9.09
cfs	10.7	10.4	7.15	7.01	10.2	7.77	8.08	7.83	9.89	8.32	8.00	14.1
Ac-ft	660	642	425	431	606	478	497	450	608	495	491	837
Calendar year 1951: Max	19.2			Min	2.9	Mean(mgd)	6.07	Mean(cfs)	9.39	Ac-ft	6,800	
Fiscal year 1951-52: Max	18.8			Min	2.9	Mean(mgd)	5.90	Mean(cfs)	9.13	Ac-ft	6,620	



## Honokowai ditch near Lahaina--Continued

Discharge, in million gallons a day, fiscal year July 1952 to June 1953

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.0	6.2	6.4	2.95	8.1	8.9	3.25	3.05	3.55	3.15	4.1	4.9
2	4.8	3.8	5.3	2.9	6.5	11.3	3.15	3.05	5.5	3.15	3.55	4.4
3	3.85	3.5	4.4	2.9	8.2	3.5	3.15	3.05	3.95	3.15	12.1	3.5
4	5.7	3.05	3.5	6.7	4.9	12.6	3.15	3.05	5.7	3.15	17.7	3.3
5	14.8	2.9	4.9	4.7	4.3	16.2	3.15	3.05	6.3	3.25	4.8	3.15
6	4.1	3.05	6.1	3.4	3.9	14.0	3.15	3.05	3.55	3.2	11.4	3.15
7	3.6	7.4	4.1	3.4	3.7	24.5	4.7	3.05	3.15	3.15	10.1	3.15
8	7.8	3.9	3.15	3.25	3.75	11.6	3.45	3.05	3.15	3.15	13.2	3.1
9	15.0	15.8	6.2	3.5	3.75	14.9	3.4	3.05	3.1	3.15	5.5	6.9
10	5.1	5.8	7.3	4.3	7.0	8.8	3.4	3.05	3.05	3.15	4.0	6.7
11	3.85	3.35	5.7	7.9	7.4	4.7	3.4	3.05	3.05	4.4	3.6	9.5
12	3.4	3.25	3.9	6.0	7.5	4.4	3.25	3.05	3.05	3.5	3.85	9.1
13	3.4	3.2	10.9	3.75	6.8	4.2	3.25	3.05	3.4	3.3	4.5	4.3
14	9.3	3.15	8.0	3.55	8.2	4.0	3.25	4.2	6.5	3.15	7.2	5.5
15	14.4	4.5	3.6	3.9	6.5	4.0	3.25	3.65	8.4	3.15	9.7	5.4
16	6.7	4.6	3.35	3.75	11.6	4.0	3.2	3.45	4.5	3.8	7.5	4.4
17	17.4	3.25	4.2	5.3	9.1	3.15	3.15	3.35	4.0	5.3	5.2	13.1
18	18.0	3.2	3.15	4.3	4.9	15.2	3.15	6.2	6.5	6.1	3.8	16.0
19	5.0	3.15	3.15	7.3	9.0	4.8	3.15	12.6	3.85	4.4	6.1	8.6
20	4.0	3.15	3.15	4.4	4.4	7.7	3.15	3.4	3.2	4.4	8.8	4.7
21	3.5	3.15	3.15	5.0	4.0	4.8	3.15	3.4	3.15	4.4	5.5	3.6
22	3.4	3.15	3.05	6.8	4.0	3.25	3.15	3.25	3.15	3.6	3.6	4.5
23	3.4	5.1	3.05	11.3	4.0	3.2	3.15	3.15	3.15	3.4	6.6	5.1
24	3.4	3.95	3.05	14.8	3.85	5.8	3.15	2.9	3.0	3.4	4.0	3.5
25	3.4	6.2	3.05	7.9	3.75	3.7	3.05	2.9	2.9	3.4	4.8	3.25
26	5.7	14.2	3.05	7.6	3.85	4.9	2.95	2.9	3.35	3.4	4.5	3.65
27	4.0	9.6	3.05	4.0	4.6	3.55	2.9	5.5	3.15	3.4	12.1	3.45
28	4.0	3.8	3.05	3.75	6.2	3.5	2.9	7.2	3.15	6.9	6.3	3.2
29	4.1	3.4	3.05	11.6	6.6	3.45	3.05	-	3.15	3.95	6.0	3.25
30	3.7	3.4	3.05	14.2	22.5	3.65	3.05	-----	3.25	5.9	3.85	3.65
31	3.45	4.6	-----	15.1	-----	3.4	3.05	-----	3.15	-----	5.0	-----
Total	191.95	150.75	131.55	189.10	191.05	231.60	99.70	107.70	122.00	114.90	210.95	160.00
Mean:												
mgd	6.19	4.86	4.38	6.10	6.37	7.47	3.22	3.85	3.94	3.83	6.80	5.33
cfs	9.58	7.52	6.78	9.44	9.86	11.6	4.98	5.98	6.10	5.93	10.5	8.25
Ac-ft	589	463	404	590	566	711	306	331	374	353	647	491
Calendar year 1952: Max	24.5	Min	2.9	Mean(mgd)	5.98	Mean(cfs)	9.25	Ac-ft	6,710			
Fiscal year 1952-53: Max	24.5	Min	2.9	Mean(mgd)	5.21	Mean(cfs)	8.06	Ac-ft	5,840			

Discharge, in million gallons a day, fiscal year July 1953 to June 1954

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.9	7.8	2.7	2.55	4.3	6.8	8.2	2.6	2.75	2.55	2.55	9.7
2	2.95	2.7	2.7	2.55	2.6	9.8	5.2	2.55	10.6	2.55	2.55	4.1
3	14.9	8.6	2.75	2.55	9.7	2.8	2.55	10.5	2.55	6.8	6.1	8.1
4	15.1	5.4	2.8	2.55	2.55	8.4	2.55	2.55	11.1	3.1	14.3	7.0
5	4.1	3.8	2.8	2.55	11.9	9.7	18.3	2.55	15.5	2.7	3.8	6.2
6	3.55	3.55	2.8	2.55	3.9	18.8	3.55	2.55	5.4	2.7	10.7	3.85
7	3.6	11.1	2.8	2.55	2.9	7.8	2.75	2.55	5.9	2.7	3.5	14.8
8	3.2	6.0	2.7	2.55	3.05	4.1	2.8	2.55	12.0	2.7	2.7	6.9
9	3.05	7.4	2.7	2.55	4.2	6.8	2.8	2.55	11.5	2.7	2.7	4.7
10	3.05	4.2	3.55	2.55	4.9	3.8	2.8	2.55	15.4	2.7	2.55	3.3
11	3.05	3.3	2.95	2.55	6.0	3.55	2.75	2.55	6.8	2.7	2.45	3.15
12	4.5	4.5	2.8	3.2	2.6	2.8	2.65	3.8	12.2	2.6	2.45	3.25
13	3.25	5.8	2.8	2.75	2.45	2.8	2.55	4.2	4.0	2.55	2.45	3.25
14	18.1	3.3	2.7	2.55	2.35	2.85	2.55	3.05	2.8	2.55	2.45	8.0
15	5.7	3.15	2.6	2.55	2.35	2.5	2.55	2.8	2.8	2.55	2.45	5.2
16	3.55	3.15	2.55	16.6	6.8	1.80	2.55	2.7	2.8	2.55	2.45	5.9
17	3.15	2.95	2.55	4.1	8.2	1.85	2.55	2.7	5.0	16.3	2.45	4.9
18	3.8	2.8	2.55	3.05	3.3	1.85	2.55	2.7	8.0	10.1	3.6	4.4
19	6.5	2.9	2.55	2.5	10.2	1.85	2.55	2.7	3.15	2.9	10.7	4.2
20	3.9	4.6	2.55	2.45	4.0	1.85	2.55	3.05	4.0	2.7	9.3	7.3
21	3.2	3.3	2.55	2.5	2.75	2.4	2.7	4.2	3.3	2.7	5.0	4.9
22	5.9	3.05	2.55	2.55	2.6	7.6	2.7	3.3	2.95	2.7	10.1	3.25
23	3.5	4.7	2.55	2.65	2.55	2.85	2.7	6.0	2.7	7.6	6.0	7.5
24	3.15	10.1	2.55	2.7	15.1	2.6	2.7	3.3	2.6	2.7	9.1	7.5
25	3.15	4.4	2.55	2.7	21	2.55	2.7	9.2	2.45	2.7	4.6	8.7
26	6.1	3.15	2.55	2.65	4.3	2.55	2.7	3.15	2.35	2.55	5.9	3.5
27	5.0	2.75	2.55	2.55	2.65	7.8	2.7	2.7	2.35	2.45	14.8	3.15
28	10.3	2.85	2.55	2.55	2.55	5.5	2.7	2.7	2.35	2.55	15.6	7.0
29	11.0	2.9	2.55	2.55	4.1	3.0	2.7	-	2.5	5.8	4.5	8.6
30	5.8	2.9	2.55	2.55	3.2	2.55	2.7	-----	2.55	4.4	5.2	4.9
31	4.4	3.15	-----	2.8	-----	3.05	2.7	-----	2.55	-----	12.4	-----
Total	173.40	163.55	80.40	96.55	149.90	151.85	105.25	89.05	184.15	106.00	187.70	175.70
Mean:												
mgd	5.59	5.28	2.68	3.11	5.00	4.90	3.40	3.18	5.94	3.53	6.05	5.86
cfs	8.65	8.17	4.15	4.8	7.74	7.58	5.26	4.92	9.19	5.46	9.38	9.07
Ac-ft	532	502	247	296	460	466	323	273	566	325	576	539
Calendar year 1953: Max	26	Min	1.80	Mean(mgd)	4.47	Mean(cfs)	6.92	Ac-ft	5,000			
Fiscal year 1953-54: Max	26	Min	1.80	Mean(mgd)	4.56	Mean(cfs)	7.06	Ac-ft	5,100			

## Honokowai ditch near Lahaina--Continued

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.1	10.9	2.95	2.55	2.45	3.9	6.5	3.5	4.6	6.8	6.7	5.7
2	11.5	4.2	2.65	2.35	2.45	13.5	6.3	3.5	4.4	18.2	7.5	6.8
3	7.6	6.8	2.55	2.35	2.45	18.6	6.4	3.5	4.4	13.8	8.5	5.5
4	21	20.5	2.55	2.6	2.45	5.1	5.0	3.65	4.4	6.3	7.5	5.3
5	8.4	6.1	2.55	2.75	2.45	9.1	4.6	3.4	4.4	7.3	5.6	6.2
6	5.1	5.2	6.5	2.55	2.45	11.6	4.9	3.4	5.2	5.5	5.5	4.7
7	3.35	3.95	5.8	2.55	9.0	23	4.9	8.7	5.2	4.9	11.3	4.5
8	3.15	4.7	3.0	2.35	3.4	10.8	5.0	12.6	4.4	4.8	7.6	4.4
9	4.6	6.1	2.8	5.3	3.85	8.3	5.0	8.8	5.1	4.8	9.6	4.4
10	8.3	3.65	2.8	10.3	7.0	15.7	5.0	24	17.9	4.8	8.3	5.2
11	7.0	9.4	2.7	3.1	2.75	13.0	5.0	18.9	13.2	4.6	5.7	5.2
12	9.2	18.1	2.55	2.55	2.55	15.4	5.0	11.7	15.5	4.6	5.5	5.0
13	7.1	14.1	2.1	2.35	2.55	10.4	5.0	12.2	8.4	5.1	6.2	5.6
14	4.3	12.8	2.05	2.35	2.55	8.0	9.5	8.6	5.3	5.2	5.3	5.5
15	3.45	9.0	2.05	3.2	2.55	7.4	5.5	9.1	6.2	5.2	5.2	6.2
16	8.2	13.6	2.05	3.65	6.5	6.9	5.0	6.8	19.3	5.0	7.6	5.0
17	13.4	7.0	7.0	2.45	3.15	6.9	5.0	6.4	5.7	10.8	5.2	5.0
18	12.5	5.9	10.9	2.45	3.15	6.9	5.0	7.1	4.1	14.3	8.1	5.0
19	5.4	7.3	4.0	2.95	3.15	6.9	5.0	19.7	4.1	6.7	16.2	11.9
20	9.7	5.7	2.65	8.0	3.15	6.9	5.0	11.6	4.1	5.2	11.2	5.1
21	3.9	10.4	2.55	4.9	3.15	12.6	13.5	5.7	4.0	5.0	7.5	5.0
22	5.0	10.0	2.55	2.55	2.95	9.2	6.3	5.1	4.1	7.1	8.1	6.7
23	8.4	16.5	2.55	2.55	2.9	7.2	4.8	5.5	7.9	11.5	14.0	21
24	10.0	5.4	2.55	2.55	2.9	7.6	4.6	7.0	3.4	10.6	13.3	7.0
25	9.0	4.0	6.9	3.25	2.9	6.8	4.6	4.9	3.4	13.7	14.2	7.3
26	10.7	10.2	2.75	4.2	3.05	6.5	4.6	5.6	3.5	21.5	10.8	5.8
27	8.4	5.4	2.4	2.6	3.05	10.1	2.45	7.2	3.5	9.8	6.8	6.8
28	23	8.7	2.35	2.55	3.05	7.9	5.8	5.2	3.65	9.7	5.6	5.6
29	7.3	9.4	2.35	2.55	15.9	6.5	5.8	-	3.75	23	5.5	10.0
30	4.4	5.1	2.35	2.55	4.2	6.5	5.8	-	3.75	14.6	5.6	5.9
31	3.75	3.25	-----	2.55	-----	6.5	4.3	-----	7.0	-----	5.8	-----
Total	254.20	263.35	101.50	101.10	114.05	295.7	171.15	233.35	193.85	270.4	251.5	193.3
Mean	8.20	8.50	3.38	3.26	3.80	9.54	5.52	8.33	6.25	9.01	8.11	6.44
mgd	12.7	13.2	5.23	5.04	5.88	14.8	8.54	12.9	9.67	13.9	12.5	9.96
cfs	780	808	311	310	350	907	525	716	595	830	772	593
Ac-ft												
Calendar year 1954: Max	23			Min	2.05	Mean(mgd)	5.42	Mean(cfs)	8.39	Ac-ft	6,070	
Fiscal year 1954-55: Max	24			Min	2.05	Mean(mgd)	6.69	Mean(cfs)	10.4	Ac-ft	7,500	



## Waiakea Stream at middle flume house, near Mountain View

Location.--Lat 19°38'25", long 155°10'35", on left bank at middle flume house, 800 ft up-stream from Olaa Sugar Co.'s main flume and 7.5 miles northwest of Mountain View.

Records available.--September 1930 to June 1955.

Gage.--Water-stage recorder and combined Parshall flume and concrete weir. Altitude of gage is 1,820 ft (by barometer).

Average discharge.--24 years (1931-55), 7.31 mgd (11.3 cfs).

Extremes.--Maximum discharge during year, 162 mgd (251 cfs) Dec. 14 (gage height, 4.39 ft), from rating curve extended as explained below; minimum, 1.30 mgd (2.01 cfs) Nov. 27. 1930-55: 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 periods of no gage-height record, which are poor. Large part of flow comes from three tunnels.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

0.4	1.25	2.0	14.5
.6	2.35	2.5	22.5
1.0	5.1	3.0	39
1.5	9.4	3.5	65

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.3	10.3	11.3	7.2	4.0	2.55	24	7.6	9.0	7.6	30	9.0
2	7.2	9.8	10.8	6.7	3.8	5.9	33	8.5	8.5	9.8	28	8.5
3	8.0	9.4	9.8	6.3	3.6	9.7	33	14.8	8.0	9.8	30	8.0
4	7.6	9.8	9.4	6.3	3.4	7.6	31.5	14.9	7.6	9.0	26.5	8.0
5	7.6	9.8	8.5	6.7	3.25	6.7	26.5	15.1	7.2	8.5	24	8.0
6	7.6	9.8	8.0	5.9	3.2	5.9	22.5	15.1	6.7	8.0	21.5	7.6
7	7.2	9.4	7.6	5.5	3.5	5.9	29.5	14.5	6.3	7.6	22.5	7.6
8	6.7	9.0	7.2	5.1	3.8	9.2	22.5	*14.0	5.9	7.2	20	7.2
9	6.3	8.5	6.7	4.8	3.5	29	18.4	17.0	5.5	6.7	20	6.7
10	5.9	8.0	6.3	4.5	3.5	27	17.0	21.5	6.7	6.3	18.4	6.3
11	5.9	12.8	5.9	4.5	3.3	45	15.7	21.5	9.0	5.9	17.0	5.9
12	6.3	16.4	5.5	5.0	3.2	39	14.0	20	17.5	*5.9	15.7	5.5
13	7.6	18.8	5.0	4.2	2.95	41	12.3	20	13.4	5.5	15.7	5.1
14	8.0	24	4.9	4.0	2.8	65	11.8	17.7	13.4	5.1	14.5	5.0
15	7.6	24	4.5	a3.8	2.65	58	10.8	16.4	13.4	5.1	14.0	4.8
16	7.2	a23	4.5	a3.6	2.45	50	9.8	15.1	13.4	4.8	14.5	4.5
17	6.7	a21	4.7	a3.4	2.35	41	9.4	13.4	12.8	8.6	13.4	4.4
18	7.2	a20	7.8	*a3.1	2.15	33	9.4	12.8	11.8	13.6	13.4	4.2
19	6.7	a21	6.7	2.9	2.1	24	8.5	12.8	10.8	14.6	13.4	4.2
20	6.3	a20	5.9	2.8	1.99	19.3	8.0	11.8	10.3	13.4	12.8	4.3
21	5.9	a21	7.4	3.35	1.88	17.7	9.6	11.3	9.4	14.0	12.3	4.0
22	5.5	a20	9.0	4.1	1.78	14.5	9.3	10.8	8.5	14.5	12.3	3.95
23	5.5	a19	8.0	3.25	1.66	13.4	8.5	9.8	8.0	14.0	11.8	3.9
24	5.1	*a18	8.0	2.95	1.56	11.8	8.0	16.1	7.6	17.0	11.8	3.6
25	6.2	17.7	8.5	2.9	1.45	11.3	7.6	11.3	6.7	19.3	*10.8	3.4
26	10.8	16.4	8.5	6.6	1.35	10.8	6.7	11.3	6.3	19.3	10.8	3.5
27	10.4	15.7	8.5	5.1	1.35	10.3	6.7	10.3	5.9	19.3	10.3	3.3
28	10.3	15.1	8.0	5.5	2.05	9.8	6.3	9.8	5.1	22.5	10.3	3.3
29	9.8	14.5	8.0	*5.0	3.25	9.8	5.9	-	4.8	25	9.8	3.25
30	9.8	13.4	7.6	4.6	2.4	16.9	5.5	-----	5.1	30	9.4	3.25
31	9.4	12.3	-----	4.3	-----	19.4	5.1	-----	5.5	-----	8.5	-----
Total	228.6	477.9	222.5	143.95	82.00	670.45	446.8	395.2	270.1	355.9	503.4	160.25
Mean:												
mgd	7.37	15.4	7.42	4.64	2.73	21.6	14.4	14.1	8.71	11.9	16.2	5.34
cfs	11.4	23.8	11.5	7.18	4.22	33.4	22.3	21.8	13.5	18.4	25.1	8.26
Ac-ft	702	1,470	683	442	252	2,060	1,370	1,210	829	1,090	1,540	492

Calendar year 1954: Max 65 Min 0.32 Mean(mgd) 7.25 Mean(cfs) 11.2 Ac-ft 8,120  
Fiscal year 1954-55: Max 65 Min 1.35 Mean(mgd) 10.8 Mean(cfs) 16.7 Ac-ft 12,140

Peak discharge (base, 50 mgd).--Dec. 11 (6 a.m.) 69 mgd (107 cfs), 3.57 ft; Dec. 14 (1:30 p.m.) 162 mgd (251 cfs), 4.39 ft; Jan. 7 (2 p.m.) 78 mgd (121 cfs), 3.67 ft; Feb. 4 (4 a.m.) 53 mgd (82 cfs), 3.31 ft; Feb. 24 (7:30 a.m.) 73 mgd (113 cfs), 3.60 ft; Apr. 30 (10:30 a.m.) 50 mgd (77 cfs), 3.26 ft.

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for nearby streams and probable decrease in flow.

## Wailuku River above Hilo Boarding School ditch intake, near Hilo

Location.--Lat 19°42'55", long 155°09'10", on left bank 1,000 ft upstream from intake of Hilo Boarding School ditch, 0.8 mile west of reservoir 1, and 4 miles west of Hilo.

Drainage area.--125 sq mi.

Records available.--July 1928 to June 1955.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (by barometer).

Average discharge.--24 years (1929-40, 1941-47, 1948-55), 174 mgd (269 cfs).

Extremes.--Maximum discharge during year, 8,780 mgd (13,600 cfs) Dec. 14 (gage height, 17.31 ft), from rating curve extended above 3,400 mgd by logarithmic plotting; minimum, 6.8 mgd (10.5 cfs) Nov. 25, 26.  
1928-55: Maximum discharge, 41,000 mgd (63,400 cfs) Aug. 11, 1940 (gage height, 28.6 ft, from floodmarks), from rating curve extended above 3,400 mgd by logarithmic plotting; minimum, 0.16 mgd (0.25 cfs) Mar. 9, 1941.

Remarks.--Records good except those for period of no gage-height record, which are poor. Hilo Water Works diverts about 1 mgd above station for domestic supply, and water passing station is used for power by Hilo Electric Light Co.

Revisions (fiscal years).--WSP 865: 1929-36(M). WSP 965: 1941.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.6	5.2	5.0	245
1.8	9.4	7.0	570
2.1	18.0	9.0	1,140
2.5	34.5	11.0	2,020
3.0	60	14.0	4,460
4.0	137		

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	60	237	102	54	39	41	1,120	184	57	266	546	110
2	188	165	79	46	34.5	437	1,410	302	52	491	362	110
3	275	110	*66	42	30	550	582	1,600	56	408	608	94
4	128	236	76	39	26.5	188	712	507	78	233	376	110
5	94	197	60	72	24.5	119	376	315	49	146	330	128
6	82	146	60	49	22.5	142	527	366	42	102	221	86
7	57	102	57	37	111	102	912	*546	39	79	415	72
8	46	86	69	34.5	54	836	522	319	193	63	392	60
9	42	104	54	34.5	34.5	3,720	301	511	a120	66	440	54
10	34.5	79	42	29	34.5	*1,180	209	942	a300	54	294	49
11	30	195	34.5	26.5	29.5	2,900	155	773	a700	44	221	54
12	73	2,490	33	72	24.5	719	408	al,500	49	253	46	
13	225	644	44	39	21	1,150	110	315	a600	*42	315	44
14	110	1,250	42	27	18.4	3,290	146	209	294	54	261	39
15	83	595	42	24.5	17.7	1,230	110	165	185	44	209	44
16	137	578	49	21.5	15.6	620	102	119	137	34.5	330	49
17	79	424	60	20	14.7	384	76	102	102	222	245	44
18	119	315	255	18.0	12.6	245	121	182	72	1,300	260	39
19	79	583	144	15.9	12.0	175	158	493	66	1,270	330	44
20	60	315	82	*15.6	11.2	137	139	209	76	385	233	66
21	49	628	163	26	9.7	295	161	165	54	233	165	46
22	42	696	246	129	9.4	175	266	119	46	165	165	44
23	39	408	128	37	9.0	155	110	110	44	155	137	63
24	34.5	273	110	25	7.6	137	82	204	39	386	245	54
25	57	221	190	21.5	7.2	128	66	119	34.5	950	197	42
26	400	175	166	201	8.3	137	57	99	30	546	*210	44
27	287	209	110	118	8.7	146	66	102	27.5	384	175	39
28	317	209	118	137	12.0	119	52	69	25	404	155	39
29	197	221	120	90	26	119	44	-	25	402	119	34.5
30	175	185	69	60	25.5	1,290	39	-----	46	1,270	94	37
31	119	137	-----	49	-----	2,730	37	-----	66	-----	79	-----
Total	3,718.0	12,213	2,856.5	1,610.5	711.6	23,820	8,887	9,554	5,255.0	10,247.5	8,392	1,784.5
Mean	120	394	95.2	52.0	23.7	768	287	341	170	342	270	59.5
cfs	186	610	147	80.5	36.7	1,190	444	528	263	529	418	92.1
Ac-ft	11,410	37,480	8,770	4,940	2,180	73,100	27,270	29,320	16,130	31,450	25,720	5,480
Calendar year 1954:	Max	3,720	Min	0.23	Mean(mgd)	154	Mean(cfs)	238	Ac-ft	172,000		
Fiscal year 1954-55:	Max	3,720	Min	7.2	Mean(mgd)	244	Mean(cfs)	378	Ac-ft	273,200		

Peak discharge (base, 5,600 mgd).--Aug. 12 (5:30 a.m.) 6,040 mgd (9,350 cfs), 15.42 ft; Dec. 9 (8:30 a.m.) 8,620 mgd (13,300 cfs), 17.20 ft; Dec. 14 (5 p.m.) 8,780 mgd (13,600 cfs), 17.31 ft; Dec. 31 (4 a.m.) 6,560 mgd (10,100 cfs), 15.77 ft.

\* Discharge measurement made on this day.

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

## Kapehu ditch diversion near Hilo

Location.--Lat 19°43'45", long 155°11'05", on left bank 40 ft downstream from gate on Kapehu ditch, 3.1 miles northwest of Pihihouna, and 6.2 miles west of Hilo.

Records available.--May 1954 to June 1955.

Gage.--Water-stage recorder and de Fabritis type-H flume.

Extremes.--Maximum daily discharge during period May 1954 to June 1955, 3.1 mgd (4.8 cfs) Aug. 12, 1954; no flow occasionally.

Remarks.--Records good except those for periods of no gage-height record and those below 0.5 mgd, which are fair. Ditch diverts water from Kapehu ditch for fluming of sugarcane near Hilo.

Discharge, in million gallons a day, 1954

Day	May	June	Day	May	June	Day	May	June	Day	May	June
1	-	2.35	9	-	2.45	17	-	2.25	25	2.4	2.3
2	-	2.3	10	-	2.4	18	-	2.35	26	2.3	2.3
3	-	2.3	11	-	2.35	19	(*)	2.4	27	2.2	2.35
4	-	2.25	12	-	2.35	20	2.35	2.4	28	2.4	2.4
5	-	2.25	13	-	2.3	21	1.96	2.35	29	2.6	2.4
6	-	2.2	14	-	2.25	22	2.1	2.3	30	2.3	2.35
7	-	2.3	15	-	2.2	23	1.93	2.3	31	2.35	-
8	-	2.4	16	-	2.2	24	2.15	*2.35			
Total.....										-	69.65
Mean, million gallons a day.....										-	2.32
Mean, cubic feet per second.....										-	3.59
Runoff in acre-feet.....										-	214

\* Discharge measurement made on this day.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.4	2.55	0.01	0.01	0.01	0.02	0.01	0	0.01	0.02	0.01	0.01
2	2.65	2.4	.01	.01	.01	.02	.01	0	.01	.01	.01	.01
3	2.55	2.35	.01	.01	.01	.02	.01	0	.01	.01	.01	0
4	2.45	2.4	.01	.01	.01	.02	.01	0	.01	.01	.01	.01
5	2.45	2.45	.01	.02	.01	.02	.01	0	.01	.01	.01	.01
6	2.45	2.4	.01	.01	.01	.02	.01	0	.02	.01	.01	.01
7	2.4	2.4	.01	.01	.01	.02	.01	0	.02	.01	.01	.01
8	2.4	2.4	.02	.01	.01	.02	.01	0	.02	.01	.01	.01
9	2.4	2.4	.01	.01	.01	.03	.01	.01	.02	.01	.01	.01
10	2.35	2.4	.01	.01	.01	.01	.01	.01	.02	.01	.01	.66
11	2.35	2.7	.01	.01	.01	.03	.01	.01	.02	.01	.01	1.01
12	2.45	3.1	.01	.02	.01	.02	.01	.01	.02	.01	.01	.98
13	2.65	2.85	.01	.01	.06	.02	.01	.01	.01	.01	.01	.96
14	2.4	3.0	.01	.01	.07	.07	.01	.01	.01	.02	.01	.93
15	2.45	2.8	.01	.01	.03	0	.01	.01	.01	.02	.01	.96
16	2.4	2.7	.01	.01	.02	0	.01	.01	.01	.02	.01	.96
17	2.4	2.65	.01	.01	.02	.01	.01	.01	.01	.03	.01	.93
18	2.5	2.6	.05	.01	.02	.01	.01	.01	.01	.03	.01	1.09
19	2.4	2.7	.01	.01	.02	0	.01	.01	.01	.03	.01	1.15
20	2.4	.69	.01	0	.02	0	.01	.01	.01	.02	.01	1.20
21	2.35	.03	.02	.01	.02	.01	.02	.01	.01	.02	.01	1.18
22	2.3	.03	.01	.01	.02	.01	.01	.01	.01	.01	.01	1.22
23	2.3	.02	.01	.05	.02	.01	.01	.01	.01	.01	.01	1.32
24	2.3	.02	.01	.07	.02	.01	.01	.02	.01	.02	.01	1.26
25	2.5	.01	.02	.01	.02	.01	.01	.01	.01	.01	.01	1.46
26	2.6	.01	.01	.02	.02	.01	.01	.01	.01	.01	.01	1.49
27	2.5	.01	.01	.02	.02	.01	.01	.01	.01	.01	.01	1.49
28	2.4	.01	.01	.02	.02	.01	.01	.01	.01	.01	.01	1.57
29	2.4	.01	.01	.01	.02	.01	.01	-	.01	.01	.01	1.57
30	2.4	.01	.01	.01	.02	.01	.01	-----	.02	.01	.01	1.59
31	2.4	.01	-----	.01	-----	.01	.01	-----	.02	-----	.01	-----
Total	75.35	50.11	0.37	0.45	0.58	0.47	0.32	0.21	0.40	0.43	0.31	25.06
Mean:	2.43	1.62	0.012	0.015	0.019	0.015	0.010	0.008	0.013	0.014	0.010	0.835
mgd	3.76	2.51	0.019	0.023	0.029	0.023	0.016	0.012	0.020	0.022	0.016	1.29
cfs	231	154	1.1	1.4	1.8	1.4	1.0	0.6	1.2	1.3	1.0	77
Ac-ft												

Calendar year 1954: Max - Min - Mean(mgd) - Mean(cfs) - Ac-ft -  
 Fiscal year 1954-55: Max 3.1 Min 0 0.422 0.653 Ac-ft 473

Note.--No gage-height record Sept. 5 to Oct. 19, Dec. 3-8; discharge estimated on basis of records for Kapehu ditch.

## Kapehu ditch near Hilo

Location.--Lat 19°43'40", long 155°11'00", 0.9 mile downstream from intake, 3 miles west of 'Iihonua, and 6 miles west of Hilo.

Records available.--March 1938 to June 1941, July 1942 to June 1948, July 1953 to June 1955.

Gage.--Water-stage recorder and de Fabritis flume. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--11 years (1938-41, 1942-48, 1953-55), 1.58 mgd (2.44 cfs).

Extremes.--1938-41, 1942-48, 1953-55: Maximum daily discharge, 6.5 mgd (10.1 cfs) Apr. 9, 1938; no flow at times.

Remarks.--Records good. Ditch diverts water from Kapehu Stream 0.6 mile northwest of station for domestic use in Hilo. Flow sometimes diverted into Kapehu diversion ditch (see preceding page).

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.05	0.10	2.9	2.7	2.4	2.2	2.9	2.7	2.5	2.5	2.85	2.8
2	.05	.09	2.9	2.7	2.35	2.8	2.9	2.75	2.45	2.65	2.8	*2.7
3	.04	.08	2.9	2.65	2.2	2.65	2.85	3.3	2.5	2.6	2.95	2.55
4	.05	.08	*3.0	2.7	2.2	2.45	2.75	2.75	2.5	2.4	2.8	2.7
5	.05	.08	2.9	2.85	2.25	2.45	2.65	2.6	2.45	2.4	2.8	2.65
6	.05	.08	2.95	2.7	2.3	2.45	2.95	2.7	2.45	2.4	2.7	2.65
7	.05	.07	2.95	2.65	2.55	2.4	3.55	2.65	2.5	2.35	3.05	2.65
8	.07	.07	3.05	2.7	2.35	3.25	2.9	2.5	2.55	2.35	2.95	2.65
9	.05	.05	2.95	2.7	2.35	3.6	2.75	2.7	2.45	2.35	2.95	2.65
10	.07	.05	2.9	2.65	2.35	2.9	2.7	3.0	2.55	2.3	2.8	1.80
11	.06	.04	2.9	2.7	2.3	3.5	2.65	3.0	2.85	2.3	2.85	1.36
12	.05	.04	2.9	2.9	2.25	2.45	2.65	2.7	3.3	2.3	2.8	1.33
13	.04	.04	2.9	2.65	2.1	2.6	2.7	2.65	2.7	*2.3	2.75	1.33
14	.04	.04	2.9	2.65	2.0	4.3	2.75	2.6	2.5	2.3	2.75	1.33
15	.04	.05	2.9	2.65	2.0	2.3	2.65	2.6	2.45	2.25	2.8	1.33
16	.04	.05	2.95	2.6	2.0	1.92	2.65	2.6	2.45	2.3	2.9	1.33
17	.05	.05	2.95	2.6	1.96	1.80	2.7	2.6	2.4	2.5	2.75	1.35
18	.05	.06	3.25	2.5	1.88	1.76	2.8	2.65	2.4	3.05	2.9	1.13
19	.05	.06	2.35	*2.4	1.88	*1.73	2.7	2.75	2.4	2.25	2.9	1.07
20	.05	1.85	2.9	2.4	1.84	1.73	2.7	2.6	2.5	2.3	2.75	1.07
21	.06	3.15	3.0	2.5	1.80	1.76	2.9	2.6	2.4	2.35	2.75	1.07
22	.06	3.1	2.95	2.55	1.76	1.69	2.7	2.55	2.4	2.5	2.75	.73
23	.06	3.0	2.9	2.4	1.73	1.69	2.65	2.55	2.4	2.65	2.8	.76
24	.06	2.95	2.9	2.35	1.69	1.65	2.6	2.85	2.4	3.2	2.85	.78
25	.06	3.05	3.0	2.4	1.69	1.65	2.6	2.5	2.35	3.15	2.8	.48
26	.07	3.05	2.95	2.75	1.76	1.65	2.6	2.55	2.35	2.95	2.85	.44
27	.07	3.05	2.9	2.5	1.76	1.65	2.6	2.5	2.35	2.75	2.8	.41
28	.08	3.05	2.85	2.6	1.80	2.15	2.55	2.5	2.35	2.95	2.75	.40
29	.08	3.0	2.85	2.45	2.1	2.5	2.55	-	2.35	2.95	2.75	.36
30	.08	2.95	2.75	2.4	2.1	3.4	2.55	-----	2.4	3.4	2.75	.31
31	.07	2.95	-----	2.4	-----	3.0	2.5	-----	2.45	-----	2.75	-----
Total	1.75	36.33	87.95	80.35	61.70	74.03	84.65	75.00	77.05	77.00	87.40	44.15
Mean:												
mgd	0.056	1.17	2.93	2.59	2.06	2.39	2.73	2.68	2.49	2.57	2.82	1.47
cfs	0.087	1.81	4.53	4.01	3.19	3.70	4.22	4.15	3.85	3.98	4.36	2.27
Ac-ft	5.4	111	270	247	189	227	260	230	236	236	268	135
Calendar year 1954: Max	4.3			Min 0.02		Mean(mgd) 1.72		Mean(cfs) 2.66		Ac-ft 1,930		
Fiscal year 1954-55: Max	4.3			Min 0.04		Mean(mgd) 2.16		Mean(cfs) 3.34		Ac-ft 2,410		

\* Discharge measurement made on this day.

## Wailikahi Stream near Waimanu

Location.--Lat 20°07'40", long 155°39'55", on right bank 30 ft upstream from Waimanu trail bridge, 1.7 miles upstream from confluence with Waimanu Stream, 1.9 miles southeast of head of Awini ditch, and 2.2 miles southwest of Waimanu.

Drainage area.--0.4 sq mi.

Records available.--March 1939 to June 1955. Prior to July 1941, published as Waimanu-lili'i Stream near Waimanu.

Gage.--Water-stage recorder. Altitude of gage is 2,740 ft (by barometer).

Average discharge.--16 years, 6.48 mgd (10.0 cfs).

Extremes.--Maximum discharge during year not determined; minimum, 0.26 mgd (0.40 cfs) probably Dec. 1.

1939-55: Maximum discharge, 544 mgd (842 cfs) Dec. 20, 1946 (gage height, 5.17 ft), from rating curve extended above 25 mgd by test on model of station site; minimum, 0.15 mgd (0.23 cfs) Mar. 17, 18, 1944.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.6	28	2.5	0.60	0.58	0.27	5.0	1.7	3.5	19	12.9	30
2	5.2	16.2	2.1	.58	.49	1.0	3.2	1.6	3.2	8.0	7.7	9.3
3	9.0	5.9	1.8	1.5	.48	3.3	7.8	1.5	3.1	2.7	25.5	5.1
4	3.85	27.5	2.0	2.1	.48	2.7	6.0	1.4	3.2	3.2	18.8	10.6
5	17.7	4.6	1.7	1.4	.47	1.7	2.4	1.4	11.9	3.5	8.1	6.9
6	17.1	9.8	11	.92	.70	1.6	2.1	1.3	10.1	2.5	4.1	3.5
7	3.55	5.2	10	.76	3.5	1.5	1.8	1.3	4.3	2.0	22.5	2.7
8	2.15	4.5	2.6	.68	2.5	12	1.6	6.0	12.2	1.8	11.8	2.5
9	1.77	8.4	1.5	.66	1.1	40	1.5	42	10.8	2.8	10.7	4.2
10	1.61	6.1	.98	.66	.70	70	1.5	140	17.2	2.9	3.7	17.8
11	2.6	4.5	.88	.60	.54	170	1.5	28	16.8	2.0	3.5	16.8
12	17.4	27	.80	.60	.45	32	1.4	8.4	29.5	1.6	5.7	9.8
13	14.2	49	.76	.56	.43	24	1.4	38	6.3	1.4	11.8	6.6
14	3.6	38	.70	.56	.43	48	1.4	24	2.75	2.0	7.1	7.9
15	2.8	14.4	.66	.66	.46	*10	1.5	*20	2.1	2.2	20.5	18.1
16	3.2	9.8	64	1.3	.42	16.1	1.4	5.4	6.3	1.9	41	8.1
17	3.7	4.8	.70	.76	.41	8.7	1.3	3.5	4.3	12	5.9	6.4
18	11.0	3.7	2.0	.60	.41	3.1	1.2	7.8	2.25	*20	3.2	4.9
19	4.6	10.1	1.4	.56	.39	2.1	1.2	20.5	1.7	13	11.5	6.4
20	3.5	4.3	.98	1.6	.36	17.5	1.1	8.6	1.5	3.25	4.6	13.7
21	2.75	13.9	.70	4.0	.34	19.3	36	4.3	1.4	2.25	3.7	4.5
22	2.4	28	.72	3.2	.33	8.2	18	2.7	1.4	3.6	5.9	11.6
23	2.05	15.0	.66	1.9	.33	4.3	4.5	2.25	3.0	13.0	7.9	16.2
24	2.25	4.6	.62	1.6	.32	2.6	2.1	2.1	8.2	34.5	7.8	5.6
25	13.2	5.2	2.2	5.0	.32	18.4	4.4	2.25	4.2	25	14.9	8.3
26	51	14.1	1.2	*9.6	.30	30	15	2.6	2.2	10.0	5.3	16.0
27	17.0	25.5	.86	3.95	.29	16	30	4.2	1.8	8.3	3.8	14.2
28	5.2	15	.70	2.8	.29	13	7.0	3.7	1.6	11.6	5.8	6.5
29	4.1	*20	.64	1.30	.28	5.0	2.5	-	1.6	20	5.3	19.5
30	3.5	7.8	.80	.97	.28	2.5	2.0	-	2.1	24	*6.4	8.7
31	14.6	3.6	-----	.72	-----	24	1.8	-----	5.0	-----	10.6	-----
Total	261.18	432.5	54.60	52.70	18.38	608.87	167.6	386.50	185.50	260.00	318.0	302.4
Mean:	8.43	14.0	1.82	1.70	0.613	19.6	5.41	13.8	5.98	8.67	10.3	10.1
mgd	13.0	21.7	2.82	2.63	0.948	30.3	8.37	21.4	9.25	13.4	15.9	15.6
cfs	802	1,330	188	182	56	1,870	514	1,190	563	798	976	928
Ac-ft												

Calendar year 1954: Max 170 Min 0.21 Mean(mgd) 6.55 Mean(cfs) 10.1 Ac-ft 7,350  
Fiscal year 1954-55: Max 170 Min 0.27 Mean(mgd) 8.35 Mean(cfs) 12.9 Ac-ft 9,360

Peak discharge (base 150 mgd).--July 26 (1 a.m.) 186 mgd (288 cfs), 3.57 ft; Dec. 10 (time and discharge unknown); Feb. 10 (time and discharge unknown).

\* Discharge measurement made on this day.

Note.--No gage-height record Aug. 28, 29, Aug. 31 to Oct. 26, Oct. 31 to Dec. 15, Dec. 26 to Feb. 15, Mar. 19 to Apr. 19; discharge estimated on basis of record for nearby stations.



## Awini ditch at East Honokaneiki Gulch, near Niuli

Location.--Lat 20°09'55", long 155°43'10", at flume across East Honokaneiki Gulch, 4.5 miles southeast of Niuli.

Records available.--October 1927 to June 1949, July 1950 to June 1955.

Gage.--Water-stage recorder. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--25 years (1928-38, 1939-49, 1950-55), 12.0 mgd (18.6 cfs).

Extremes.--1927-49, 1950-55: Maximum daily discharge, 33 mgd (51 cfs) Jan. 8, 1935, Aug. 10, 1938; no flow at times.

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

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	22	24	18.2	4.7	3.2	1.42	8.4	9.6	3.05	21.5	f28	f28
2	23.5	23.5	14.5	4.3	2.75	14.5	9.0	7.9	2.6	21.5	24.5	26
3	22.5	17.4	13.2	5.0	2.4	23.5	8.4	7.9	2.2	18.2	f28	18.8
4	19.8	22.5	11.9	6.7	2.15	13.5	8.4	7.4	2.0	17.4	26	18.0
5	23.5	17.4	11.3	10.1	2.0	6.9	7.4	6.4	7.8	14.0	24.5	20
6	24	21.5	18.5	6.0	3.35	7.9	6.0	5.9	11.8	9.0	18.0	13.1
7	19.8	18.2	21.5	4.6	19.8	9.3	5.9	5.8	5.1	7.4	f26	10.7
8	14.5	18.2	15.2	4.3	12.0	22.5	5.2	8.4	a8.0	6.4	26	9.6
9	11.9	19.0	11.9	5.1	6.0	25	4.8	10.1	a8.0	6.4	26	10.0
10	10.1	19.8	10.1	5.2	4.9	20.5	6.0	11.9	a6.0	8.4	18.8	22.5
11	12.9	17.4	9.0	4.6	3.85	4.7	5.8	12.5	a4.7	6.0	18.7	26
12	19.2	23.5	8.4	4.2	3.0	1.94	6.0	12.5	a5.0	5.2	24.5	26
13	23.5	24	7.4	3.75	2.45	1.95	6.9	12.5	a2.7	4.6	f28	24.5
14	18.2	24	7.4	3.25	2.15	2.2	7.4	12.5	a2.4	6.4	24.5	22.5
15	13.2	23.5	6.9	3.0	2.15	1.54	8.4	12.5	a2.2	*7.2	f26	26
16	15.2	22.5	6.0	5.2	4.7	1.73	6.4	12.5	a3.5	5.8	a30	f26
17	16.0	19.8	6.9	4.3	4.5	4.5	5.7	12.5	a5.4	14.8	22.5	24.5
18	21.5	15.2	18.8	5.4	3.4	*4.8	5.0	10.7	5.7	f28	17.2	22.5
19	19.8	21.5	15.2	2.8	2.6	3.4	4.6	10.7	5.8	f28	f28	19.5
20	18.2	16.0	9.6	3.85	2.1	5.8	4.3	10.7	5.8	18.4	20	24.5
21	13.8	21.5	7.4	*17.7	1.77	7.4	5.5	10.7	5.1	12.5	14.4	22.5
22	10.7	24	6.4	16.1	1.64	7.4	2.85	10.7	4.7	10.9	19.5	20
23	10.1	23.5	5.9	6.9	1.46	6.4	1.77	8.0	9.7	26	23	24.5
24	10.3	21.5	6.4	4.5	1.38	4.7	1.92	4.1	12.5	f28	22	24.5
25	22.5	20.5	19.0	3.85	1.30	5.6	5.4	3.5	10.1	f28	21.5	21
26	23.5	23.5	17.2	21.5	1.22	6.4	9.6	3.2	7.4	26	21	24.5
27	20.5	*26.5	13.8	16.4	1.18	6.4	11.9	6.2	6.0	24.5	*20	24.5
28	14.5	25	9.0	13.7	1.10	6.4	12.5	4.3	5.6	24.5	19.7	24.5
29	16.7	24	6.4	6.9	1.00	6.4	12.5	-	5.9	f28	22	24.5
30	16.0	23.5	5.4	4.7	.94	6.9	12.5	8.7	8.7	a30	18.1	26
31	14.0	19.0	-----	3.7	-----	8.4	11.9	-----	13.7	-----	19.5	-----
Total	541.9	681.4	338.8	210.30	102.44	249.78	218.34	251.6	189.15	493.0	703.9	655.2
Mean:												
mgd	17.5	21.3	11.3	6.78	3.41	8.06	7.04	8.99	6.10	16.4	22.7	21.8
cfs	27.1	33.0	17.5	10.5	5.28	12.5	10.9	13.9	9.44	25.4	35.1	33.7
Ac-ft	1,660	2,030	1,040	645	314	767	670	772	580	1,510	2,160	2,010
Calendar year 1954: Max	26.5			Min	0.94	Mean(mgd)	11.3	Mean(cfs)	17.5	Ac-ft	12,630	
Fiscal year 1954-55: Max	30			Min	0.94	Mean(mgd)	12.6	Mean(cfs)	19.5	Ac-ft	14,160	

\* Discharge measurement made on this day.

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

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

East Honokaneiki Intake to Awini ditch at East Honokaneiki Gulch, near Niulii

Location.--Lat 20°09'55", long 155°43'15", on intake tunnel delivering water from East Honokaneiki Gulch to Awini ditch, on west side of gulch, 4.5 miles southeast of Niulii.

Records available.--October 1927 to June 1938, July 1939 to June 1949, July 1951 to June 1955.

Gage.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,000 ft (from topographic map).

Average discharge.--22 years (1928-36, 1937-38, 1939-40, 1941-49, 1951-55), 1.17 mgd (1.81 cfs).

Extremes.--1927-38, 1939-49, 1951-55: Maximum daily discharge, 8.0 mgd (12.4 cfs) Dec. 29, 1937, Mar. 20, Apr. 7, 1938, Jan. 12, 1946; no flow at times.

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

Revisions (fiscal years).--WSP 725: 1928-30.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.55	3.3	1.5	0.29	2.75	0	0.38	0.41	0.35	6.8	3.85	4.4
2	3.65	3.2	*1.2	.27	2.65	2.4	.41	.35	.32	3.6	2.9	2.65
3	2.2	1.7	1.1	.32	1.06	4.8	.38	.38	.35	1.45	4.9	1.60
4	2.1	3.0	.90	.50	0	.86	.88	.32	.32	1.16	4.1	1.35
5	1.97	1.7	.85	.80	0	.29	1.25	.23	3.5	.75	3.05	1.23
6	2.9	2.5	1.7	.45	0	.38	.87	.20	4.2	.41	1.78	.75
7	1.79	1.8	2.0	.50	1.47	.61	.71	1.54	1.27	.32	5.1	.60
8	.84	1.8	1.4	.28	.58	3.4	.56	3.2	2.55	.26	4.2	.48
9	.56	1.9	.90	.33	.17	3.55	.44	3.25	2.6	.28	3.65	.51
10	.44	1.9	.70	.35	.08	1.30	.41	2.45	1.48	.26	1.90	2.45
11	.53	1.7	.60	.31	.06	.44	.35	.75	.90	.23	1.71	3.8
12	2.3	3.0	.55	.28	.02	.38	.32	*.64	.98	.17	2.5	2.75
13	3.85	3.1	.45	.25	0	.38	.29	.83	.29	.14	3.7	1.98
14	1.24	3.1	.45	.22	0	.32	.32	.71	.26	.20	2.45	1.52
15	.72	3.0	.40	.20	0	.29	.41	.75	.23	.20	3.5	3.4
16	.64	2.8	.35	.35	.10	.32	.32	.60	.39	.17	4.6	2.65
17	.60	2.2	.40	.29	.08	.35	.23	.48	1.09	2.0	2.4	1.55
18	2.35	1.5	1.8	.22	.03	.23	.20	.63	.92	6.0	1.55	1.35
19	2.05	2.4	1.4	.18	.01	.17	.17	.83	.68	5.2	2.9	1.73
20	1.34	1.7	.70	.26	0	.32	.14	.71	.52	1.32	1.66	2.5
21	.92	2.5	.45	3.0	0	.35	.58	.56	.44	.68	1.11	1.22
22	.50	3.0	.38	*1.5	0	.26	.01	.48	.38	.66	1.11	1.91
23	.38	2.9	.35	1.06	0	.14	.01	.41	3.3	5.4	1.99	3.3
24	.41	2.5	.38	1.01	0	.12	.25	.38	1.54	6.6	2.15	2.0
25	3.2	2.3	1.9	.92	0	.28	1.00	.38	.69	4.8	2.5	1.37
26	2.85	3.0	1.7	4.2	0	.29	3.35	.35	.41	3.7	1.90	3.0
27	3.6	3.5	1.2	4.6	0	.26	4.8	.52	.32	2.55	*1.65	2.7
28	2.8	3.1	.65	3.85	0	.26	2.3	.38	.26	2.35	1.98	2.05
29	1.08	2.9	.38	3.3	0	.12	1.02	-	.26	6.0	2.15	2.85
30	.76	2.7	.30	3.0	0	.11	.71	-----	.26	6.9	1.68	2.45
31	.95	1.9	-----	2.9	-----	.51	.56	-----	.89	-----	2.05	-----
Total	51.87	77.6	27.04	35.79	9.06	23.49	23.63	22.72	31.95	70.54	62.55	62.08
Mean:	1.67	2.50	0.901	1.15	0.302	0.758	0.762	0.811	1.03	2.35	2.66	2.07
cfs	2.58	3.87	1.39	1.78	0.467	1.17	1.18	1.25	1.59	3.64	4.12	3.20
Ac-ft	159	238	83	110	28	72	73	70	98	216	253	191
Calendar year 1954: Max	5.6				Min 0	Mean(mgd)	1.19	Mean(cfs)	1.84	Ac-ft	1,330	
Fiscal year 1954-55: Max	6.9				Min 0	Mean(mgd)	1.42	Mean(cfs)	2.20	Ac-ft	1,590	

\* Discharge measurement made on this day.

Note.--No gage-height record Aug. 1 to Oct. 21, Nov. 30, Dec. 1, 15-17; discharge estimated on basis of records for nearby stations.

## Kohala ditch at Pololu, near Niulii

Location--Lat 20°10'20", long 155°44'15", on right bank of open section of ditch in Pololu Valley just downstream from boundary between land of Honokane and land of Pololu, 2.8 miles upstream from mouth of Pololu Stream and 4 miles south of Niulii.

Records available--August 1927 to June 1955.

Gage--Water-state recorder. Altitude of gage is 1,100 ft (from topographic map).

Average discharge--26 years (1928-38, 1939-55), 26.6 mgd (41.2 cfs).

Extremes--1927-55: Maximum daily discharge, 63 mgd (98 cfs) May 1, July 17, 1952; no flow at times.

Remarks--Records good except those for periods of fragmentary or no gage-height record, which are fair. Kohala ditch receives flow of Awini ditch at Honokane Gulch and diverts water at altitude of about 1,200 ft from Honokane and all streams west. Water is used for irrigation in vicinity of Kohala.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	50	54	38.5	21.5	17.4	14.4	1.92	20.5	a.0.3	45	33.5	51
2	49	51	33.5	20.5	17.4	29	2.75	18.9	a.3	35.5	25.5	41
3	49	46	31.5	20.5	16.6	46	3.2	20.5	a.3	27	27.5	36
4	46	57	29.5	22.5	15.8	31.5	8.3	18.9	a.2	27	24.5	33.5
5	51	46	27	26	15.8	21.5	13.7	18.9	f.7	25	33.5	33.5
6	51	46	35.5	22.5	17.2	22.5	18.1	18.1	a.1	22.5	31.5	29.5
7	43	43	43	20.5	36	23	18.1	23	a.7	20.5	48	25
8	36	41	33.5	19.7	29.5	41	17.4	27	f.8	19.7	41	23
9	31.5	43	27	20.5	22.5	60	16.6	20.5	a.9	19.7	38.5	23
10	27	41	25	20.5	19.7	38	17.4	30.5	f.1.0	22.5	33.5	36
11	31.5	38.5	23	19.7	18.1	f16.1	17.4	*f4.4	f12.0	19.7	36	43
12	41	54	21.5	18.9	17.4	f7.5	17.4	a1.2	38	18.1	41	41
13	51	57	21.5	18.1	16.6	a0	18.1	f5.5	18.9	17.4	46	38.5
14	41	57	22.5	18.1	16.6	a0	19.7	f1.8	18.6	21.5	43	36
15	31.5	51	21.5	18.1	16.6	a0	21.5	f2.4	15.8	20.5	44	41
16	36	51	20.5	19.7	18.1	a0	19.7	a1.1	22	*18.5	51	41
17	39.5	46	21.5	18.9	18.1	0	18.1	a1.0	24	30.5	36	36
18	54	41	37	17.4	17.4	0	17.4	a.9	23	51	33.5	38.5
19	46	46	33.5	17.4	16.6	0	17.4	a1.1	20.5	44	42	36
20	43	38.5	26	18.4	15.8	3.7	16.6	a1.1	18.9	30.5	36	41
21	33.5	43	22.5	34.5	15.8	4.0	26	a1.0	18.9	27	31.5	36
22	26	51	21.5	36	15.1	1.95	13.3	a.9	18.9	26	33.5	36
23	24	49	20.5	*22.5	15.1	0	16.6	a.7	31.5	50	36	46
24	23	43	20.5	19.7	14.4	0	18.1	a.6	29.5	55	41	41
25	43	41	37.5	19.5	15.1	2.6	17.6	a.5	24	48	38.5	36
26	60	*48	36	51	15.1	2.7	25.5	a.4	20.5	34	38.5	43
27	51	54	36	38.5	15.1	3.5	33.5	a.4	19.7	29.5	36	41
28	41	51	27	31.5	14.4	2.45	26	a.3	19.7	33.5	*37	38.5
29	38.5	51	23	23	14.4	1.13	24	-	19.7	41	41	41
30	36	49	23	19.7	14.4	.41	24	-----	22.5	43	33.5	41
31	31.5	43	-----	18.1	-----	2.9	23	-----	27	-----	38.5	-----
Total	1,255.5	1,471.0	840.0	713.4	528.1	375.84	548.37	242.1	467.9	923.1	1,150.5	1,123.0
Mean:												
mgd	40.5	47.5	28.0	23.0	17.6	12.1	17.7	8.65	15.1	30.8	37.1	37.4
cfs	62.7	73.5	43.3	35.6	27.2	18.7	27.4	13.4	23.4	47.7	57.4	57.9
Ac-ft	3,650	4,510	2,580	2,190	1,620	1,150	1,680	743	1,440	2,830	3,530	3,450
Calendar year 1954: Max	60			Min	0	Mean(mgd)	28.3	Mean(cfs)	43.8	Ac-ft	31,710	
Fiscal year 1954-55: Max	60			Min	0	Mean(mgd)	26.4	Mean(cfs)	40.8	Ac-ft	29,570	

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Awini ditch.

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

## Kahena ditch near Kohala

Location.--Lat 20°07'25", long 155°45'05", on right bank at old Honokane weir near head of West Branch of Honokanenui Gulch, 8.5 miles southeast of Kohala.

Records available.--December 1917 to November 1919, April 1928 to June 1955.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,850 ft (from topographic map). Prior to Apr. 26, 1928, water-stage recorder at same site at different datum.

Average discharge.--27 years (1928-55), 7.69 mgd (11.9 cfs).

Extremes.--1917-19, 1928-55: Maximum daily discharge, 54 mgd (84 cfs) Mar. 23, 1919; no flow at times.

Remarks.--Records good except those for period of no gage-height record, which are poor. Intake on Honokanenui Stream about 2 miles above station, at altitude of about 4,200 ft. Kahua Ranch diverts small quantity of water from ditch 2 miles above station for watering stock. From December 1953 to January 1955 Kohala ditch diverted a small quantity of water 1,000 ft below Kahua Ranch diversion. Water used for irrigation in vicinity of Hawi.

Revisions (fiscal years).--WSP 740: 1930.

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	25.5	19.2	0.98	0.29	0.19	0	15.2	1.50	2.7	36	17.6	37.5
2	15.4	22	.53	.29	.19	12.8	21.5	1.13	1.85	9.0	18.2	19.4
3	21.5	11.4	.40	.29	.07	25.5	17.0	.98	1.50	2.0	36.5	11.0
4	9.6	34	.40	.29	0	8.4	17.9	.82	1.13	2.3	31	9.6
5	27	11.4	.40	.29	0	3.95	6.7	.67	7.0	2.5	19.0	9.0
6	24	11.1	3.5	.29	0	5.3	3.7	.53	18.7	1.7	10.1	5.0
7	3.95	9.2	7.8	.19	1.01	4.1	2.7	.74	6.0	1.4	41	3.15
8	1.65	5.5	1.85	.42	1.65	19.3	2.05	21.5	7.8	1.3	32.5	2.5
9	2.05	6.6	.82	.98	.40	39.5	1.50	44	18.9	2.0	23.5	2.05
10	1.50	3.95	.40	1.85	.19	34.5	1.30	51	15.0	2.0	9.3	6.8
11	2.6	2.5	.40	1.50	.04	45	.98	32	30	1.3	6.9	23
12	13.6	31	.29	1.13	0	33	.82	16.3	37.5	1.1	14.4	14.3
13	18.3	29	.29	1.13	.40	35	.82	35.5	14.7	1.0	27.5	11.0
14	3.85	30.5	.29	.67	.29	37.5	1.65	28.5	5.3	1.3	18.3	11.1
15	1.65	18.2	.29	.67	.82	17.4	4.2	28	2.9	1.3	24	18.8
16	1.85	25.5	.29	1.85	2.5	*23.5	2.5	*9.5	12.7	1.2	33.5	15.0
17	16.8	11.0	.29	1.13	1.65	24	1.50	5.3	9.4	15	11.5	10.6
18	35	4.3	3.8	.67	.98	9.2	1.30	13.1	3.4	38	5.5	8.5
19	8.3	15.2	1.85	.53	.67	4.7	.82	36	2.05	30	6.9	15.0
20	6.7	5.45	.67	3.8	.40	18.3	.67	27.5	1.65	*8.0	7.0	16.6
21	2.5	6.1	.40	13.6	.29	32.5	14.9	13.2	1.30	5.3	3.95	7.9
22	1.13	16.5	.29	9.7	.29	21	20.5	8.2	1.13	13.2	3.95	16.4
23	.82	10.9	.19	3.15	.19	11.0	5.0	4.7	17.3	42	9.8	24.5
24	.67	3.1	.19	2.9	.04	6.4	1.50	3.4	19.8	45	18.0	13.9
25	7.7	2.25	6.8	3.7	0	18.9	.98	2.5	8.4	40	15.9	11.0
26	40	8.6	3.65	24.5	0	21.5	6.9	2.5	3.7	28.5	13.2	17.9
27	24	23	5.7	*6.0	0	18.3	25	8.8	2.05	17.3	6.7	13.6
28	9.7	17.2	1.50	1.50	0	17.8	13.1	4.5	1.65	12.0	4.7	10.3
29	2.7	17.8	.53	.67	0	11.2	6.0	-	1.30	29.5	6.7	14.6
30	1.65	*5.7	.40	.29	0	6.1	3.4	-----	1.50	30	6.3	14.6
31	1.41	2.25	-----	.29	-----	30.5	2.25	-----	8.0	-----	14.8	-----
Total	333.08	416.40	44.99	84.56	12.26	596.15	204.34	400.37	266.31	421.2	498.20	394.60
Mean	10.7	13.4	1.50	2.73	0.409	19.2	6.59	14.3	8.59	14.0	16.1	13.2
cfs	16.6	20.7	2.32	4.22	0.633	29.7	10.2	22.1	13.3	21.7	24.9	20.4
Ac-ft	1,020	1,280	138	260	38	1,830	627	1,230	817	1,290	1,530	1,210
Calendar year 1954: Max	45			Min	0	Mean(mgd)	7.44	Mean(cfs)	11.5	Ac-ft	8,340	
Fiscal year 1954-55: Max	51			Min	0	Mean(mgd)	10.1	Mean(cfs)	15.6	Ac-ft	11,270	

\* Discharge measurement made on this day.

Note.--No gage-height record Mar. 31 to Apr. 20; discharge estimated on basis of records for near-by stations.

## Waikoloa Stream near Kamuela

Location.--Lat 20°03'15", long 155°39'55", on left bank 350 ft downstream from Parker Ranch boundary and 2.1 miles north of Kamuela.

Drainage area.--1.0 sq mi.

Records available.--May 1947 to June 1955.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,500 ft (from topographic map).

Average discharge.--8 years, 4.97 mgd (7.69 cfs).

Extremes.--Maximum discharge during year, 545 mgd (843 cfs) Dec. 10 (gage height, 5.52 ft), from rating curve extended above 10 mgd; minimum, 1.20 mgd (1.86 cfs) Dec. 1, 2.

1947-55: Maximum discharge, 545 mgd (843 cfs) Jan. 11, 1949, Dec. 10, 1954 (gage heights, 5.47 and 5.52 ft, respectively), from rating curve extended above 10 mgd; minimum, 1.04 mgd (1.61 cfs) Nov. 6-10, 1950, Feb. 12, 1951.

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

Revisions (fiscal years).--WSP 1155: 1948(M).

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.2	0.88	2.0	13.2
1.3	1.52	2.3	24
1.4	2.4	2.7	46
1.5	3.4	3.1	80
1.7	6.4	3.6	140

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.0	16.7	3.7	2.05	1.61	1.20	3.55	2.15	2.3	11.2	6.9	17.5
2	5.9	12.2	3.2	1.96	1.52	1.76	3.2	2.05	2.15	5.9	7.1	8.5
3	8.2	8.2	3.1	2.9	1.52	3.9	5.6	1.96	2.05	2.7	12.9	5.6
4	6.0	25	3.3	3.35	1.52	2.6	5.0	1.87	1.96	2.9	14.6	7.7
5	14.9	8.0	3.0	2.6	1.52	1.87	2.9	1.87	2.15	3.0	7.8	6.9
6	12.8	10.8	7.7	2.2	1.70	1.78	2.4	1.78	3.4	2.5	4.8	3.95
7	4.5	7.6	7.2	2.05	4.3	1.70	2.2	1.78	2.4	2.2	13.2	3.2
8	3.5	6.8	3.7	1.96	3.45	6.4	2.05	4.9	4.5	2.15	9.0	2.9
9	3.7	9.0	3.2	1.96	2.2	27	1.96	25.5	7.0	2.7	7.6	3.0
10	3.0	6.6	2.8	1.96	1.87	39.5	1.96	86	8.9	2.7	4.4	9.4
11	5.5	4.8	2.6	1.87	1.70	126	1.96	15.7	10.3	2.2	4.1	12.4
12	8.8	22	2.4	1.87	1.52	19.3	1.87	6.9	11.8	1.96	6.1	9.4
13	12.3	28.5	2.4	1.78	1.52	*16.7	1.87	23	4.9	1.87	8.1	6.7
14	4.8	24.5	2.3	1.78	1.52	27.5	1.87	14.2	2.9	2.15	8.3	7.5
15	4.7	13.5	2.2	1.96	1.61	7.8	1.96	14.0	2.4	2.2	12.8	7.3
16	5.0	11.2	2.15	2.3	1.52	11.7	1.87	5.9	2.4	2.05	26	6.5
17	4.6	9.0	2.3	2.05	1.52	7.2	1.78	*4.1	2.7	7.3	7.0	6.7
18	11.3	6.3	3.95	1.87	1.52	3.6	1.70	3.2	2.2	12.0	4.4	5.2
19	6.8	8.1	3.0	1.78	1.46	2.7	1.70	7.5	2.05	9.2	7.2	5.0
20	5.5	5.6	2.6	3.0	1.39	8.5	1.61	5.8	1.96	3.55	5.3	8.8
21	4.6	9.9	2.3	4.3	1.33	8.3	21	4.2	1.87	*2.7	3.9	4.7
22	3.7	17.6	2.4	2.6	1.33	7.1	11.0	3.1	1.87	3.05	6.4	8.9
23	3.8	12.0	2.2	2.05	1.33	4.2	3.85	2.8	3.0	11.0	9.9	13.7
24	4.9	5.6	2.15	1.87	1.33	3.2	2.8	2.5	5.9	19.2	7.4	6.6
25	11.7	*4.8	4.4	3.9	1.33	4.7	3.8	2.3	4.0	15.6	8.6	8.3
26	29.5	10.1	3.7	7.9	1.26	8.4	10.5	2.3	2.4	12.6	5.6	13.9
27	13.1	20	3.2	3.4	1.26	6.3	16.8	2.8	2.15	7.2	3.8	10.6
28	6.5	12.3	2.6	*2.4	1.26	6.0	5.9	2.6	1.96	7.9	3.8	7.1
29	4.2	15.2	2.15	1.96	1.26	4.3	3.2	--	1.96	11.8	4.3	11.9
30	4.5	9.3	2.05	1.78	1.26	3.1	2.6	-----	2.3	15.2	7.3	9.1
31	5.0	4.7	-----	1.70	-----	8.0	2.3	-----	3.55	-----	8.3	-----
Total	235.1	365.9	93.95	77.11	49.44	382.31	132.76	252.76	111.38	188.68	247.1	238.95
Mean:	7.58	11.8	3.13	2.49	1.65	12.3	4.28	9.03	3.59	6.29	7.97	7.96
mgd	11.7	18.3	4.84	3.85	2.55	19.0	6.82	14.0	5.55	9.73	12.3	12.3
cfs	721	1,120	288	237	152	1,170	407	776	342	579	753	733
Ac-ft												

Calendar year 1954: Max 126 Min 1.20 Mean(mgd) 5.52 Mean(cfs) 8.54 Ac-ft 6,180  
Fiscal year 1954-55: Max 126 Min 1.20 Mean(mgd) 6.51 Mean(cfs) 10.1 Ac-ft 7,280

Peak discharge (base, 100 mgd).--Aug. 4 (5:30 a.m.) 118 mgd (183 cfs), 3.46 ft; Dec. 10 (8 p.m.) 545 mgd (843 cfs), 5.52 ft; Jan. 21 (6:30 p.m.) 110 mgd (170 cfs), 3.42 ft; Feb. 10 (9:30 a.m.) 185 mgd (286 cfs), 3.88 ft.

\* Discharge measurement made on this day.

## Waikoloa Stream at Marine Dam, near Kamuela

Location.--Lat 20°02'45", long 155°39'55", on right bank 160 ft upstream from Marine Dam and 1.5 miles north of Kamuela.

Drainage area.--1.3 sq mi.

Records available.--May 1947 to June 1955.

Gage.--Water-stage recorder and artificial control. Altitude of gage is 3,450 ft (from topographic map).

Average discharge.--8 years, 6.14 mgd (9.50 cfs).

Extremes.--Maximum discharge during year, 720 mgd (1,110 cfs) Dec. 10 (gage height, 5.80 ft), from rating curve extended above 14 mgd; minimum, 0.65 mgd (1.01 cfs) Dec. 1. 1947-55: Maximum discharge, that of Dec. 10, 1954; minimum, that of Dec. 1, 1954.

Remarks.--Records good. Diversions above station for domestic use.

Rating table, fiscal year 1954-55 (gage height, in feet, and discharge, in million gallons a day)

1.4	0.60	2.0	8.6
1.5	1.15	2.2	14.5
1.6	2.0	2.4	24
1.7	3.05	2.6	36.5
1.8	4.5	3.0	71
1.9	6.4	3.6	143

Discharge, in million gallons a day, fiscal year July 1954 to June 1955

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	16.1	26	3.7	1.50	1.10	0.70	4.4	2.2	2.4	15.7	8.8	27
2	6.8	16.7	2.95	1.58	1.03	1.18	3.7	2.0	2.0	7.4	9.2	11.0
3	10.1	11.1	2.95	2.6	.96	3.2	7.8	1.82	1.74	2.85	18.1	6.8
4	7.0	34	3.2	3.05	.96	1.89	7.0	1.74	1.66	2.95	22	9.0
5	21	9.8	2.7	2.3	.96	1.23	3.3	1.66	1.88	3.05	10.3	8.4
6	17.1	14.1	9.1	1.74	1.03	1.22	2.6	1.66	3.45	2.5	5.7	4.3
7	4.9	9.3	8.4	1.58	3.8	1.15	2.4	1.66	2.4	2.1	20	3.3
8	3.45	9.0	3.7	1.50	2.8	7.2	2.2	5.3	5.2	2.0	11.2	2.95
9	3.55	11.3	3.2	1.43	1.50	40	2.0	42	8.4	2.65	9.4	3.05
10	2.95	7.9	2.6	1.43	1.22	61	1.82	114	12.8	2.7	5.0	11.5
11	6.2	5.4	2.3	1.36	1.10	139	1.74	25	13.4	2.1	4.6	17.9
12	12.0	33.5	2.1	1.29	1.03	30	1.66	8.9	15.9	1.74	7.2	12.5
13	17.4	43	2.0	1.29	.96	*26	1.66	33	6.0	1.58	10.4	8.8
14	5.6	37	1.82	1.22	.90	42	1.74	19.8	3.05	2.0	10.7	9.5
15	5.6	19.9	1.74	1.36	1.03	11.6	1.82	21	2.5	2.1	19.7	9.1
16	5.8	15.4	1.66	1.66	.96	17.0	1.74	7.6	2.4	1.74	40	7.9
17	5.3	11.2	1.82	1.43	.96	10.7	1.66	4.7	2.6	10.2	8.7	8.3
18	16.2	7.4	3.6	1.29	.90	4.4	1.58	3.45	2.2	17.8	5.2	6.2
19	8.7	9.6	2.7	1.22	.85	3.05	1.50	9.7	1.82	12.3	8.6	5.8
20	6.8	6.5	2.2	2.65	.85	11.9	1.50	7.3	1.74	4.1	6.2	11.2
21	5.0	13.0	1.82	3.8	.80	11.8	31	5.0	1.66	*2.7	4.3	5.4
22	3.95	26	2.0	2.1	.80	10.2	16.9	3.2	1.58	3.2	7.4	11.9
23	4.2	15.8	1.74	1.50	.75	5.0	5.0	2.85	3.15	15.8	12.7	18.6
24	5.3	8.2	1.66	1.36	.75	3.7	3.05	2.5	7.5	31	9.6	7.9
25	15.5	*5.0	4.5	4.4	.75	6.2	4.3	2.3	5.0	25	11.4	10.8
26	43	13.4	3.4	8.6	.75	14.7	16.3	2.2	2.5	16.9	6.9	19.1
27	15.1	29.5	3.05	3.3	.75	8.7	24.5	2.95	2.0	9.3	4.3	14.1
28	8.3	18.0	2.3	*1.96	.70	8.3	7.5	2.6	1.74	10.0	4.0	8.6
29	4.5	21.5	1.74	1.43	.70	5.5	3.75	-	1.74	17.2	*5.3	16.1
30	4.7	11.6	1.58	1.22	.70	3.55	2.85	-----	2.2	23.5	9.3	12.3
31	5.6	5.0	-----	1.10	-----	10.8	2.4	-----	3.8	-----	11.5	-----
Total	301.70	503.1	88.23	64.25	32.35	503.03	171.37	338.09	126.41	254.16	327.7	309.30
Mean:												
mgd	9.73	16.2	2.94	2.07	1.08	16.2	5.53	12.1	4.08	8.47	10.6	10.3
cfs	15.1	25.1	4.55	3.20	1.67	25.1	8.56	18.7	6.31	13.1	16.4	15.9
Ac-ft	926	1,540	271	137	99	1,540	526	1,040	388	780	1,010	949

Calendar year 1954: Max 139 Min 0.70 Mean(mgd) 6.65 Mean(cfs) 10.3 Ac-ft 7,440  
Fiscal year 1954-55: Max 139 Min 0.70 Mean(mgd) 8.27 Mean(cfs) 12.8 Ac-ft 9,270

Peak discharge (base, 100 mgd).--Aug. 4 (4:30 a.m.) 129 mgd (200 cfs), 3.48 ft; Dec. 10 (7 p.m.) 720 mgd (1,110 cfs), 5.80 ft; Dec. 14 (3:30 p.m.) 110 mgd (170 cfs), 3.37 ft; Jan. 21 (6:30 p.m.) 150 mgd (232 cfs), 3.63 ft; Feb. 10 (10:30 a.m.) 200 mgd (309 cfs), 3.95 ft.  
\* Discharge measurement made on this day.

## Discharge measurements at points other than gaging stations

Measurements of streamflow on the island of Hawaii made at points other than regular gaging 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. Measurements believed to have been made under base-flow conditions are identified by an asterisk (\*) to the left of the discharge figure. 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 stream. The column headed, "Measured previously" shows the fiscal years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at points other than gaging stations on the island of Hawaii during fiscal year July 1954 to June 1955

Stream	Tributary to	Location	Measured previously (fiscal years)	Date	Discharge	
					Million gallons a day	Cubic feet per second
Kokelekele.	Kalohewahewa Stream.	Lat 19°43'28", long 155°10'30", at altitude 1,740 ft, in Hilo Forest Reserve, about 4,000 ft southeast of gaging station on Kapehu ditch, near Hilo.	1954	Oct. 19	*1.93	*2.99
Unnamed branch.	Kokelekele Stream.	Lat 19°43'25", long 155°10'30", at altitude 1,750 ft, in Hilo Forest Reserve, 0.9 mile southeast of gaging station on Kapehu ditch, near Hilo.	1954	Oct. 19	*.343	*.531
Kapehu Stream.	Wailuku River.	Lat 19°43'55", long 155°10'40", at altitude 1,850 ft, in Hilo Forest Reserve, 1,000 ft above confluence with Kipi Stream and 0.5 mile northeast of gaging station on Kapehu ditch, near Hilo.	1954	Oct. 19	*1.35	*2.09
Kipi Stream.	Kapehu Stream.	Lat 19°44'00", long 155°10'35", at altitude 1,800 ft, in Hilo Forest Reserve, 700 ft above confluence with Kapehu Stream and 0.5 mile northeast of gaging station on Kapehu ditch, near Hilo.	1954	Oct. 19	*1.45	*2.24
Kapehu Stream.	Wailuku River.	Lat 19°44'00", long 155°10'30", at altitude 1,750 ft, in Hilo Forest Reserve, 30 ft below confluence with Kipi Stream and 0.6 mile northeast of gaging station on Kapehu ditch, near Hilo.	1954	Oct. 19	*3.57	*5.53
Kehena ditch diversion.	East Branch Honokane-nui Stream.	Lat 20°06'55", long 155°44'00", head of Honokane Valley, Kohala Mountains, near Kohala.	1954	Oct. 27	4.21	6.52

\* Base flow.

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