Water Resources Data for Hawaii and other Pacific Areas

Volume 1. Hawaii

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT HI-79-1

WATER YEAR 1979

Prepared in cooperation with the State of Hawaii and with other agencies

CALENDAR FOR WATER YEAR 1979

1978

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Volume 1. Hawaii

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT HI-79-1

WATER YEAR 1979

Prepared in cooperation with the State of Hawaii and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, Director

For information on the water program in Hawaii
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Honolulu, Hawaii 96850

1980

PREFACE

This report was prepared by personnel of the Hawaii district of the Water Resources Division of the U.S. Geological Survey under the supervision of Benjamin L. Jones, District Chief, and W. H. Robinson, Regional Hydrologist, Western Region. It was done in cooperation with the State of Hawaii and with other agencies.

This report is one of a series issued by State. General direction for the series is by Philip Cohen, Chief Hydrologist, U.S. Geological Survey, and R. J. Dingman, Assistant Chief Hydrologist for Scientific Publications and Data Management.

Data for Hawaii and other Pacific Areas are in two volumes as follows:

Volume 1. State of Hawaii

Volume 2. Trust Territory of the Pacific Islands, Guam, Mariana Islands, Tutuila, American Samoa, and Saipan, Northern Mariana Islands

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Volume 1 of water resources data for the 1979 water year for Hawaii and other Pacific Areas consist of records of stage, discharge, and water quality of streams; and water levels and water quality in wells and springs. This report contains discharge records for 111 gaging stations; water quality for 12 gaging stations, 103 partial-record flow stations, and 157 wells; and water levels for 22 observation wells. Also included are 106 crest-stage partial-record stations and 18 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, Federal, and other agencies in Hawaii.

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WATER RESOURCES DATA FOR HAWAII AND OTHER PACIFIC AREAS, 1979

Volume 1

INTRODUCTION

Water resources data for the 1979 water year for Hawaii and other Pacific areas consist of records of stage, discharge, and water quality of streams; and water-levels and water quality of wells and springs. This report contains discharge records for 111 gaging stations; water quality for 12 gaging stations, 103 partial-record flow stations, and 157 wells; and water levels for 22 observation wells. Also included are data for 106 crest-stage partial-record stations and 18 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, Territorial, and Federal agencies in Hawaii and other Pacific areas.

Through September 30, 1960 (June 30, 1960, for Hawaii and other Pacific areas), the records of discharge (or stage) of streams, and contents (or stage) of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." The records in Hawaii were contained in the series as "Surface Water Supply of Hawaii." Records for other Pacific areas were contained in one volume entitled, "Surface Water Supply of Mariana, Caroline, and Samoa Islands." Through water year 1960 these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202.

Beginning with the 1961 water year (fiscal year for Hawaii) and continuing through water year 1974, streamflow data have been released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records beginning with the 1964 water year, and ground-water data since the 1971 water year have been similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1975 water year, water data for streamflow, water-quality, and ground water are published as an official Survey report on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report HI-79-1." For archiving and general distribution, the reports for water years 1971-74 are also identified as water-data reports. These water-data reports are for sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information including current prices, for ordering specific reports may be obtained from the district chief at the address given on the back of the title page or by telephone (808) 546-8331.

COOPERATION

The U.S. Geological Survey and organizations of the State of Hawaii have had cooperative agreements for the systematic collection of streamflow records since 1909, and for water-quality records since 1967. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Hawaii Department of Land and Natural Resources, Division of Water and Land Development, R. T. Chuck, manager-chief engineer.
Hawaii Department of Transportation, Ryokichi Higashionna, director.
City and County of Honolulu, Board of Water Supply, Kazuyoshi Hayashida, manager and chief engineer.
City and County of Honolulu, Division of Engineering, Wallace Miyahira, director and chief engineer.

Assistance in the form of funds or services are given by the Corps of Engineers, U.S. Army in collecting records for 11 gaging stations, 4 water-quality stations and 5 partial-record stations, and the U.S. Forest Service for 1 water-quality station published in this report.

The following organizations aided in collecting records:

Maui County Board of Water Supply; East Kauai Water Co., Ltd.; McBryde Sugar Co., Ltd.; East Maui Irrigation Co., Ltd.; and B. P. Bishop Estate.

HYDROLOGIC CONDITIONS

Runoff during October to February of the 1979 water year was predominantly in the excessive range (in the upper 75 percent of record) at the four index stations on the four major islands within the State. The flow at all four index stations was greatly excessive in February and ranged between 275 and 605 percent of the monthly medians for each station. Deficient flows at the index stations occurred randomly from March to September but mostly during the last 3 months of the water year. The annual mean discharge for the 1979 water year was in the normal range at two of the index stations and in the excessive range at the other two index stations. The relation to the median of yearly mean discharges for the period 1941-70 for the four index stations ranged between 100 and 139 percent.

At the index station, East Branch of North Fork Wailua River near Lihue, Kauai, streamflow was excessive for 4 months and deficient for 5 months of the 12 months in 1979. Annual mean discharge was in the normal range and was 100 percent of the annual median. Streamflow at Kalihi Stream near Honolulu, Oahu, was excessive for 4 months and also deficient for 4 months of the 12 months in 1979. Yearly mean discharge was normal and 103 percent of the annual median. Monthly mean flow at Honopou Stream near Huelo, Maui was excessive from October to February and in the normal range in March and May to August. Annual mean discharge was in the excessive range and was 139 percent of the annual median. Streamflow at the index station Waiakea Stream near Mountain View, Hawaii, was variable. Monthly mean flows were normal for 6 months and deficient for 3 of the 12 months. However, annual mean discharge was in the excessive range and was 133 percent of the annual median.

On February 20, heavy rains caused extensive flooding in many districts on the island of Hawaii. In a single 24-hour period, 22.3 inches (56.6 cm) of rain fell in the Hilo area. During a 10-day period, about 250 families were evacuated. Damage estimates to private and public property reached 6 million dollars and President Carter proclaimed the County of Hawaii a federal disaster area in February 1979.

Records at the two continuous recorder sites on Oahu showed minimum ground-water level for their respective periods of record. One of the two continuous recorder sites on Maui showed a new maximum ground-water level for the period of record and the other continuous recorder site showed that the water level was also near the maximum for the period of record.

Analyses of water samples taken at more than 150 basal water-table wells did not in general show significant changes in the chloride contents.

Monthly and annual mean discharge is compared with medians at the four index stations in figure 1. Flood hydrographs at two selected stations on the island of Hawaii are shown in figure 2. Table 1 is a summary of flood stages, discharges, and recurrence intervals at 20 selected sites.

DEFINITION OF TERMS

Definition of terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined as follows:

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or 325,851 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies within 24 hours when incubated at 35°C ± 1.0°C on M-Endomedium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on m-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria

which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biomass is the amount of living matter present at any time, expressed as the weight per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in g/m^3 (grams per cubic meter), and periphyton and benthic organisms in g/m^2 (grams per square meter).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash, and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash and dry mass.

Wet mass is the mass of living matter plus contained water.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually mililiters (mL) of liters (L).

CFS-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.9835 acre-feet, or 646,317 gallons or 2,447 cubic meters.

Chlorophyll refers to the green pigments of plants. Chlorphyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Coliform organisms are a group of bacteria used as an indicator of the sanitary quality of the water. The number of coliform colonies per 100 milliliters is determined by the immediate or delayed incubation membrane filter method.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Continuing record station is a specified site which meets one or all conditions listed:

1. When chemical samples are collected daily or monthly for 10 or more months during the water year.

2. When water temperature records include observations taken one or more times daily.

3. When sediment discharge records include those periods for which sediment loads are computed and are considered to be representative of the runoff for the water year.

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, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (FT^3/S, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic average of individual daily mean discharges during a specified period.

Instantaneous discharge is the discharge at a particular instant of time. If this discharge is reported instead of the daily mean, the heading of the discharge column in the table is "DISCHARGE (CFS)."

Dissolved is that material in a representative water sample which passes through a 0.45 micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate. It is recognized that certain kinds of samples cannot be filtered; to provide for this, procedures that are considered equivalent to filtering through a 0.45 micrometer membrane filter will be identified and announced at a later date.

Suspended recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total". (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material".

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = \sum_{i=i}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains 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.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Micrograms per gram (µg/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L, and is based on the mass of sediment per liter of water-sediment mixture.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (mL) or liters (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

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

Particle-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The Classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.0	Sedimentation or sieve.
Gravel.....	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass, or volume.

Pesticides are chemical compounds used to control the growth of undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (Pc,pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in additon to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having siliceous shell. Their concentrations are expressed as number of cells/mL of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells/mL of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/(m^2·time) for periphyton and macrophytes and mg C/(m^3·time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O_2/(m^2 ·time) for periphyton and macrophytes and mg O_2/(m^3·time)] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times milligrams per liter times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total-sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weight concentration of suspended sediment passing a stream section during a 24-hour day.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglas strips for periphyton collection.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom.....Animal
Phylum.....Arthropoda
Class.....Insecta
Order.....Ephemeroptera
Family.....Ephemeridae
Genus.....Hexageria
Species.....Hexagenia limbata

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Turbidity of a sample is the reduction of transparency due to the presence of particulate matter. In this report it is expressed Jackson turbidity units (JTU). Nephelometric

WDR is used as an abbreviation for "Water-Data Reports" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

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

DOWNSTREAM ORDER AND STATION NUMBER

Records are listed in a downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all main-stream stations are listed before the first main-stream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each gaging station, partial-record station, and water-quality station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station.

Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 16200000 which appears just to the left of the station name includes the 2-digit number "16" plus the 6-digit downstream order number "200000." In this report, the records are listed in downstream order by islands.

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

Miscellaneous downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits is a sequential number for wells within a 1-second grid. In the event that the latitude-longitude coordinates for a well and a miscellaneous site are the same, assign sequential numbers "01," "02," etc. as one would for wells. See figure 13.

Beginning in 1971, the local well-numbering system for Hawaii was restructured to contain seven digits based on a non-arbitrary, unique one-minute grid system. One-minute parallel lines for both latitude and longitude are drawn on the map resulting in one-minute grids. Each grid is designated by a four-digit number. The first two digits represent minutes of latitude for the grid and the second two digits represent minutes of longitude for that grid. This establishes unique minute-grid numbers within each of the islands in the state except for the island of Hawaii where it encompasses an area more than one degree (60 minutes) of latitude and longitude. To establish unique minute-grid numbers for this island, 30 was added to the minutes of latitude in areas less than 19°00" of latitude, and 60 was added to the minutes of latitude in areas more than 20°00" of latitude. For the same reason, 30 was added to the minutes of longitude in areas less than 155°00" of longitude, and 60 was added to the minutes of longitudes more than 156°00" longitude. See figures 14 and 15.

To distinguish wells within a minute grid, two grids are added following the 4-digit minute-grid numbers with a dash separator. These two-digit numbers are assigned with the oldest well dug within the grid as 01 and increase chronologically, with few exceptions, to the latest dug.

Since it is possible to have a same 6-digit number for wells on different islands, another digit distinguishing each of the islands, is added in front of the 6-digit number with a dash separator.

For continuity, the old well numbers are listed in parentheses after the new well numbers.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network is an accounting network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on the river-basin accounting units designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharges are computed from the daily figures. 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 computed 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 basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the bases of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations, in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow 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 or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" 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 water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the 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 figures was first published is given.

The type of gage currently in use, 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 record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE", it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN"), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharge are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

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 interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Records of discharge collected by agencies other than the Geological Survey

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, Va 22092, maintains an index of water-data sites not published by the Geological Survey. Information on records available at specific sites can be obtained upon request.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

Publications

In each water-supply paper entitled, "Surface Water Supply of the United States" there is a list of numbers of preceding water-supply papers containing streamflow information for the area covered by that report. In addition, there is a list of numbers of water-supply papers containing detailed information on major floods in the area. Records for stations in Hawaii and other Pacific areas for the period October 1959 to September 1965, are in Water-Supply Paper 1937.

Two series of summary reports entitled, "Compilation of Records of Surface Waters of the United States" have been published; the first series covers the entire period of record through September 1950 (June 1950, for Hawaii), and the second series covers the period October 1950 to September 1960 (July 1950 to June 1960, for Hawaii and other Pacific areas). These reports contain summaries of monthly and annual discharge and monthend storage for all previously published records, as well as some records not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical. The yearly summary table for each gaging station lists the numbers of the water-supply papers in which daily records were published for that station. Records for stations in Hawaii and other Pacific areas are compiled in Water-Supply Paper 1319 through June 1950, in 1739 and 1751 for July 1950 to June 1960, in 1937 for October 1959 to September 1965, and 2137 for October 1966 to September 1970.

Special reports on major floods or droughts or of other hydrologic studies for the area have been issued in publications other than water-supply papers. Information relative to these reports may be obtained from the district office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The water-quality records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives periods of record for the various types of water-quality data (chemical, specific conductance, biological determination, water temperatures, sediment discharge), period of record, and extremes of pertinent data, and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

One sample can define adequately the water-quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diel temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

Publications

The annual series of water-supply papers that contain information on quality of surface waters in Hawaii and other Pacific areas are listed below.

Water year	WSP No.	Water year	WSP No.	Water year	WSP No.
1964	1966	1967	2016	1970	2160
1965	1966	1968	2016		
1966	1996	1969	2150		

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 14.

Measurements are made in many types of wells, under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom). To show the intraday variation in the ground-water levels caused by local pumping and tidal fluctuations, instantaneous maximum and minimum water levels are given with the mean water levels for the day.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error in determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

Publications

Publication of ground-water level data for the United States in Water-Supply Papers was begun by the Geological Survey in 1935. From 1935 through 1939, a single Water-Supply Paper for each year covering the entire nations was issued (Water-Supply Papers 777, 817, 840, 845, and 886). From 1940 through

1974, separate Water-Supply Papers were issued for 6 sections of the United States. Water-level data for Hawaii are in the Water-Supply Papers listed below, each report containing one or more calendar years (January-December) of data. Data in this report are for the 12-month water year ending September 30.

Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.
1935	777	1942	949	1949	1161	1956-60	1770
1936	817	1943	991	1950	1170	1961-65	1855
1937	840	1944	1021	1951	1196	1966-70	2010
1938	845	1945	1028	1952	1226	1971-74	2162
1939	886	1946	1076	1953	1270		
1940	911	1947	1101	1954	1326		
1941	941	1948	1131	1955	1409		

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.

2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.

2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.

3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.

3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.

3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.

3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.

3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.

3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.

3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.

3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.

3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.

3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.

3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.

3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.

3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.

4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.

4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.

4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.

4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.

4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.

4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.

5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.

5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.

5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.

5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.

5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.

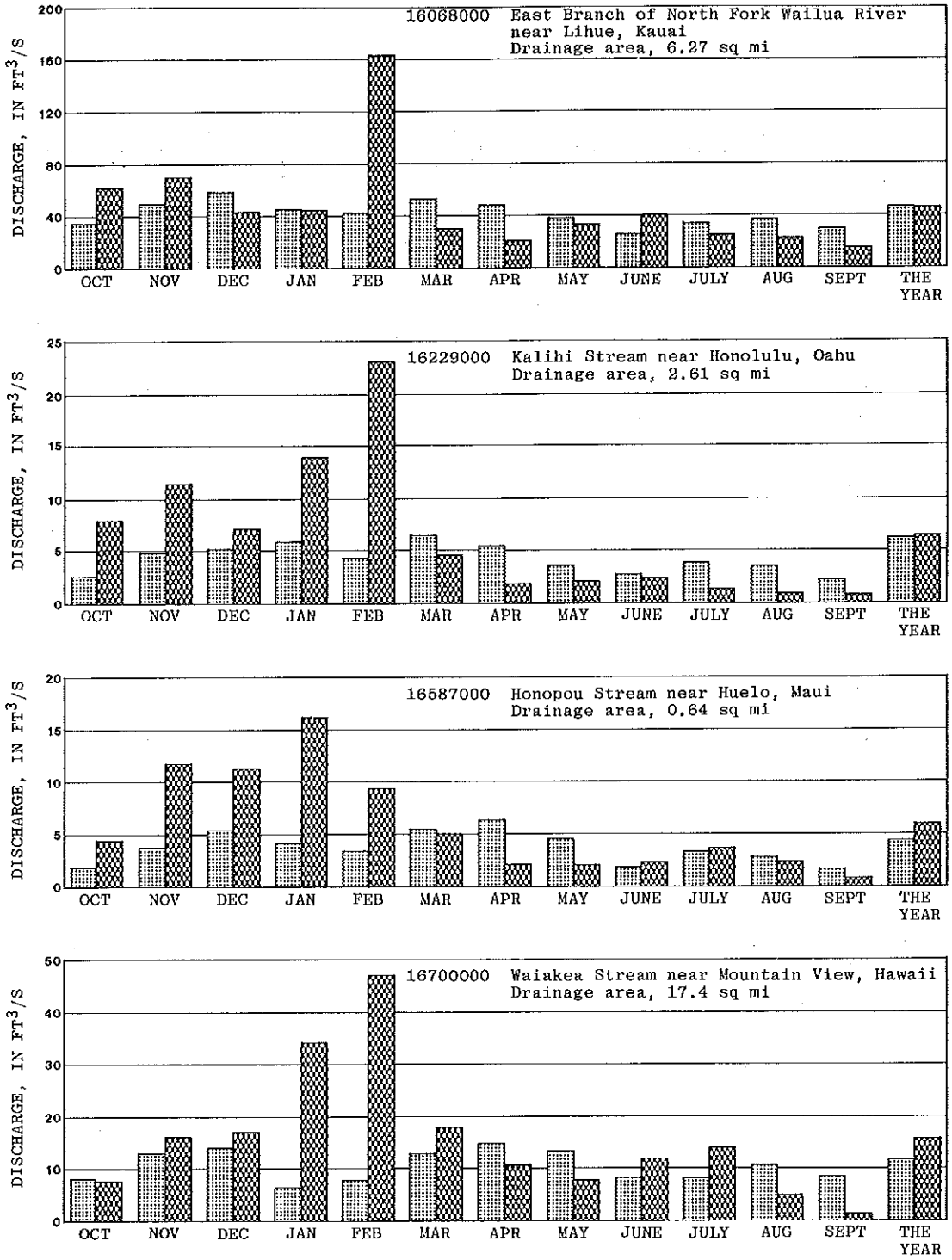
5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.

7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.

8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.



Median of monthly and yearly mean discharge for period 1941-70.

Monthly and yearly mean discharge during 1979 water year.

FIGURE 1.--DISCHARGE DURING 1979 WATER YEAR COMPARED WITH MEDIAN DISCHARGE FOR PERIOD 1941-70 FOR FOUR REPRESENTATIVE GAGING STATIONS.

SUMMARY OF FLOOD STAGE AND DISCHARGE

The following table contains the record of peak flows at selected sites for floods which occurred during February 20, 1979. The sites are gaging and crest-gage stations. Eleven indirect discharge measurements were made to determine peaks of the flood. Other peaks were determined from established or extended rating tables. Recurrence interval or the average period in years, in which a flood of a given magnitude will be equalled or exceeded once, is also shown.

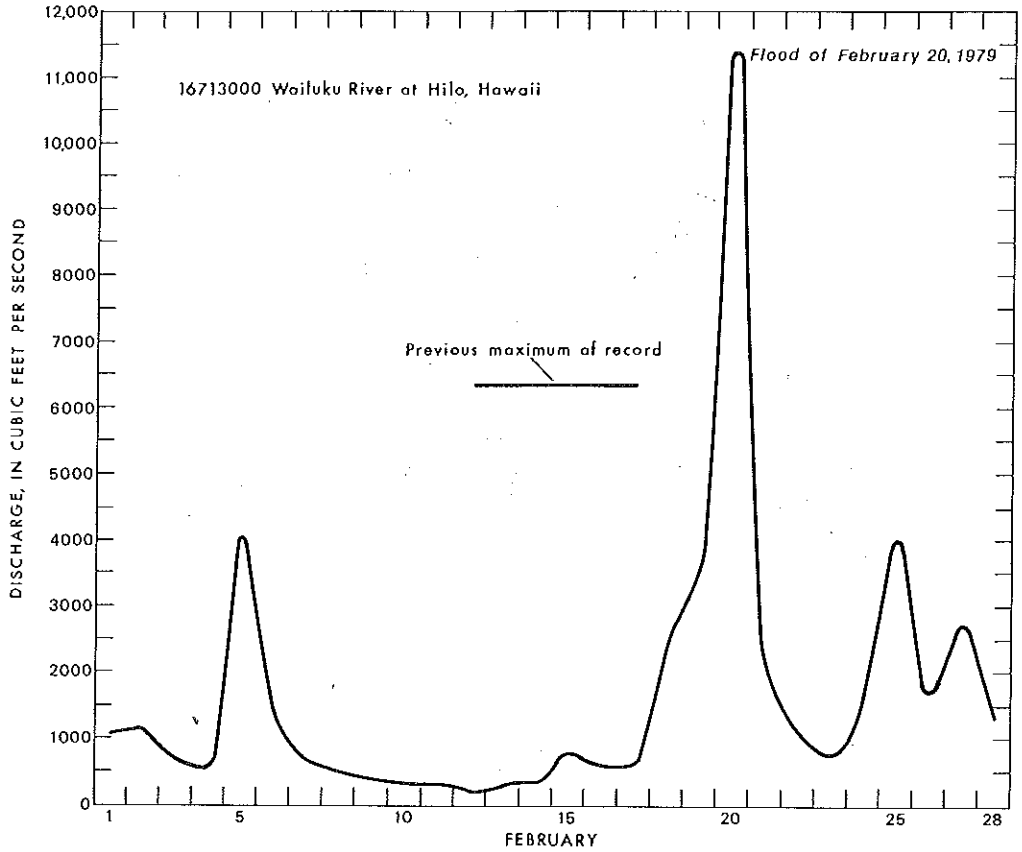
Table 1.--Peak discharges at selected station sites, island of Hawaii

				Maximum flood previously known			Peak flood on February 20, 1979			
Station Number (16-)	Station name	Drainage area (mi^2)	Period of record	Date	Gage Height (ft)	Discharge (ft^3/s)	Time (hr)	Gage Height (ft)	Discharge (ft^3/s)	Recurrence interval (yrs)
16700000	Waikea Stream near Mountain View	17.4	1931-79	8-26-70	4.45	565	1300	4.38	516	8
16701300	Waiakea Stream at Hilo (CG)	35.8	1968-79	8-26-70	6.65	865	--	9.07	2,590	40
16701400	Palai Stream at Hilo (CG)	5.08	1965-79	7-25-66	7.13	1,000	--	8.1	1,260	100
16701800	Wailuku River near Kaumana	43.4	1967-79	8- 8-67	13.35	9,580	1230	4.50	630	< 2
16704000	Wailuku River at Piihonua	230	1929-79	8-11-40	28.6	63,400	1300	17.80	17,800	3
16713000	Wailuku River at Hilo	256	1978-79	5-23-78	23.30	34,200	1300	24.4	37,800	-
16717000	Honolii Stream near Papaikou	11.6	1967-79	5-23-78	20.00	22,600	1230	13.53	6,030	< 2
16717600	Alia Stream near Hilo (CG)	0.58	1962-79	1- 8-75	4.96	724	--	17.1±	2,850	>100
16717650	Kapehu Stream near Pepeekeo (CG)	1.09	1963-79	2- 8-72	9.60	1,010	--	29.93	3,320	>100
16717800	Pohakupuka Stream near Papaaloa	2.76	1963-79	11-26-67	13.37	5,340	0330	7.95	1,540	< 2
16762000	Alapai Gulch at Naalehu (CG)	2.87	1963-79	11-26-67	9.91	1,550	--	6.23	962	5
16764000	Hilea Gulch tributary near Honuapo	9.17	1966-79	12-30-66	6.35	1,220	0430	6.45	1,280	> 5
16765000	Hilea Gulch tributary No. 2 near Honuapo	1.86	1966-79	12-30-66	7.16	523	0430	7.02	496	> 5
16767000	Ninole Gulch near Punaluu	15.5	1966-79	4-11-70	6.62	2,430	0230	6.50	2,250	5
16770000	Hionamoa Gulch at Pahala (CG)	9.41	1963-79	1- 5-76	15.50	6,600	--	--	10,400	< 25
16770500	Paauau Gulch at Pahala	1.74	1963-79	1- 5-69	5.90	760	a0400	9.67	2,800	6
Misc.	Alenaio Stream at Hilo	8.48	--	7-25-66	--	2,800	--	--	1,280	-
Misc.	Keaiwa Gulch near Pahala	3.39	--	--	--	--	--	--	7,360	-
Misc.	Kaalaala Gulch near Pahala	2.22	--	--	--	--	--	--	6,460	-
Misc.	Piikea Gulch near Pahala	7.83	--	--	--	--	--	--	6,920	-

(CG) Crest-gage station.

Misc. Miscellaneous site.

a About.



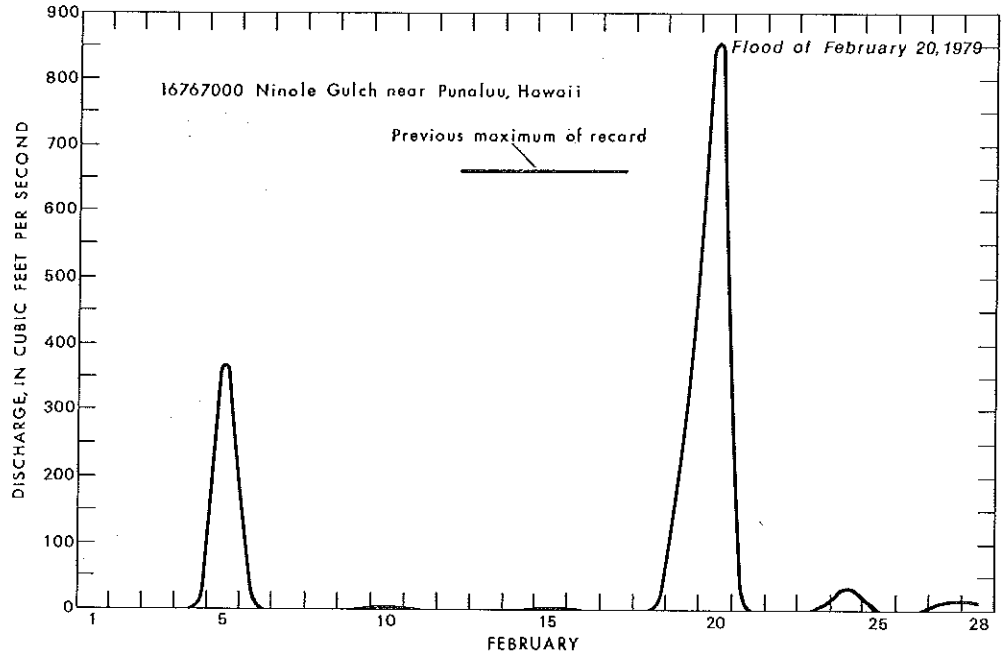
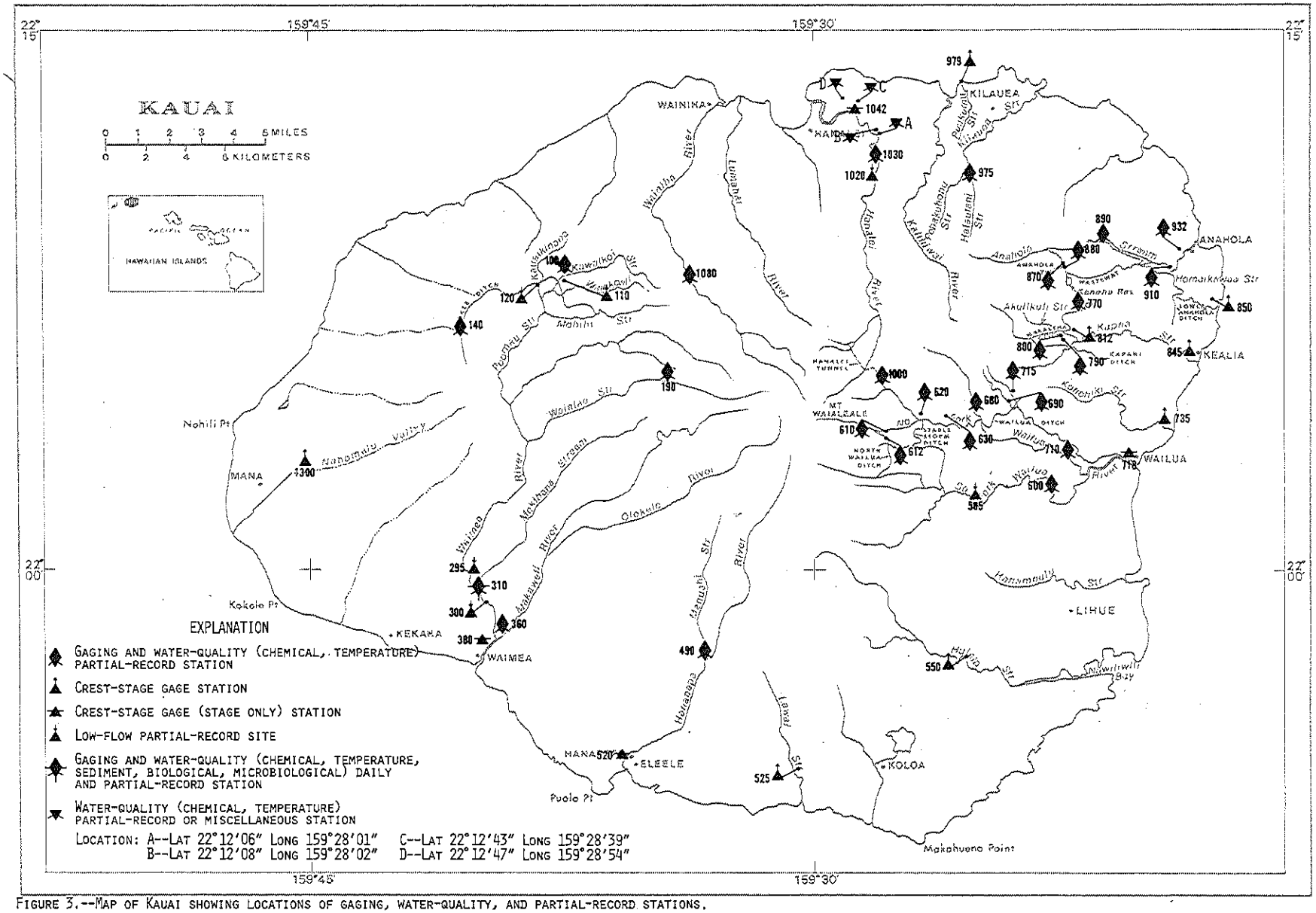


FIGURE 2.--DISCHARGE AT SELECTED GAGING STATIONS, FLOOD OF FEBRUARY 20.



EXPLANATION

- GAGING AND WATER-QUALITY (CHEMICAL, TEMPERATURE) PARTIAL-RECORD STATION
- CREST-STAGE GAGE STATION
- CREST-STAGE GAGE (STAGE ONLY) STATION
- LOW-FLOW PARTIAL-RECORD SITE
- GAGING AND WATER-QUALITY (CHEMICAL, TEMPERATURE, SEDIMENT, BIOLOGICAL, MICROBIOLOGICAL) DAILY AND PARTIAL-RECORD STATION
- WATER-QUALITY (CHEMICAL, TEMPERATURE) PARTIAL-RECORD OR MISCELLANEOUS STATION

LOCATION: A--LAT 22°12'06" LONG 159°28'01" C--LAT 22°12'43" LONG 159°28'39"
B--LAT 22°12'08" LONG 159°28'02" D--LAT 22°12'47" LONG 159°28'54"

FIGURE 3.--MAP OF KAUAI SHOWING LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS.

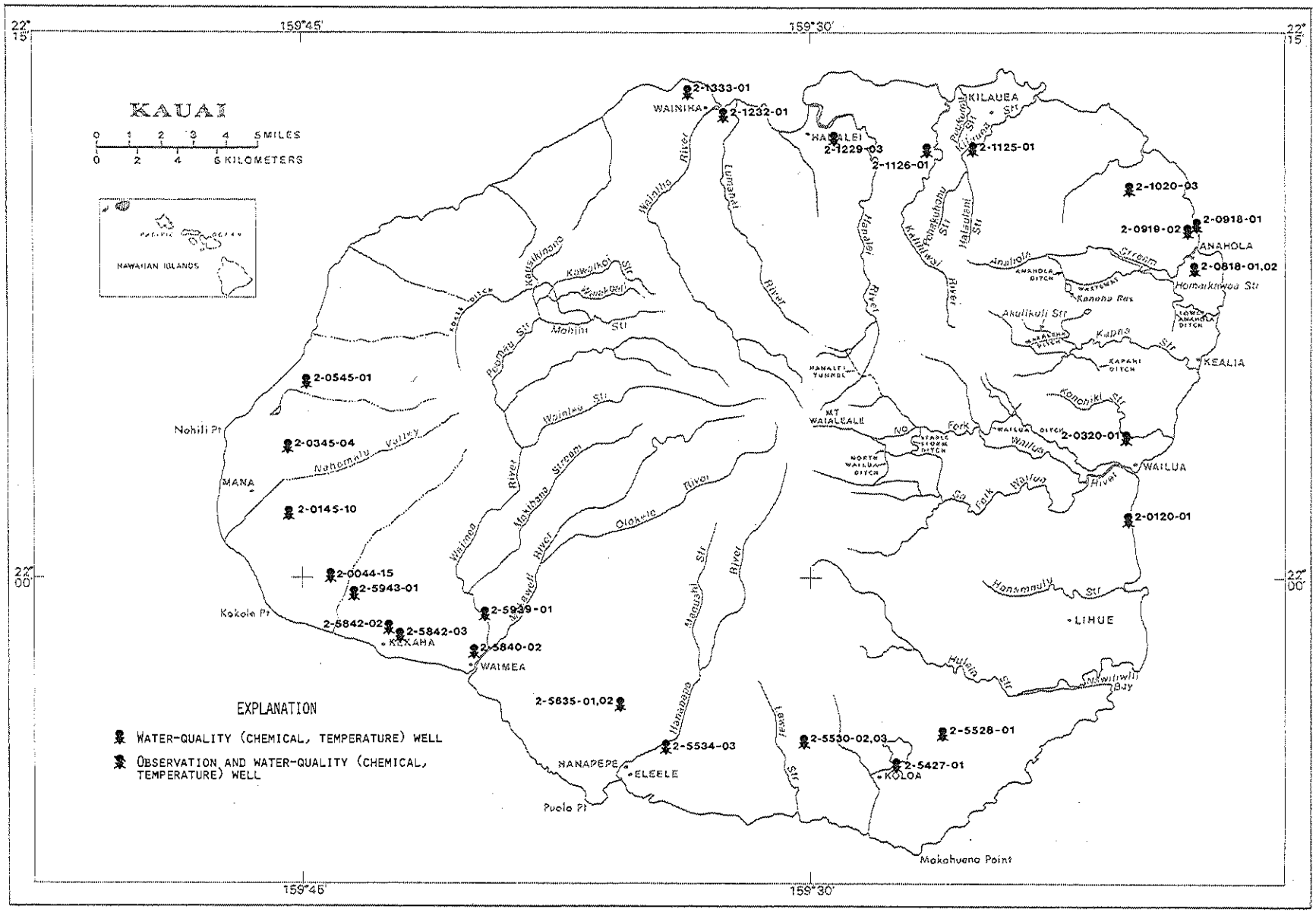


FIGURE 4.--MAP OF KAUAI SHOWING LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES.

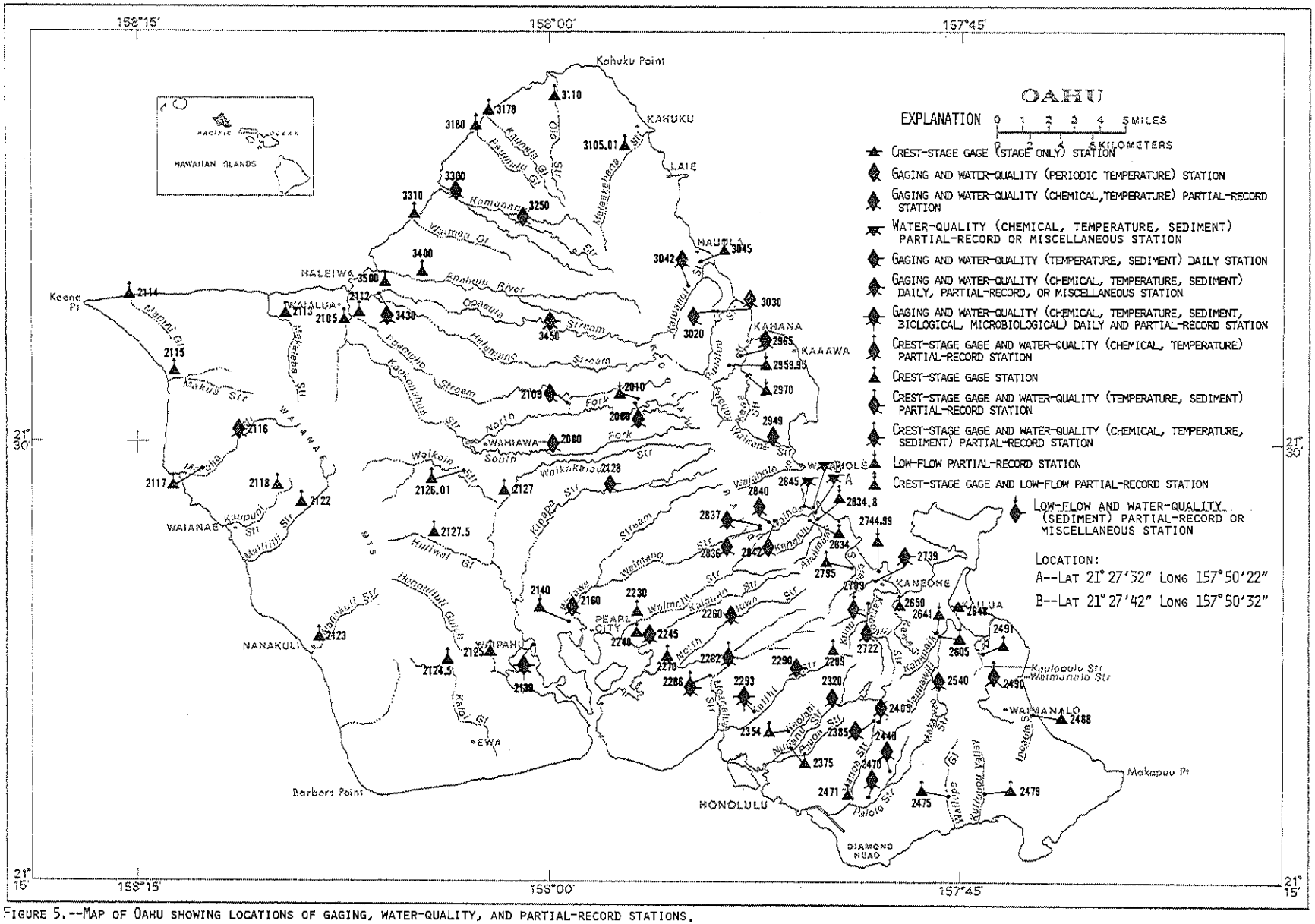


FIGURE 5.--MAP OF OAHU SHOWING LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS.

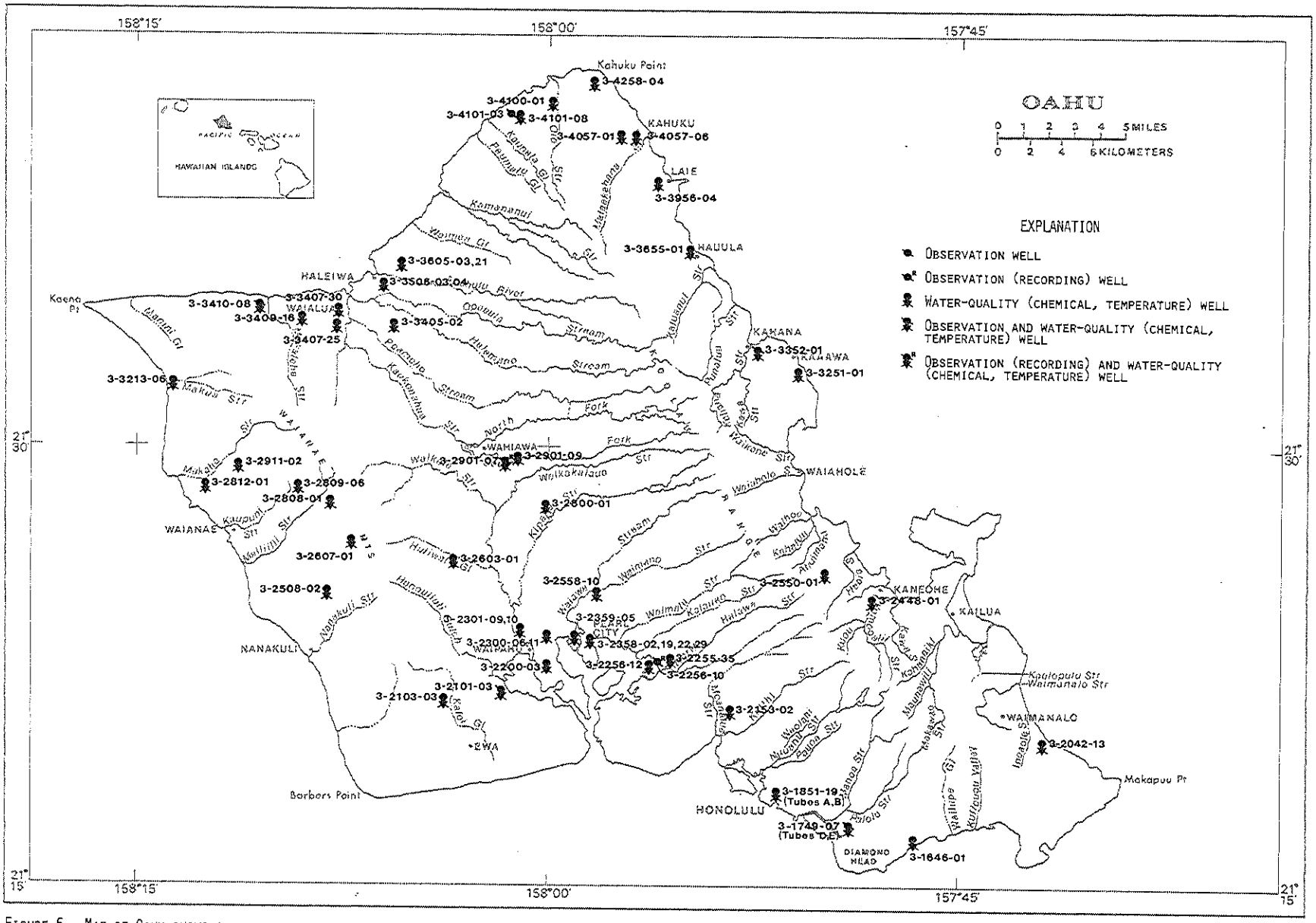


FIGURE 6.--MAP OF OAHU SHOWING LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES.

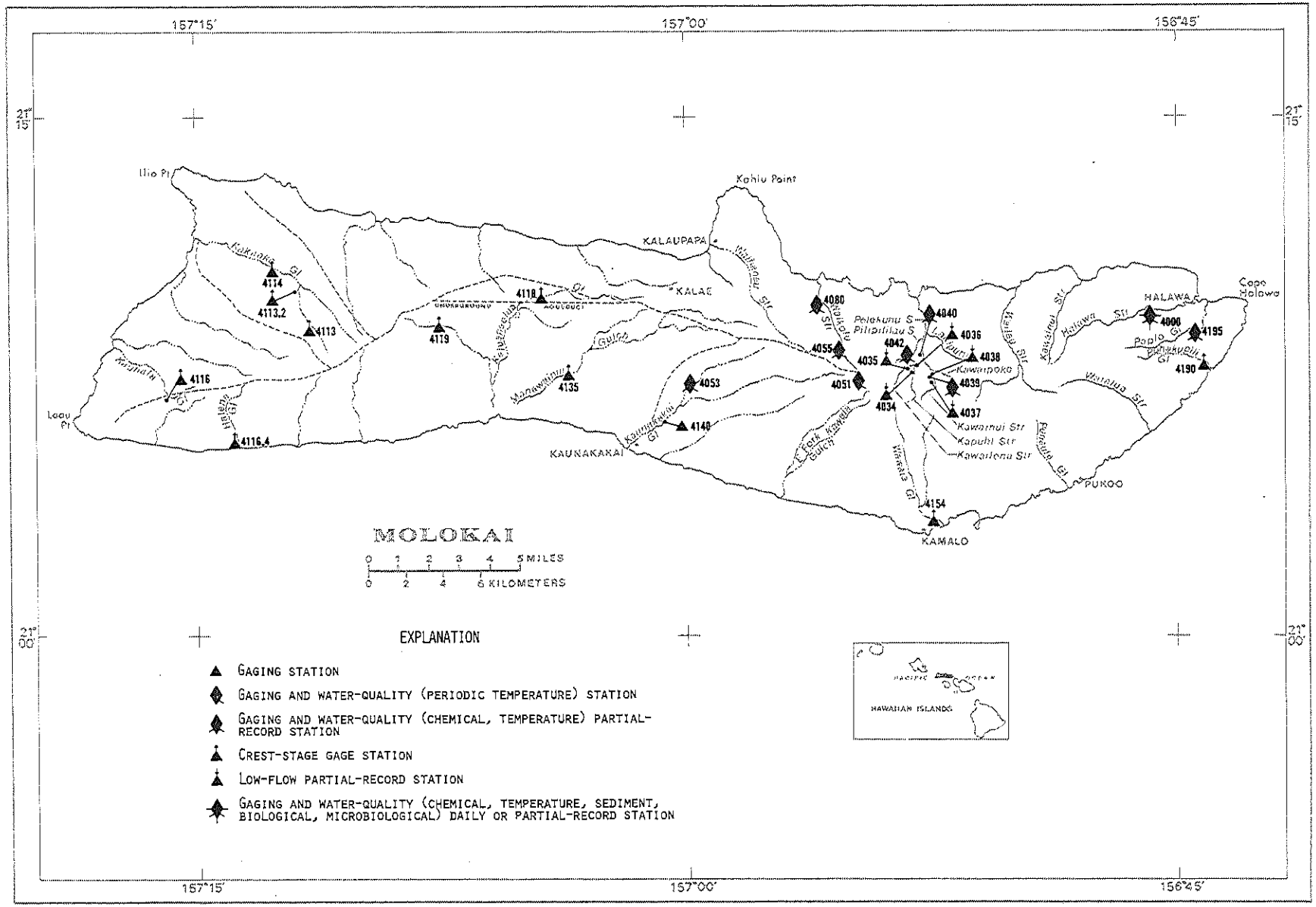


FIGURE 7.--MAP OF MOLOKAI SHOWING LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS.

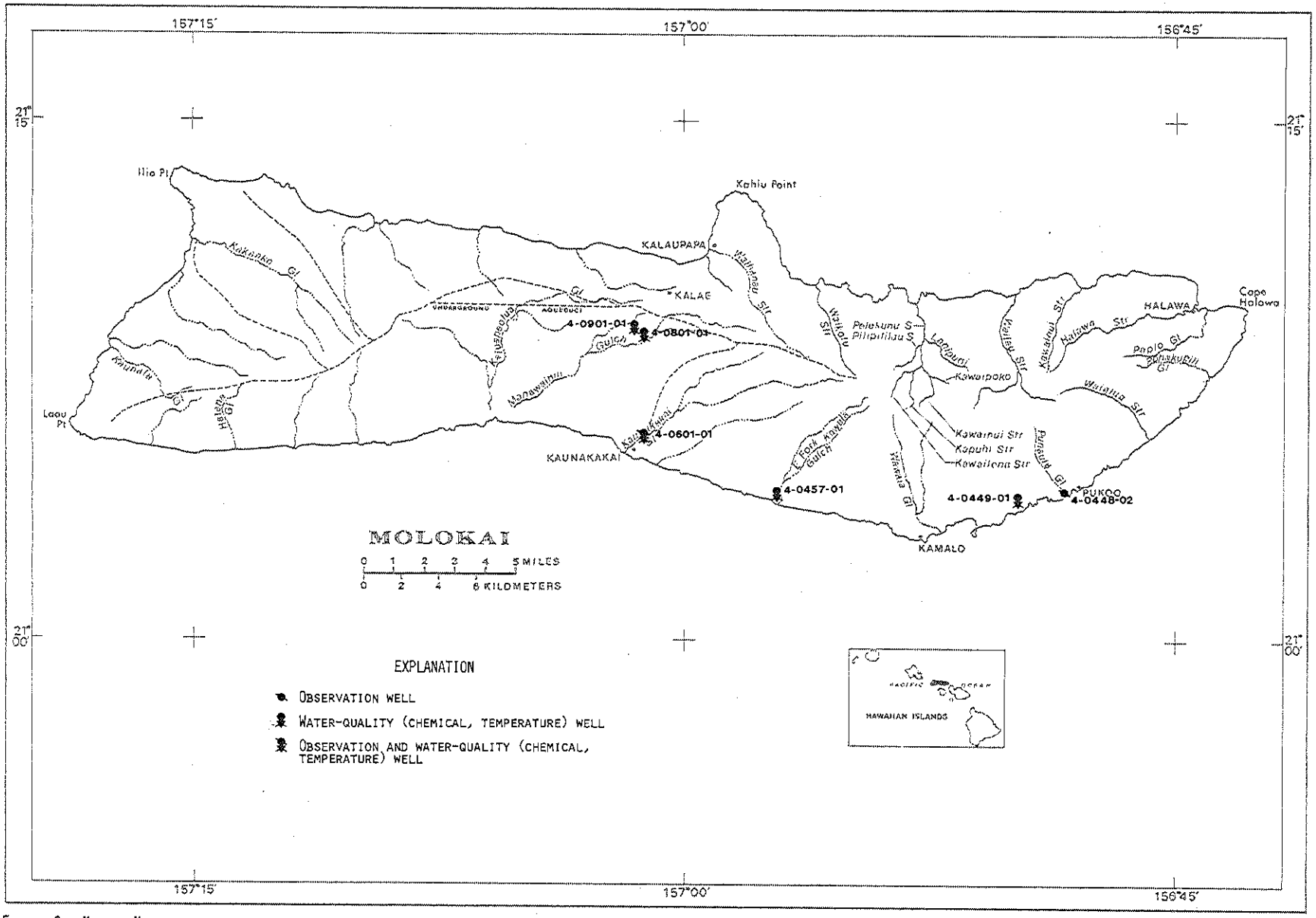


FIGURE 8.--MAP OF MOLOKAI SHOWING LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES.

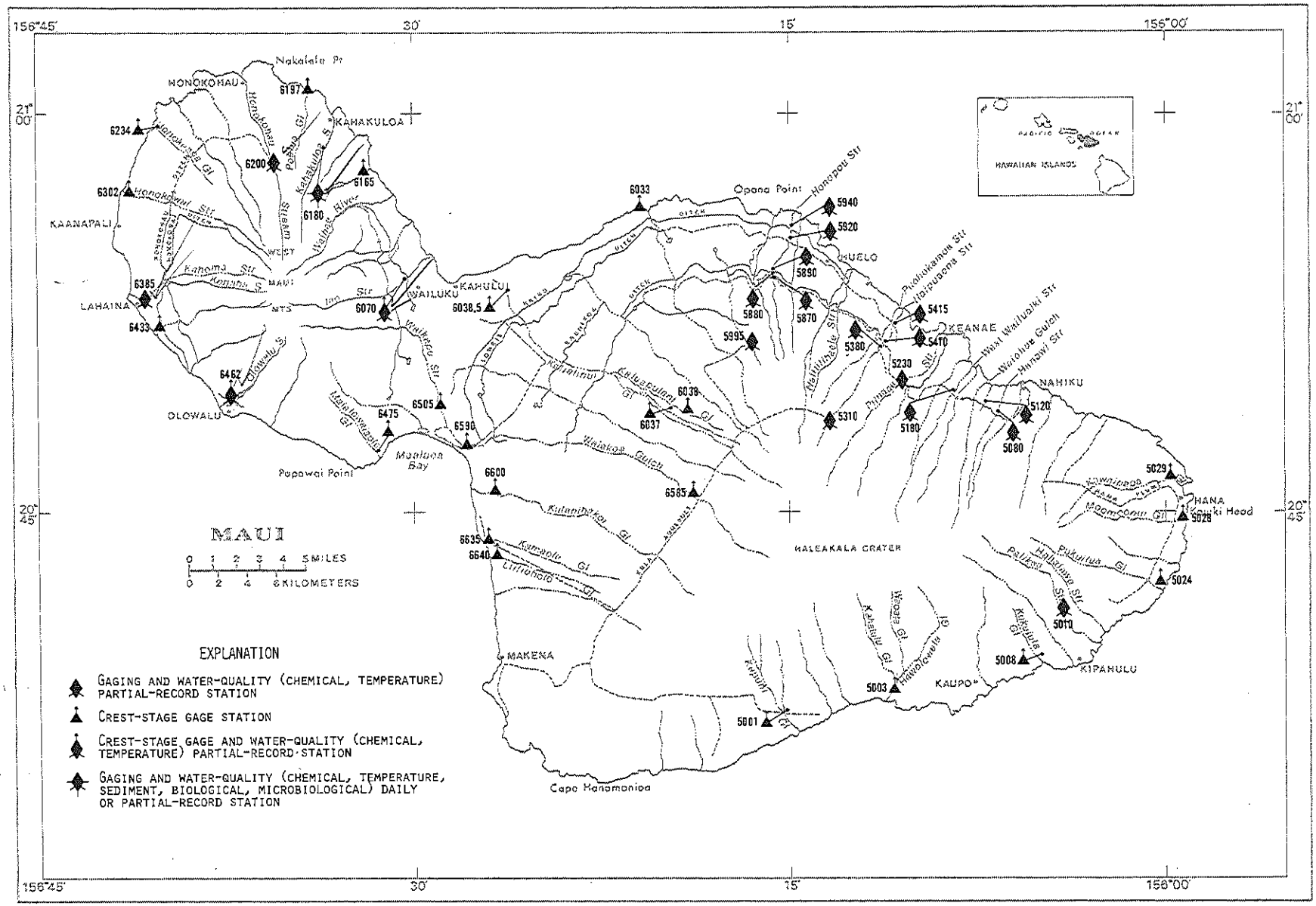


FIGURE 9.--MAP OF MAUI SHOWING LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS.

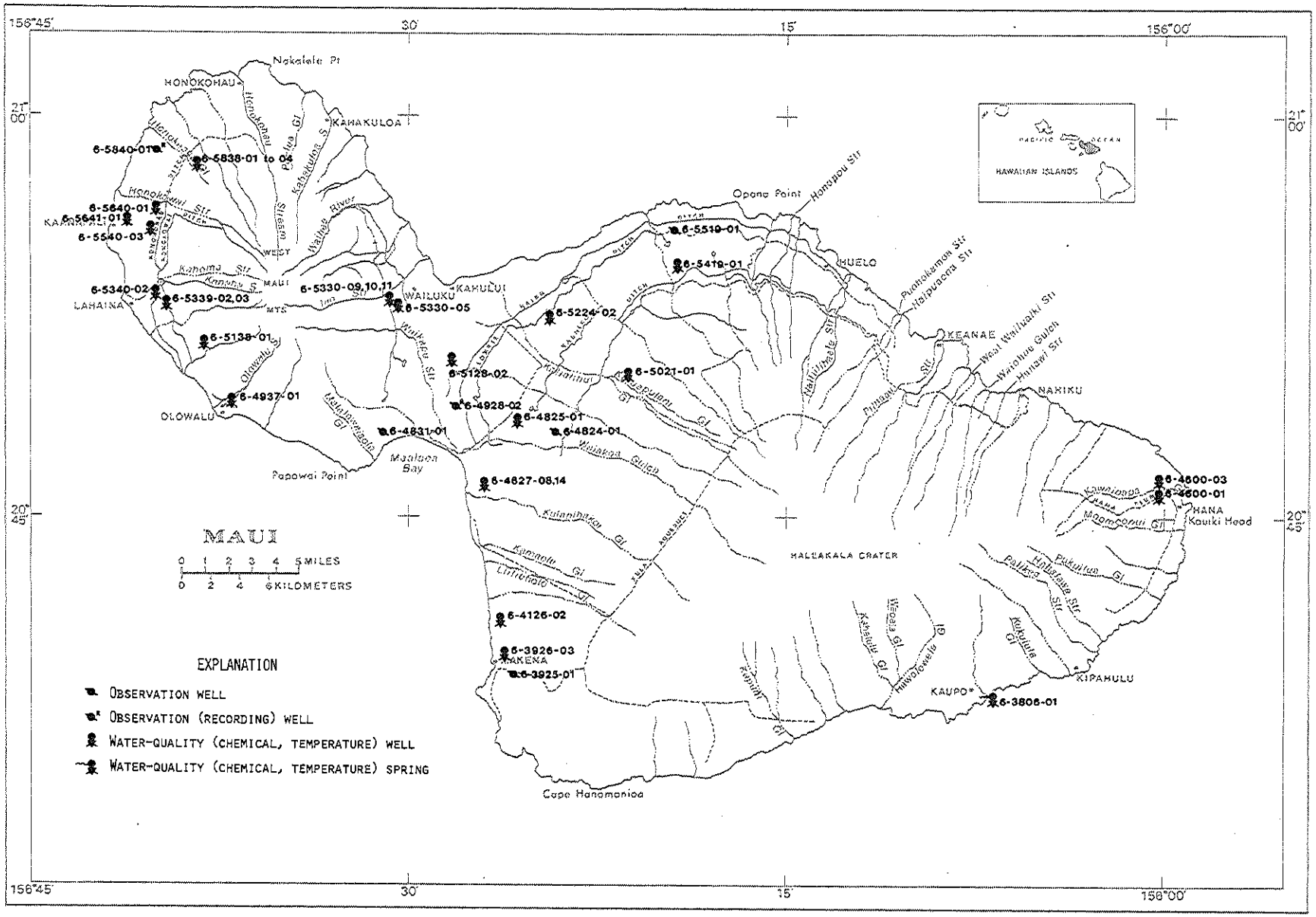


FIGURE 10.--MAP OF MAUI SHOWING LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES.

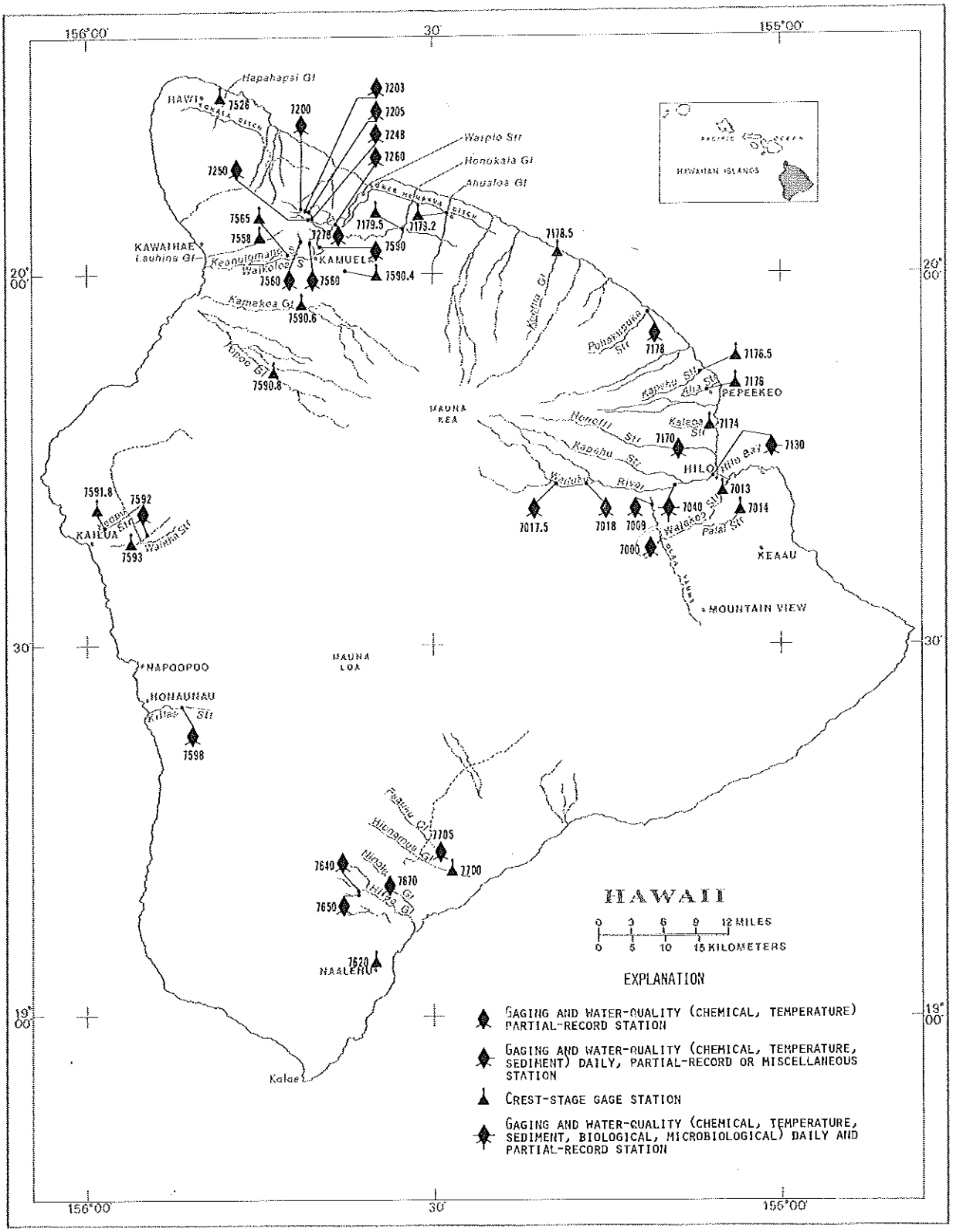


FIGURE 11.--MAP OF HAWAII SHOWING LOCATIONS OF GAGING, WATER-QUALITY, AND PARTIAL-RECORD STATIONS.

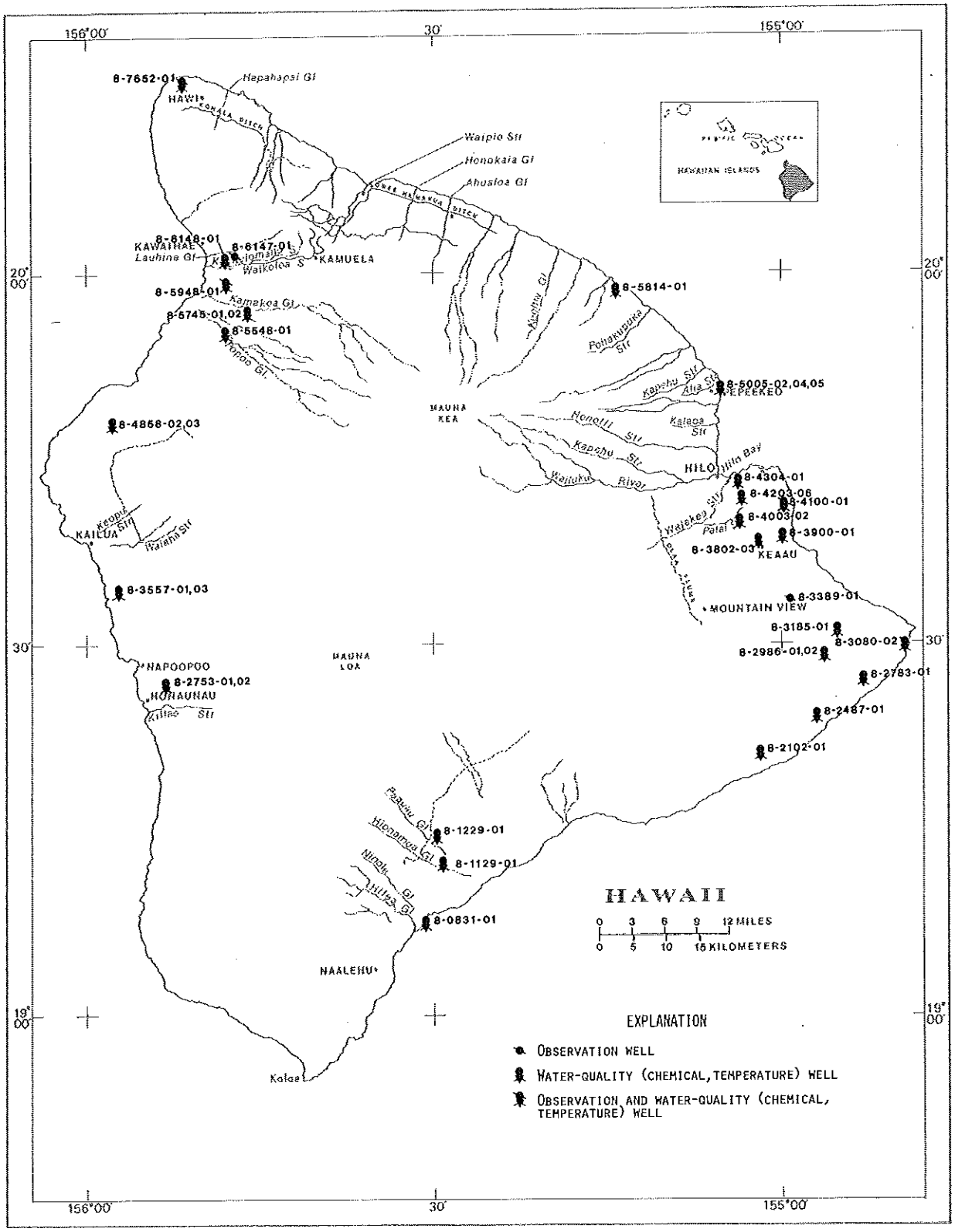


FIGURE 12.--MAP OF HAWAII SHOWING LOCATIONS OF OBSERVATION WELLS AND GROUND-WATER QUALITY SAMPLING SITES.

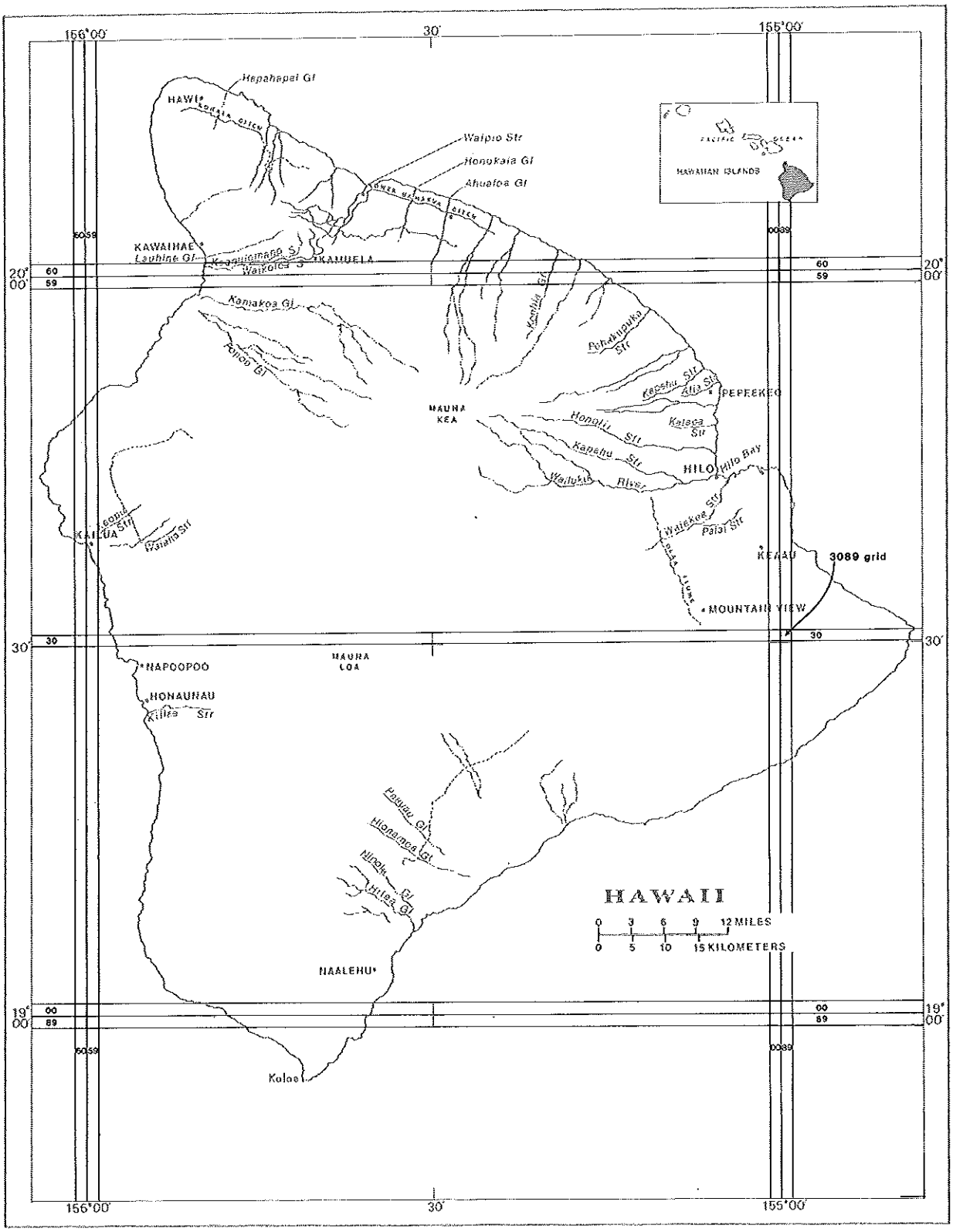


FIGURE 15.--MAP OF HAWAII SHOWING SYSTEM FOR NUMBERING LOCAL WELL NUMBERS.

16014000 KOKEE DITCH NEAR WAIMEA

LOCATION.--Lat 22°06'42", long 159°40'43", Hydrologic Unit 20070000, on left bank, 0.3 mi (0.5 km) west of Highway 55, 1.9 mi (3.1 km) south of Kokee Lodge, and 10.5 mi (16.9 km) north of Waimea.

PERIOD OF RECORD.--September 1926 to current year.

GAGE.--Water-stage recorder and suppressed weir. Altitude of gage is 3,310 ft (1,009 m) by barometer. Prior to July 1, 1962, at datum 0.07 ft (0.021 m) higher.

REMARKS.--Records good. Ditch diverts at altitude 3,400 ft (1,040 m) from Mohihi Stream and all streams west which are tributary to Waimea River, for irrigation in vicinity of Kekaha. Records do not include waste water diverted at times at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--53 years, 24.2 ft^3/s (0.685 m^3/s), 17,530 acre-ft/yr (21.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 105 ft^3/s (2.97 m^3/s) Dec. 2, 1929, Mar. 4, 1933; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 88 ft^3/s (2.49 m^3/s) Jan. 14; minimum daily, 1.3 ft^3/s (0.037 m^3/s) Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	60	8.2	28	36	54	20	19	12	13	9.2	3.7
2	6.2	69	8.0	25	48	60	18	36	10	11	16	3.7
3	5.8	69	7.5	23	55	56	17	78	9.5	9.8	10	3.5
4	6.0	68	61.	22	54	52	36	78	9.2	12	8.8	4.4
5	6.2	38	36	21	54	48	45	56	8.8	11	7.3	4.6
6	5.8	30	22	22	56	46	34	79	8.5	51	4.6	4.6
7	5.6	25	74	20	50	42	68	63	8.2	53	3.3	4.1
8	5.8	21	66	19	48	64	62	33	8.0	21	3.5	3.7
9	6.0	18	30	26	65	46	33	25	8.0	14	3.5	3.7
10	5.2	17	44	36	54	39	24	21	18	12	3.7	4.1
11	5.0	24	71	56	48	35	21	21	40	10	3.7	4.4
12	5.0	31	52	77	37	33	24	19	45	9.2	3.5	3.7
13	4.8	19	71	72	55	32	22	17	64	8.5	3.5	3.5
14	4.6	40	82	88	54	30	18	17	35	8.0	3.0	3.1
15	4.6	74	77	76	52	28	17	13	26	7.8	2.6	3.3
16	4.6	30	50	57	45	27	15	21	16	7.3	20	3.1
17	4.4	20	37	51	40	26	14	25	19	7.1	23	3.0
18	4.4	17	31	42	53	26	14	29	19	7.1	8.4	3.0
19	18	15	53	39	68	28	13	18	62	6.4	3.1	3.0
20	9.2	27	79	50	42	32	13	14	40	6.2	1.3	3.1
21	6.2	21	59	68	57	28	12	13	21	6.0	2.4	4.6
22	20	15	48	67	70	24	12	12	28.	6.7	4.6	3.7
23	48	13	44	59	55	22	15	12	44	12	4.4	3.3
24	13	12	52	67	29	22	20	12	35	17	4.4	3.0
25	9.2	11	32	62	36	21	46	12	18	56	4.4	2.8
26	7.1	10	29	54	80	27	20	12	15	40	4.6	2.6
27	6.0	9.5	29	50	63	33	17	11	17	53	4.1	3.0
28	5.4	9.0	26	45	47	28	15	11	35	22	3.9	3.3
29	5.8	9.0	26	41	---	34	56	12	37	14	3.7	4.6
30	48	8.2	70	39	---	26	29	12	17	10	3.7	4.1
31	81	---	36	37	---	22	---	13	---	9.0	3.9	---
TOTAL	373.6	829.7	1410.7	1439	1447	1091	770	814	733.2	531.1	186.1	108.3
MEAN	12.1	27.7	45.5	46.4	51.7	35.2	25.7	26.3	24.4	17.1	6.00	3.61
MAX	81	74	82	88	80	64	68	79	64	56	23	4.6
MIN	4.4	8.2	7.5	19	29	21	12	11	8.0	6.0	1.3	2.6
AC-FT	741	1650	2800	2850	2870	2160	1530	1610	1450	1050	369	215

CAL YR 1978 TOTAL 9303.6 MEAN 25.5 MAX 82 MIN 4.4 AC-FT 18450
WTR YR 1979 TOTAL 9733.7 MEAN 26.7 MAX 88 MIN 1.3 AC-FT 19310

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT (1,164 M), NEAR WAIMEA

LOCATION.--Lat 22°05'20", long 159°34'18", Hydrologic Unit 20070000, on left bank 5.0 mi (8.0 km) northeast of mouth, 6.4 mi (10.3 km) southeast of Kokee Lodge, and 11 mi (18 km) northeast of Waimea.

DRAINAGE AREA.--1.79 mi^2 (4.64 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1920 to July 1932, June 1952 to current year. Prior to July 1954, published as Waialae River at altitude 3,700 ft (1,128 m) near Waimea.

REVISED RECORDS.--WSP 1937: 1921, 1922-32(M), 1953(M), 1954. WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 3,820 ft (1,164 m), from topographic map.

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

AVERAGE DISCHARGE.--38 years (water years, 1921-31, 1953-79), 22.1 ft^3/s (0.626 m^3/s), 16,010 acre-ft/yr (19.7 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,530 ft^3/s (128 m^3/s) Jan. 16, 1921, gage height, 8.44 ft (2.573 m), from rating curve extended above 1,100 ft^3/s (31.2 m^3/s) on basis of slope-area measurement at gage height 4.60 ft (1.402 m); minimum, 0.99 ft^3/s (0.028 m^3/s) May 17, 18, May 30 to June 2, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,290 ft^3/s (36.5 m^3/s) Feb. 9, gage height, 4.49 ft (1.369 m), no peak above base of 1,300 ft^3/s (36.8 m^3/s); minimum 1.6 ft^3/s (0.045 m^3/s) Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	78	2.8	6.6	16	11	3.4	4.0	3.2	5.5	3.2	2.1
2	3.0	63	2.6	5.5	41	9.0	3.2	8.7	2.8	4.4	4.7	1.9
3	3.0	92	2.6	5.2	139	7.8	3.0	29	2.8	4.2	5.2	1.9
4	3.0	20	170	4.7	55	6.9	32	24	2.6	4.2	6.1	1.9
5	3.0	9.5	10	4.2	14	6.1	53	17	2.4	3.8	4.2	2.1
6	2.8	7.2	7.2	4.2	10	5.8	10	65	2.3	27	3.4	2.1
7	2.8	6.9	48	4.0	9.5	5.2	7.7	39	2.3	16	3.0	1.9
8	3.0	5.5	34	4.2	12	6.6	20	8.6	2.2	6.4	3.2	1.9
9	2.6	5.0	9.0	152	299	6.9	19	6.6	2.2	5.0	4.4	1.9
10	2.4	4.4	10	20	44	5.5	12	5.8	4.0	4.2	4.4	1.8
11	2.4	4.2	32	58	146	5.0	7.7	6.6	8.1	3.8	3.4	1.8
12	2.4	4.2	22	82	25	4.4	33	5.2	26	3.6	3.0	1.7
13	2.6	4.0	168	87	17	4.2	9.0	4.7	33	3.2	2.6	1.7
14	2.8	4.8	99	273	40	4.2	6.6	4.2	12	3.0	2.4	1.7
15	2.4	36	84	151	63	4.0	5.2	4.2	9.0	3.0	2.3	1.7
16	2.4	8.1	20	40	24	3.4	4.7	4.4	11	2.8	73	1.7
17	2.3	5.5	14	26	60	3.8	4.2	7.7	57	2.8	11	1.7
18	2.2	4.4	14	15	39	3.2	4.0	5.8	21	2.6	56	1.7
19	12	4.0	33	12	39	3.8	3.8	4.7	92	2.6	13	1.7
20	5.5	37	25	13	22	12	3.2	4.2	17	2.4	5.8	1.7
21	4.0	9.5	12	66	15	7.2	3.0	3.4	8.1	2.3	4.2	1.7
22	3.4	6.9	41	96	22	5.2	2.8	3.2	26	2.8	3.4	1.7
23	6.1	6.9	26	28	52	4.4	2.8	3.0	60	3.0	2.9	1.7
24	4.4	5.2	19	18	80	4.0	3.0	3.0	14	3.6	2.6	1.7
25	3.4	4.2	12	12	26	3.4	5.0	2.8	7.2	15	2.6	1.7
26	3.0	4.0	9.0	10	216	24	4.2	2.8	7.2	11	2.3	1.7
27	2.6	3.4	7.2	9.0	30	12	3.4	4.0	6.9	7.7	2.3	1.8
28	2.4	3.0	6.6	10	17	7.2	3.0	8.3	13	5.0	2.3	2.3
29	2.4	3.0	6.6	16	---	5.5	5.0	8.1	10	4.0	2.3	2.1
30	25	2.8	9.0	20	---	4.7	4.7	5.0	6.6	3.6	2.3	1.9
31	308	---	7.2	23	---	4.2	---	4.0	---	3.0	2.2	---
TOTAL	430.5	452.6	962.8	1275.6	1572.5	200.6	281.6	307.0	471.9	171.5	243.7	54.9
MEAN	13.9	15.1	31.1	41.1	56.2	6.47	9.39	9.90	15.7	5.53	7.86	1.83
MAX	308	92	170	273	299	24	53	65	92	27	73	2.3
MIN	2.2	2.8	2.6	4.0	9.5	3.2	2.8	2.8	2.2	2.3	2.2	1.7
AC-FT	854	898	1910	2530	3120	398	559	609	936	340	483	109

CAL YR 1978 TOTAL 6655.2 MEAN 18.2 MAX 308 MIN 1.8 AC-FT 13200
WTR YR 1979 TOTAL 6425.2 MEAN 17.6 MAX 308 MIN 1.7 AC-FT 12740

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT (1,164 M), NEAR WAIMEA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-79.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
OCT									
18...	1015	2.0	31	6.2	15.0	12	--	3.2	.9
JAN									
02...	1015	5.6	33	6.7	10.0	8	1	1.9	.9
MAR									
07...	1015	5.6	37	6.4	13.0	6	5	1.1	.7
MAY									
18...	1000	5.9	29	5.1	14.5	7	6	.9	1.1
JUL									
05...	0950	3.7	30	5.7	16.0	5	4	.7	.8
AUG									
23...	0950	3.2	32	5.4	17.5	8	6	1.2	1.1

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT									
18...	3.6	39	.5	--	.3	5	1.6	6.4	.1
JAN									
02...	3.7	48	.6	--	.3	7	2.4	6.3	.0
MAR									
07...	3.6	57	.7	--	.3	1	3.1	6.4	.1
MAY									
18...	3.2	48	.5	3.8	.6	1	8.2	6.0	.0
JUL									
05...	3.5	58	.7	3.9	.4	1	9.4	6.4	.0
AUG									
23...	3.5	68	.6	3.9	.4	2	8.7	6.1	.0

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
OCT								
18...	7.8	--	--	--	.03	.01	110	0
JAN								
02...	5.9	26	.04	.39	.09	.04	130	0
MAR								
07...	5.8	22	.03	.33	.07	.02	160	10
MAY								
18...	7.0	28	.04	.45	.00	.01	350	0
JUL								
05...	4.7	22	.03	.22	.00	.01	310	3
AUG								
23...	4.3	27	.04	.23	.02	.02	450	6

16031000 WAIMEA RIVER NEAR WAIMEA
(National stream-quality accounting network station)

LOCATION.--21°59'02", long 159°39'47", Hydrologic Unit 20070000, on right bank 1.3 mi (2.1 km) upstream from Makaweli River and 1.9 mi (3.1 km) north of Waimea Post Office.

DRAINAGE AREA.--57.8 mi² (149.7 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1910 to June 1918, July to October 1919, November 1943 to September 1968, October 1969 to September 1972 (discontinued as a continuous-record station, converted to a crest-stage partial-record station October 1972 to April 1975), May 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 20.0 ft (6.10 m) above mean sea level (Department of Water, County of Kauai bench mark). Prior to Oct. 5, 1911, nonrecording gage at site 1.0 mi (1.6 km) downstream at different datum. Oct. 5, 1911, to Oct. 31, 1919, nonrecording gage at present site at different datum. Oct. 1, 1972, to Apr. 30, 1975, at site 60 ft (18.3 m) streamward at same datum.

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

AVERAGE DISCHARGE.--38 years (water years 1911-17, 1945-68, 1970-72, 1976-79), 128 ft³/s (3.625 m³/s), 92,740 acre-ft/yr (114 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,100 ft³/s (1,050 m³/s) Feb. 7, 1949, gage height, 19.3 ft (5.88 m), from rating curve extended above 5,200 ft³/s (147 m³/s) on basis of slope-area measurements at gage heights 10.28 ft (3.133 m) and 18.7 ft (5.70 m); practically no flow occasionally owing to upstream diversions.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 19, 1974, which destroyed the station reached a stage of 19.05 ft (5.806 m), from floodmarks, discharge, 29,100 ft³/s (824 m³/s), from rating curve extended above 2,200 ft³/s (62.3 m³/s) on basis of slope-area measurement at gage height 19.05 ft (5.806 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,860 ft³/s (251 m³/s) Feb. 9, gage height, 11.22 ft (3.420 m), from rating curve extended as explained above, no other peak above base of 8,700 ft³/s (246 m³/s); minimum, 0.36 ft³/s (0.010 m³/s) Oct. 3, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	374	5.9	5.5	29	122	4.4	3.3	5.0	4.0	2.5	2.6
2	2.3	500	5.7	4.4	78	97	4.6	2.6	4.2	3.0	2.9	2.9
3	1.5	756	6.1	4.0	600	40	4.4	112	4.0	2.9	3.3	2.9
4	1.9	253	637	3.9	656	32	16	140	2.9	2.7	4.4	3.1
5	1.8	68	104	3.5	134	26	60	33	2.7	3.2	4.6	3.8
6	2.2	39	18	3.7	49	21	58	214	2.7	9.7	3.5	3.8
7	2.2	48	152	3.5	28	12	6.5	95	2.9	116	3.5	3.8
8	2.2	52	269	3.7	26	11	19	19	3.0	10	3.3	3.7
9	2.2	39	25	354	1510	17	34	4.0	3.2	4.0	3.3	5.6
10	1.9	6.4	7.1	222	742	10	13	3.2	3.3	3.0	4.0	5.2
11	2.1	3.9	92	402	1630	8.5	8.5	3.0	3.5	2.9	5.7	2.4
12	2.6	3.5	43	525	441	7.9	23	3.3	15	2.7	3.5	2.7
13	1.8	3.5	577	334	237	7.6	23	3.0	79	2.7	3.0	2.9
14	2.2	3.0	415	2480	273	7.4	6.9	2.6	21	2.6	3.2	2.9
15	2.1	184	358	1290	280	6.6	5.2	2.4	4.8	2.9	3.0	2.9
16	1.9	28	91	370	173	6.1	4.4	2.7	3.3	3.0	73	3.0
17	1.9	7.4	34	218	130	5.7	3.5	2.9	69	2.9	62	3.3
18	1.7	3.7	19	83	250	5.5	3.3	3.9	19	1.5	50	3.0
19	1.8	2.9	32	44	219	5.9	3.0	3.3	150	2.9	70	3.9
20	5.7	23	100	30	217	6.4	3.0	3.0	40	2.9	5.6	3.7
21	2.9	23	58	343	159	13	3.0	3.3	15	3.0	2.9	3.7
22	2.1	6.6	46	708	139	7.4	3.9	3.7	7.5	3.2	2.3	3.7
23	2.7	4.6	73	208	708	7.4	3.9	4.0	77	3.3	2.1	3.5
24	3.5	7.4	56	122	701	7.4	4.0	3.5	53	3.9	2.1	3.7
25	1.5	6.4	27	43	303	5.7	4.2	3.3	8.8	16	2.4	3.7
26	.81	5.9	11	23	571	14	5.2	3.2	5.0	9.1	2.4	3.2
27	.97	5.7	6.9	13	192	49	3.7	3.7	4.8	6.9	2.5	3.7
28	1.2	5.7	5.5	8.8	118	12	3.0	5.9	5.2	6.1	2.6	4.2
29	1.6	5.0	4.6	10	---	7.9	24	9.1	4.2	3.9	2.5	5.9
30	6.4	5.5	67	21	---	5.7	9.1	6.9	4.2	3.3	2.5	4.2
31	1620	---	13	25	---	5.0	---	5.7	---	3.0	2.5	---
TOTAL	1687.88	2474.1	3358.8	7509.0	10593	590.1	367.7	708.5	623.2	247.2	341.5	107.6
MEAN	54.4	82.5	108	255	378	19.0	12.3	22.9	20.8	7.97	11.0	3.59
MAX	1620	756	637	2480	1630	122	60	214	150	116	73	5.9
MIN	.81	2.9	4.6	3.5	26	5.0	3.0	2.4	2.7	1.5	2.1	2.4
AC-FT	3350	4910	6660	15690	21010	1170	729	1410	1240	490	677	213

CAL YR 1978 TOTAL 18461.78 MEAN 50.6 MAX 1620 MIN .81 AC-FT 36620
WTR YR 1979 TOTAL 29008.58 MEAN 79.5 MAX 2480 MIN .81 AC-FT 57540

16031000 WAIMEA RIVER NEAR WAIMEA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971-74, November 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT											
02...	1010	2.5	180	7.6	23.0	3.5	8.3	--	--	72	0
02...	1015	--	--	--	--	--	--	190	820	--	--
NOV											
01...	1400	209	68	6.2	18.5	7.4	8.5	4700	81000	20	5
DEC											
04...	1325	1910	42	6.7	19.5	160	9.0	4800	24000	15	9
JAN											
08...	1035	3.8	170	7.2	21.0	1.4	8.9	140	K8000	79	13
FEB											
07...	1030	28	110	7.2	18.5	6.1	9.4	320	6000	34	3
MAR											
05...	1130	26	130	7.4	21.0	3.6	9.2	240	22000	51	12
APR											
02...	1100	4.6	160	7.1	21.0	3.2	8.9	230	2200	59	0
MAY											
07...	1135	148	67	6.4	21.0	3.7	9.2	450	900	23	7
JUN											
04...	1300	2.9	--	7.9	26.0	1.2	9.2	330	310	77	13
JUL											
02...	1030	3.4	140	7.6	24.0	2.7	9.2	430	140	55	6
AUG											
06...	1230	3.5	165	7.7	26.5	2.0	9.1	260	98	71	0
SEP											
04...	1005	3.1	230	7.2	25.5	.40	9.2	260	200	77	2

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT										
02...	9.2	12	10	23	.5	--	.7	72	--	4.3
02...	--	--	--	--	--	--	--	--	--	--
NOV										
01...	2.7	3.2	4.3	31	.4	--	.6	15	--	5.4
DEC										
04...	3.1	1.8	3.4	32	.4	--	.5	6	--	2.3
JAN										
08...	10	13	9.4	20	.5	--	.8	66	--	4.2
FEB										
07...	4.1	5.7	6.7	30	.5	--	.5	31	--	3.6
MAR										
05...	8.7	7.0	7.1	23	.4	--	.5	39	--	1.7
APR										
02...	7.1	10	9.2	25	.5	--	.7	61	--	2.8
MAY										
07...	3.1	3.8	4.9	31	.4	--	.4	16	--	4.3
JUN										
04...	9.2	13	11	24	.5	12	1.1	64	--	6.0
JUL										
02...	6.4	9.4	8.6	25	.5	9.2	.6	49	--	4.3
AUG										
06...	8.7	12	9.9	23	.5	11	.7	81	3.2	.5
SEP										
04...	9.3	13	10	22	.5	11	.8	75	--	4.0

K Results based on colony count outside the acceptable range (non-ideal colony count).

16031000 WAIMEA RIVER NEAR WAIMEA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4)
OCT										
02...	19	.1	26	117	120	.16	.79	.00	.00	--
02...	--	--	--	--	--	--	--	--	--	--
NOV										
01...	7.7	.0	15	50	48	.07	28.2	.57	.02	--
DEC										
04...	5.6	--	8.6	97	30	.06	292	.31	.05	--
JAN										
08...	17	.0	29	113	118	.15	1.16	.00	.00	--
FEB										
07...	11	.0	19	72	69	.10	5.49	.13	.01	--
MAR										
05...	13	.1	19	109	81	.15	7.65	.11	.01	--
APR										
02...	16	.1	21	98	109	.13	1.22	.02	.01	--
MAY										
07...	7.2	.1	15	58	48	.08	23.2	.05	.01	.01
JUN										
04...	15	.1	23	116	117	.16	.91	.05	.01	.01
JUL										
02...	12	.1	24	100	95	.14	.92	.01	.00	.00
AUG										
06...	19	.1	27	118	122	.16	1.12	.00	.00	.00
SEP										
04...	19	.1	28	--	129	.18	1.08	.01	.01	.01

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS TOTAL (MG/L AS PO4)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHATE, TOTAL (MG/L AS PO4)	PHOSPHORUS, DISSOLVED (MG/L AS P)
OCT										
02...	.67	.67	.28	.39	.67	3.0	--	.02	--	.00
02...	--	--	--	--	--	--	--	--	--	--
NOV										
01...	.52	.54	.08	.46	1.1	4.9	--	.07	--	.01
DEC										
04...	.95	1.0	.51	.49	1.3	5.8	--	.24	--	.06
JAN										
08...	.10	.10	.00	.12	.10	.44	--	.02	--	.01
FEB										
07...	.13	.14	.06	.08	.27	1.2	--	.00	--	.00
MAR										
05...	.10	.11	.00	.11	.22	.97	--	.04	--	.02
APR										
02...	.12	.13	.02	.11	.15	.66	--	.01	--	.01
MAY										
07...	.29	.30	.00	.33	.35	1.6	.06	.02	.06	.01
JUN										
04...	.57	.58	.06	.52	.63	2.8	.03	.01	.03	.01
JUL										
02...	.03	.03	.00	.03	.04	.18	.03	.01	--	.01
AUG										
06...	.24	.24	.08	.16	.24	1.1	.03	.01	--	.01
SEP										
04...	.40	.41	.00	.41	.42	1.9	.03	.01	--	.01

16031000 WAIMEA RIVER NEAR WAIMEA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT										
02...	1010	0	0	0	0	0	1	0	2	0
JAN										
08...	1035	0	0	0	0	0	10	0	10	10
APR										
02...	1100	0	0	10	0	10	2	0	3	10
JUL										
02...	1030	0	0	10	0	10	1	0	2	0

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)
OCT										
02...	0	0	4	0	4	15	14	1	320	250
JAN										
08...	0	10	2	2	0	3	0	3	340	110
APR										
02...	10	0	<3	0	<3	4	4	0	310	180
JUL										
02...	0	0	2	0	<3	5	5	0	350	190

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT										
02...	70	22	19	3	30	20	10	.0	.0	.0
JAN										
08...	230	14	5	9	30	20	10	.0	.0	.0
APR										
02...	130	21	14	7	40	10	30	.0	.0	.0
JUL										
02...	160	12	12	0	20	0	20	.0	.0	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT									
02...	0	0	0	0	0	0	10	10	0
JAN									
08...	0	0	0	1	1	0	10	0	10
APR									
02...	0	0	0	0	0	0	30	30	<3
JUL									
02...	0	0	0	0	0	0	10	7	<3

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
OCT				
02...	1010	--	2.7	.1
NOV				
01...	1400	11	--	--
DEC				
04...	1325	19	--	--
JAN				
08...	1035	--	2.0	.1
FEB				
07...	1030	1.5	--	--
MAR				
05...	1130	2.8	--	--
APR				
02...	1100	--	2.3	.0
MAY				
07...	1135	13	--	--
JUN				
04...	1300	9.2	--	--
JUL				
02...	1030	--	4.0	.3
AUG				
06...	1230	8.5	--	--
SEP				
04...	1005	6.5	--	--

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	LENGTH OF EXPO-SURE (DAYS)
OCT								
02...	1010	240	5.43	4.65	3.02	.940	--	21
NOV								
01...	1400	140	--	--	--	--	--	--
DEC								
04...	1325	5800	--	--	--	--	--	--
JAN								
08...	1035	45	--	--	--	--	--	--
FEB								
07...	1030	110	15.9	14.0	9.18	.000	196	30
APR								
02...	1100	260	2.91	2.13	2.75	1.43	--	28
MAY								
07...	1135	320	--	--	--	--	--	--
JUN								
04...	1300	130	--	--	--	--	--	--
JUL								
02...	1030	64	5.04	3.86	8.59	3.25	137	28
AUG								
06...	1230	570	--	--	--	--	--	--
SEP								
04...	1005	850	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT					
02...	1010	2.5	--	--	--
02...	1015	--	3	--	100
NOV					
01...	1400	209	51	29	100
DEC					
04...	1325	1910	1900	9800	--
JAN					
08...	1035	3.8	2	.02	100
FEB					
07...	1030	28	6	.45	100
MAR					
05...	1130	26	3	.21	100
APR					
02...	1100	4.6	2	.02	100
MAY					
07...	1135	148	15	6.0	100
JUN					
04...	1300	2.9	2	.02	100
JUL					
02...	1030	3.4	4	.04	100
AUG					
06...	1230	3.5	2	.02	100
SEP					
04...	1005	3.1	4	.03	100

16031000 WAIMEA RIVER NBAR WAIMEA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, APRIL 1978 TO SEPTEMBER 1978

DATE	APR 3,78		MAY 1,78		JUN 5,78		JUL 10,78		AUG 7,78		SEP 11,78	
TIME	1115		1200		1245		1300		1320		1140	
TOTAL CELLS/ML	110		210		89		490		19		380	
DIVERSITY: DIVISION	0.0		0.4		0.0		1.0		0.6		1.6	
.CLASS	0.0		0.4		0.0		1.0		0.6		1.6	
..ORDER	1.0		0.9		0.0		1.0		0.9		2.3	
...FAMILY	1.6		2.1		1.5		1.8		1.7		3.3	
....GENUS	1.6		2.1		1.5		1.9		1.7		3.3	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	14	4
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	3	14	4	1
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	19	9	--	-	--	-	--	-	10	3
..ZYGNEMATALES												
...DESMIDIACEAE												
....COSMARIUM	--	-	--	-	--	-	--	-	--	-	2	1
....STAURASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	41#	38	19	9	--	-	--	-	1	7	58#	15
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	23	5	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	23	5	--	-	--	-
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	27#	25	38#	18	22#	25	--	-	--	-	6	2
....EPITHEMIA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	41#	38	--	-	--	-	--	-	--	-	2	1
...COMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	22#	25	--	-	--	-	--	-
...NAVICULACEAE												
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	76#	36	--	-	69	14	7#	36	8	2
....PINNULARIA	--	-	--	-	--	-	--	-	--	-	2	1
...NITZSCHIACEAE												
....NITZSCHIA	--	-	57#	27	45#	50	160#	33	8#	43	84#	22
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	4	1
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	16	4
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	--	-	40	10
...OSCILLATORIACEAE	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	210#	43	--	-	80#	21
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	30	8
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	10	3
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	2	1
PYRRHOPHYTA (FIRE ALGAE)												
.DINOPHYCEAE												
..PERIDINIALES												
...PERIDINIACEAE												
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-	12	3

- DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

NOTE: DATA FOR OCTOBER 1977 TO MARCH 1978 PUBLISHED IN 1978 REPORT.

16031000 WAIMBA RIVER NBAR WAIMBA--Continued

QUALITATIVE AND ASSOCIATBD QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	OCT 2,78	NOV 1,78	DEC 4,78	JAN 8,79	FEB 7,79	APR 2,79
TIME	1010	1400	1325	1035	1030	1100
TOTAL CELLS/ML	240	140	5800	45	110	260
DIVERSITY: DIVISION	1.4	0.0	0.5	1.0	1.1	0.9
.CLASS	1.4	0.0	0.5	1.0	1.1	0.9
..ORDER	1.6	0.0	0.5	1.4	1.1	1.9
...FAMILY	1.7	0.0	0.5	1.4	2.0	3.0
....GENUS	1.8	0.0	0.5	1.4	2.0	3.2

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	16	7	--	-	--	-	--	-	--	-	10	4
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	2	1	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	2	1	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	--	-	--	-	--	-	30#	67	--	-	20	8
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
..OEDOGONIALES												
...OEDOGONIACEAE												
....OEDOGONIUM	--	-	--	-	--	-	--	-	--	-	20	8
..TETRASPORALES												
...COCCOMYXACEAE												
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	5	11	5	5	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....COSMARTUM	--	-	--	-	--	-	--	-	--	-	10	4
....EUASTRUM	2	1	--	-	--	-	--	-	--	-	--	-
...ZYGNEMATACEAE												
....MOUGEOTIA	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	7	3	--	-	--	-	--	-	--	-	45#	18
....MELOSIRA	--	-	140#	100	--	-	--	-	--	-	15	6
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	460	8	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	5	2
....RHOICOSPHENIA	--	-	--	-	120	2	--	-	5	5	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	5	11	--	-	20	8
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	5	5	--	-
....SYNEDRA	2	1	--	-	--	-	--	-	--	-	5	2
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-	15	6
...NAVICULACEAE												
....NAVICULA	4	2	--	-	--	-	--	-	20#	19	--	-
...NITZSCHIACEAE												
....NITZSCHIA	53#	23	--	-	--	-	--	-	--	-	75#	29
...SURIRELLACEAE												
....SURIRELLA	2	1	--	-	--	-	--	-	--	-	10	4
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16031000 WAIMBA RIVER NEAR WAIMBA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	OCT 2,78		NOV 1,78		DEC 4,78		JAN 8,79		FEB 7,79		APR 2,79	
TIME	1010		1400		1325		1035		1030		1100	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..PORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	20#	19	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	5200#	90	--	-	--	-	--	-
....OSCILLATORIA	140#	60	--	-	--	-	--	-	50#	48	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	5	11	--	-	--	-
....EUTREPTIA	--	-	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	5	2
PYRRHOPHYTA (FIRE ALGAE)												
.DINOPHYCEAE												
..PERIDINIALES												
...GLENODINIACEAE												
....GLENODINIUM	5	2	--	-	--	-	--	-	--	-	--	-
...PERIDINIACEAE												
....PERIDINIUM	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16031000 WAIMEA RIVER NEAR WAIMEA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	MAY 7,79		JUN 4,79		JUL 2,79		AUG 6,79		SEP 4,79	
TIME	1135		1300		1030		1230		1005	
TOTAL CELLS/ML	320		130		64		570		850	
DIVERSITY: DIVISION	0.6		1.6		0.0		1.3		0.8	
.CLASS	0.6		1.6		0.0		1.3		0.8	
..ORDER	0.7		2.2		0.7		1.8		1.6	
...FAMILY	2.5		2.2		1.5		2.2		2.9	
....GENUS	2.6		2.2		1.5		2.2		3.3	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	7	1
....DICTYOSPHAERIUM	--	-	--	-	--	-	43	7	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	13	10	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	7	1
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	27	3
....SCENEDESMUS	14	5	--	-	--	-	--	-	13	2
....TETRASTRUM	--	-	--	-	--	-	--	-	27	3
..OEDOGONIALES										
...OEDOGONIACEAE										
....OEDOGONIUM	--	-	--	-	--	-	--	-	--	-
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	29	9	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	86	15	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
....EUASTRUM	--	-	--	-	--	-	--	-	--	-
...ZYGNEMATACEAE										
....MOUGEOTIA	--	-	--	-	--	-	57	10	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	39#	30	13#	20	57	10	230#	28
....MELOSIRA	--	-	--	-	--	-	--	-	13	2
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	14	5	--	-	--	-	--	-	13	2
....COCCONEIS	--	-	--	-	--	-	--	-	20	2
....RHOICOSPHENIA	14	5	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	29	9	--	-	--	-	--	-	40	5
....EPITHEMIA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	47	6
....SYNEDRA	--	-	--	-	--	-	--	-	130	15
...GOMPHONEMATACEAE										
....GOMPHONEMA	43	14	--	-	--	-	--	-	140#	17
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	120#	36	--	-	26#	40	--	-	80	9
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	58#	18	39#	30	26#	40	--	-	13	2
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	13	10	--	-	--	-	20	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16031000 WAIMEA RIVER NEAR WAIMEA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	MAY 7,79		JUN 4,79		JUL 2,79		AUG 6,79		SEP 4,79	
TIME	1135		1300		1030		1230		1005	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	26#	20	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	260#	45	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	72	13	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....EUTREPTIA	--	-	--	-	--	-	--	-	7	1
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-
...PERIDINIACEAE										
....PERIDINIUM	--	-	--	-	--	-	--	-	13	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16036000 MAKAWELI RIVER NEAR WAIMEA

LOCATION.--Lat 21°58'31", long 159°38'55", Hydrologic Unit 20070000, on left bank 0.7 mi (1.1 km) upstream from mouth and 1.9 mi (3.1 km) northeast of Waimea.

DRAINAGE AREA.--26.0 mi² (67.3 km²).

PERIOD OF RECORD.--July 1943 to current year. Records for October 1911 to June 1917 at site 0.2 mi (0.3 km) downstream not equivalent owing to intervening diversion.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 18.2 ft (5.55 m) above mean sea level (by stadia survey). Prior to June 16, 1959, at datum 1.00 ft (0.305 m) higher.

REMARKS.--Records good. Olokele ditch diverts all low flow from Olokele River 9 mi (14.5 km) above station for irrigation in vicinity of Makaweli. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--36 years, 87.2 ft³/s (2.470 m³/s), 63,180 acre-ft/yr (77.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s (736 m³/s) Jan. 31, 1975, gage height, 15.51 ft (4.727 m), from rating curve extended above 3,200 ft³/s (90.6 m³/s) on basis of slope-area measurement at gage height 10.65 ft (3.246 m); minimum, 3.15 ft³/s (0.089 m³/s) July 19, 1951.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,490 ft³/s (184 m³/s) Feb. 9, gage height, 7.87 ft (2.399 m), from rating curve extended as explained above, no other peak above base of 4,700 ft³/s (135 m³/s); minimum, 9.5 ft³/s (0.27 m³/s) Oct. 18, 27-29, Sept. 25, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	234	15	16	34	73	17	19	26	21	17	11
2	12	280	15	16	60	59	16	22	25	18	18	11
3	12	150	15	15	269	52	16	57	24	17	28	11
4	12	77	441	15	214	47	115	52	24	17	19	12
5	32	46	65	15	59	41	132	19	23	45	14	19
6	12	39	38	15	42	33	41	115	23	42	13	13
7	11	43	557	14	34	29	23	85	23	45	13	12
8	10	34	70	15	44	28	55	35	24	21	12	11
9	10	30	28	165	1270	25	51	23	24	17	14	11
10	10	24	27	57	441	23	71	19	33	16	21	11
11	10	19	68	58	221	21	26	19	32	16	15	11
12	11	19	40	65	113	21	65	18	68	16	16	11
13	10	18	384	83	125	21	35	17	79	15	14	11
14	12	17	261	379	211	21	24	18	48	14	12	11
15	12	94	265	272	467	20	21	16	46	14	12	11
16	10	22	67	74	520	19	19	22	84	14	398	10
17	10	17	45	49	504	18	18	30	339	14	48	11
18	9.5	15	37	37	240	19	16	17	53	14	33	10
19	39	15	52	30	237	22	16	16	278	13	35	10
20	18	56	41	27	178	65	15	20	69	13	19	11
21	12	48	31	70	136	26	14	24	30	13	16	11
22	10	44	37	150	153	27	14	23	101	14	15	11
23	10	40	35	46	176	16	13	22	162	19	13	11
24	10	19	31	37	299	16	13	22	53	13	13	11
25	10	17	26	28	170	17	27	23	28	21	12	10
26	10	16	22	25	1160	63	14	24	40	22	12	10
27	10	16	20	22	202	53	13	26	25	21	12	12
28	10	15	19	31	139	26	13	38	62	19	12	14
29	10	15	18	42	---	21	14	38	35	18	12	12
30	22	15	17	46	---	19	15	28	33	19	12	11
31	795	---	17	45	---	17	---	26	---	19	12	---
TOTAL	1183.5	1494	2804	1959	7718	958	942	933	1914	600	912	342
MEAN	38.2	49.8	90.5	63.2	276	30.9	31.4	30.1	63.8	19.4	29.4	11.4
MAX	795	280	557	379	1270	73	132	115	339	45	398	19
MIN	9.5	15	15	14	34	16	13	16	23	13	12	10
AC-FT	2350	2960	5560	3890	15310	1900	1870	1850	3800	1190	1810	678

CAL YR 1978 TOTAL 16432.5 MEAN 45.0 MAX 795 MIN 9.5 AC-FT 32590
WTR YR 1979 TOTAL 21759.5 MEAN 59.6 MAX 1270 MIN 9.5 AC-FT 43160

16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEELE

LOCATION.--Lat 21°57'29", long 159°33'13", Hydrologic Unit 20070000, on left bank 200 ft (61 m) downstream from Manuahi Stream and 4.0 mi (6.4 km) northeast of Eleele.

DRAINAGE AREA.--18.5 mi² (47.9 km²).

PERIOD OF RECORD.--July 1917 to January 1921, December 1926 to current year. Prior to July 1952, published as "at Koula, near Eleele." Records for August 1910 to December 1916 at site 0.5 mi (0.8 km) upstream not equivalent owing to intervening inflow.

REVISED RECORDS.--WSP 740: 1931. WSP 1719: 1929-31(M). WSP 1937: 1918, 1919(M), 1920, 1921(M), 1927-28(M), 1930, 1936-37(M), 1941(P), 1943-46(P), 1947(M), 1948-52(P), 1955(M), 1956-57(P), 1958(M), 1960(M). WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 222 ft (67.67 m) above mean sea level (by stadia survey). July 1, 1917, to Jan. 22, 1921, nonrecording gage and Dec. 16, 1926, to June 30, 1951, water-stage recorder, at same site at datum 1.00 ft (0.305 m) higher.

REMARKS.--Records good. Hanapepe ditch diverts 3.0 mi (4.8 km) above station for irrigation in vicinity of Makaweli. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--55 years (water years, 1918-20, 1928-79), 86.4 ft³/s (2.447 m³/s), 62,600 acre-ft/yr (77.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft³/s (1,100 m³/s) Apr. 15, 1963, gage height, 14.87 ft (4.532 m), from rating curve extended above 7,600 ft³/s (215 m³/s) on basis of slope-area measurement of peak flow; minimum, 5.1 ft³/s (0.14 m³/s) May 21, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s (102 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1630	*4410	125	*a6.54	1.993
Feb. 26	0030	3810	108	a6.14	1.871

Minimum discharge, 14 ft³/s (0.40 m³/s) June 4-9.

a From floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	429	24	21	40	169	23	19	16	40	17	19
2	20	319	20	21	37	99	22	34	16	30	17	20
3	19	94	20	21	263	49	23	84	15	27	29	21
4	20	41	698	20	162	43	110	50	15	26	33	24
5	33	28	62	20	45	39	91	20	15	145	17	30
6	19	24	32	20	31	36	36	142	15	136	16	21
7	17	22	27	20	30	33	25	97	15	72	17	20
8	19	20	30	21	36	32	43	37	15	32	18	19
9	17	19	23	108	1030	30	54	23	19	26	21	19
10	17	18	42	39	334	29	71	20	32	24	19	20
11	17	17	60	32	91	29	27	20	24	23	18	20
12	17	17	40	33	51	28	73	18	62	22	21	20
13	18	17	453	25	60	29	30	19	91	21	19	20
14	29	30	381	196	142	27	24	18	45	21	19	20
15	19	168	307	251	700	27	21	17	54	21	14	19
16	16	24	91	55	890	26	20	19	78	20	755	18
17	17	20	52	34	834	26	19	19	680	20	65	18
18	18	20	44	27	276	26	18	17	121	21	23	19
19	49	20	53	22	278	30	17	16	308	20	19	20
20	24	86	39	21	172	101	17	18	117	19	18	19
21	19	66	33	43	149	52	17	16	35	19	17	20
22	17	50	20	42	178	38	17	16	176	34	17	19
23	17	36	27	30	156	25	17	16	312	24	17	19
24	16	24	26	29	490	24	17	16	102	21	16	22
25	16	22	23	24	360	24	31	16	96	33	17	22
26	16	22	24	22	1180	127	16	18	135	22	17	27
27	16	21	23	21	357	48	16	19	96	17	17	22
28	16	20	22	31	256	30	16	37	227	17	17	25
29	16	20	22	34	---	26	16	20	171	21	17	20
30	29	20	22	59	---	24	17	16	125	17	19	23
31	1270	---	21	65	---	24	---	16	---	16	19	---
TOTAL	1873	1734	2761	1407	8628	1350	944	913	3228	1007	1370	625
MEAN	60.4	57.8	89.1	45.4	308	43.5	31.5	29.5	108	32.5	44.2	20.8
MAX	1270	429	698	251	1180	169	110	142	680	145	755	30
MIN	16	17	20	20	30	24	16	16	15	16	16	18
AC-FT	3720	3440	5480	2790	17110	2680	1870	1810	6400	2000	2720	1240

CAL YR 1978 TOTAL 25772 MEAN 70.6 MAX 1270 MIN 15 AC-FT 51120
WTR YR 1979 TOTAL 25840 MEAN 70.8 MAX 1270 MIN 15 AC-FT 51250

16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°02'24", long 159°22'58", Hydrologic Unit 20070000, on right bank 0.2 mi (0.3 km) upstream from Wailua Falls and 4.3 mi (6.9 km) north of Lihue.

DRAINAGE AREA.--22.4 mi² (58.0 km²).

PERIOD OF RECORD.--December 1911 to April 1919, June 1919 to March 1921, May 1921 to June 1957, August, September 1957, November 1957 to February 1958, June 1958 to current year. Monthly discharge only for some periods, published in WSP 1319. Published as "above Waiehu Falls, near Lihue" 1912-13.

REVISED RECORDS.--WSP 1249: 1941-47(M), 1948-51(P). WSP 1719: 1943-49. WSP 1937: 1958-60.

GAGE.--Water-stage recorder. Altitude of gage is 240 ft (73 m), from topographic map. Prior to Nov. 18, 1918, at site 0.3 mi (0.5 km) upstream at different datum. Nov. 18, 1918, to June 30, 1957, at site 10 ft (3 m) downstream from present site at datum 2.50 ft (0.762 m) higher and July 1, 1957, to June 23, 1958, at present datum.

REMARKS.--Records good. Lihue and Hanamaulu ditches divert upstream for irrigation of sugarcane in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--62 years (water years, 1913-18, 1920, 1922-24, 1926-56, 1959-79), 116 ft³/s (3.285 m³/s), 84,040 acre-ft/yr (104 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,300 ft³/s (2,470 m³/s) Apr. 15, 1963, gage height, 22.90 ft (6.980 m), from rating curve extended above 13,000 ft³/s (368 m³/s) on basis of slope-area measurement of peak flow; minimum, 1.69 ft³/s (0.048 m³/s) Sept. 21, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,800 ft³/s (164 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1700	*11300	320	*16.23	4.947
Feb. 9	1900	6930	196	14.97	4.563
Aug. 16	0900	7140	202	15.04	4.584

Minimum discharge, 4.3 ft³/s (0.122 m³/s) Sept. 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	654	10	7.7	22	202	7.7	6.1	7.7	59	5.0	5.0
2	9.8	508	11	7.5	17	152	7.5	7.3	6.9	25	5.3	5.1
3	10	384	10	7.5	172	129	7.7	47	6.7	12	12	4.8
4	7.1	232	529	7.1	204	113	52	33	5.9	8.6	20	5.0
5	63	157	83	7.1	73	100	61	9.9	5.7	95	8.8	73
6	14	119	17	7.5	18	91	34	23	5.5	72	5.1	13
7	8.9	99	14	8.0	36	81	10	11	5.3	72	4.8	7.3
8	22	84	21	7.5	80	76	10	12	5.1	22	4.8	6.9
9	7.3	82	27	66	1830	65	16	11	5.3	11	17	5.7
10	6.5	54	44	34	638	60	74	18	7.8	7.1	18	5.3
11	6.1	30	108	80	598	58	12	61	9.1	6.5	5.9	5.0
12	6.5	25	77	79	242	54	9.4	8.2	34	6.3	11	5.0
13	6.9	22	308	47	140	45	8.8	7.1	60	5.7	8.0	5.0
14	7.3	133	269	165	246	14	6.5	6.7	30	5.7	5.7	4.8
15	8.4	584	252	292	577	12	6.3	7.1	30	5.9	5.1	4.7
16	7.3	94	124	108	682	11	6.3	7.5	71	5.9	1040	4.3
17	6.5	53	89	45	848	11	6.1	7.5	362	6.5	152	4.3
18	6.3	38	69	15	455	10	5.9	9.9	125	7.7	30	4.3
19	36	34	51	13	763	17	6.1	7.5	254	6.7	17	6.3
20	31	71	59	11	384	66	6.3	6.7	186	6.3	7.3	5.1
21	14	198	73	19	273	32	6.1	7.1	61	6.1	5.9	6.5
22	8.2	97	51	45	186	36	5.7	6.3	158	11	5.5	5.7
23	44	89	21	31	200	10	5.5	5.9	292	26	5.7	5.0
24	7.3	55	18	38	606	9.1	5.3	6.5	131	7.1	6.1	5.1
25	5.5	43	16	22	512	8.8	20	6.1	54	6.9	5.9	6.3
26	5.5	38	14	15	1020	47	6.9	6.5	65	6.1	5.7	6.3
27	5.7	31	9.5	12	406	57	5.7	7.1	31	5.7	5.3	6.5
28	5.7	12	8.8	10	310	11	5.3	13	116	5.1	5.7	13
29	5.7	11	9.5	28	---	8.6	5.7	22	104	5.9	5.0	17
30	16	10	8.8	34	---	8.2	5.9	6.5	117	7.5	5.1	13
31	3520	---	8.0	40	---	8.0	---	7.7	---	5.3	5.3	---
TOTAL	3919.5	4041	2409.6	1308.9	11538	1602.7	425.7	402.2	2352.0	539.6	1344.0	264.3
MEAN	126	135	77.7	42.2	412	51.7	14.2	13.0	78.4	17.4	46.6	8.81
MAX	3520	654	529	292	1830	202	74	61	362	95	1040	73
MIN	5.5	10	8.0	7.1	17	8.0	5.3	5.9	5.1	5.1	4.8	4.3
AC-FT	7770	8020	4780	2600	22890	3180	844	798	4670	1070	2860	524

CAL YR 1978 TOTAL 35840.9 MEAN 98.2 MAX 3520 MIN 2.6 AC-FT 71090
WTR YR 1979 TOTAL 30247.5 MEAN 82.9 MAX 3520 MIN 4.3 AC-FT 60000

16061000 NORTH WAILUA DITCH NEAR LIHUE

LOCATION.--Lat 22°03'56", long 159°28'14", Hydrologic Unit 2007000, on left bank 300 ft (91 m) downstream from intake, 7.9 mi (12.7 km) west of Wailua House Lots, and 8.8 mi (14.2 km) northwest of Lihue.

PERIOD OF RECORD.--July 1932 to current year.

REVISED RECORDS.--WSP 770: 1933.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,105.45 ft (336.941 m) above mean sea level (levels by Lihue Plantation Co.).

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for power and irrigation in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--47 years, 18.8 ft^3/s (0.532 m^3/s), 13,620 acre-ft/yr (16.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 59 ft^3/s (1.67 m^3/s) Dec. 21, 1933, Apr. 24, 1934; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 27 ft^3/s (0.76 m^3/s) Oct. 31; no flow Oct. 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	23	19	17	16	19	17	18	20	18	16	17
2	9.2	22	18	17	16	18	17	18	20	17	17	17
3	.00	23	18	17	20	18	17	20	20	17	19	17
4	.00	21	21	17	18	18	19	20	20	18	18	20
5	11	20	18	17	17	18	20	18	20	20	16	20
6	18	20	18	17	17	18	18	19	20	20	16	18
7	18	20	20	17	19	17	18	18	20	18	16	18
8	18	20	19	17	18	18	19	19	19	17	17	17
9	17	20	18	20	21	17	20	18	20	17	18	17
10	17	20	19	18	19	17	20	18	22	16	17	17
11	18	20	19	20	23	17	17	18	22	16	17	16
12	17	19	19	20	19	17	18	17	24	16	17	16
13	17	11	21	19	18	17	17	17	24	16	16	16
14	18	13	21	20	20	17	17	17	23	16	16	16
15	18	21	20	19	22	17	17	6.8	20	17	17	16
16	17	19	19	17	23	17	17	15	20	17	24	16
17	17	19	19	16	24	18	17	22	21	17	18	16
18	18	18	19	16	22	18	17	22	20	17	18	16
19	21	18	19	16	21	18	17	20	21	16	17	16
20	20	20	18	16	20	20	16	22	20	16	16	16
21	19	21	18	16	19	19	16	20	19	16	16	17
22	20	20	18	17	18	18	16	20	21	18	16	18
23	20	19	18	17	21	18	16	20	21	17	16	16
24	19	18	18	16	22	17	17	20	19	17	16	17
25	18	18	17	16	22	17	18	20	18	17	16	17
26	18	18	17	16	23	19	17	22	19	17	16	18
27	18	18	17	16	20	17	17	21	18	16	16	17
28	18	18	17	16	20	17	17	22	20	16	16	20
29	18	17	17	16	---	17	17	22	20	17	17	19
30	20	17	17	17	---	17	18	20	20	17	18	19
31	27	---	17	16	---	17	---	20	---	16	17	---
TOTAL	520.20	571	573	532	558	547	528	589.8	611	526	526	516
MEAN	16.8	19.0	18.5	17.2	19.9	17.6	17.5	19.0	20.4	17.0	17.0	17.2
MAX	27	23	21	20	24	20	20	22	24	20	24	20
MIN	.00	11	17	16	16	17	16	6.8	18	16	16	16
AC-FT	1030	1130	1140	1060	1110	1080	1040	1170	1210	1040	1040	1020

CAL YR 1978 TOTAL 6608.00 MEAN 18.1 MAX 28 MIN .00 AC-FT 13110
WTR YR 1979 TOTAL 6594.00 MEAN 18.1 MAX 27 MIN .00 AC-FT 13080

16061200 NORTH WAILUA DITCH BELOW WAIKOKO STREAM, NEAR LIHUE

LOCATION.--Lat 22°03'34", long 159°28'00", Hydrologic Unit 20070000, on left bank 380 ft (116 m) downstream from Waikoko Stream, 8.1 mi (13.0 km) west of Wailua, and 8.4 mi (13.5 km) northwest of Lihue.

PERIOD OF RECORD.--January 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,070 ft (326 m), from topographic map.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River and Waikoko Stream for power and irrigation in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--14 years, 24.0 ft^3/s (0.680 m^3/s), 17,390 acre-ft/yr (21.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 58 ft^3/s (1.64 m^3/s) Oct. 11, 1966; no flow Jan. 1-18, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 35 ft^3/s (0.99 m^3/s) Oct. 31; minimum daily, 0.80 ft^3/s (0.023 m^3/s) Oct. 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	28	20	18	19	19	18	19	21	22	19	19
2	10	25	20	18	19	19	18	19	21	21	19	19
3	.80	26	20	18	24	19	18	20	21	21	23	18
4	.80	23	28	17	21	18	20	20	20	21	22	21
5	13	22	22	17	19	18	20	19	20	26	20	23
6	20	22	20	18	19	18	19	20	20	24	19	21
7	21	21	21	17	21	18	19	20	20	22	19	20
8	20	21	20	18	20	18	19	20	20	21	19	19
9	20	21	20	24	25	18	20	19	20	21	22	19
10	20	20	22	19	20	18	19	19	21	20	20	19
11	20	20	23	22	26	18	18	19	22	20	20	19
12	20	20	21	20	20	18	19	19	24	20	21	18
13	20	8.6	27	20	19	18	18	19	24	19	20	18
14	20	16	25	22	21	18	18	18	23	19	19	18
15	20	27	24	22	25	18	18	7.7	23	20	19	18
16	20	22	22	20	26	18	18	14	25	19	32	18
17	19	21	21	19	26	17	18	22	29	19	23	18
18	19	20	21	19	24	18	18	22	25	19	22	18
19	24	20	21	19	24	19	18	21	28	18	21	19
20	23	22	20	19	21	20	18	22	26	18	20	18
21	22	26	20	20	20	19	18	21	22	18	20	19
22	22	24	20	20	19	18	18	21	27	21	20	19
23	21	22	20	19	22	17	18	21	29	19	20	18
24	20	21	19	19	24	17	18	21	23	19	19	19
25	20	20	19	19	24	17	19	21	22	19	19	19
26	20	20	19	19	25	19	18	22	24	19	19	20
27	20	20	19	19	22	19	18	22	21	18	19	19
28	20	20	18	20	21	18	18	24	25	18	19	23
29	19	20	19	20	---	18	18	22	24	20	19	21
30	22	19	18	20	---	18	18	22	24	19	19	21
31	35	---	18	20	---	18	---	21	---	18	19	---
TOTAL	590.60	637.6	647	601	616	563	552	616.7	694	618	631	578
MEAN	19.1	21.3	20.9	19.4	22.0	18.2	18.4	19.9	23.1	19.9	20.4	19.3
MAX	35	28	28	24	26	20	20	24	29	26	32	23
MIN	.80	8.6	18	17	19	17	18	7.7	20	18	19	18
AC-FT	1170	1260	1280	1190	1220	1120	1090	1220	1380	1230	1250	1150

CAL YR 1978 TOTAL 7446.80 MEAN 20.4 MAX 35 MIN .80 AC-FT 14770
WTR YR 1979 TOTAL 7344.90 MEAN 20.1 MAX 35 MIN .80 AC-FT 14570

16062000 STABLE STORM DITCH NEAR LIHUE

LOCATION.--Lat 22°04'09", long 159°26'46", Hydrologic Unit 20070000, on left bank 100 ft (30 m) downstream from intake, 7.8 mi (12.6 km) northwest of Lihue, and 7.9 mi (12.7 km) west of Kapaa.

PERIOD OF RECORD.--December 1936 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 710 ft (216 m) by barometer.

REMARKS.--Records good. Ditch diverts from North Fork Wailua River for irrigation of sugarcane in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--42 years (water years 1938-79), 10.6 ft^3/s (0.300 m^3/s), 7,680 acre-ft/yr (9.47 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 71 ft^3/s (2.01 m^3/s) Apr. 3, 1948; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 47 ft^3/s (1.33 m^3/s) June 12; minimum daily, 0.02 ft^3/s (0.001 m^3/s) for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.02	.12	.18	.18	.06	.02	28	28	.42	36	30
2	.18	.02	.18	.18	.18	.06	11	33	36	.42	36	30
3	.18	.02	.18	.18	.31	.06	20	45	37	.42	29	30
4	.28	.06	.28	13	.06	.06	28	18	35	.42	21	40
5	.28	.06	.28	23	.06	.06	35	1.4	34	.42	20	45
6	.28	.06	.28	24	.06	.06	20	1.4	34	.42	20	35
7	.28	.06	.28	23	.06	.06	19	1.4	33	.42	20	35
8	.42	.12	.28	22	.06	.06	20	1.2	34	.42	31	29
9	.42	.12	.28	15	.55	.06	23	14	34	.42	43	26
10	.28	.12	.28	19	.06	.06	22	18	39	.42	41	25
11	.28	.12	.28	30	.24	.06	19	1.4	40	.42	40	28
12	29	.06	.28	.88	.06	.06	20	1.2	47	.42	44	30
13	24	.06	.28	.88	.06	.06	18	1.2	42	.42	39	31
14	25	.12	.28	.72	.06	.06	17	16	38	.42	36	30
15	26	.12	.28	.57	.06	.06	17	38	14	.42	36	30
16	24	.06	.28	.57	.06	.06	19	29	1.0	23	23	30
17	23	.06	.28	.57	.06	.06	20	27	.57	38	.42	30
18	24	.06	.28	.42	.06	.06	20	26	.57	38	.42	29
19	38	.06	.28	.42	.06	.06	20	17	.57	36	.42	30
20	34	.06	.28	.28	.06	.02	20	22	.42	36	.28	29
21	22	.06	.28	.28	.06	.02	19	15	.42	36	.28	30
22	.72	.06	.28	.28	.06	.02	19	13	.42	40	23	32
23	.72	.06	.28	.28	.06	.02	19	12	.42	38	32	28
24	.42	.06	.28	.28	.06	.02	22	14	.42	38	31	30
25	12	.06	.28	.28	.38	.02	25	13	.42	38	31	29
26	18	.06	.28	.28	.06	.02	19	22	.42	39	30	30
27	18	.06	.28	.18	.06	.02	21	25	.42	37	30	30
28	18	.06	.18	.18	.06	.02	22	29	.42	36	30	40
29	18	.06	.18	.18	---	.02	27	24	.42	39	32	37
30	8.4	.12	.18	.18	---	.02	28	17	.42	36	34	35
31	.72	---	.18	.18	---	.02	---	15	---	35	32	---
TOTAL	367.04	2.10	7.92	177.43	3.16	1.38	609.02	539.2	532.33	589.30	823.82	943
MEAN	11.8	.070	.26	5.72	.11	.045	20.3	17.4	17.7	19.0	26.6	31.4
MAX	38	.12	.28	30	.55	.06	35	45	47	40	44	45
MIN	.18	.02	.12	.18	.06	.02	.02	1.2	.42	.42	.28	25
AC-FT	728	4.2	16	352	6.3	2.7	1210	1070	1060	1170	1630	1870

CAL YR 1978 TOTAL 2433.45 MEAN 6.67 MAX 38 MIN .02 AC-FT 4830
WTR YR 1979 TOTAL 4595.70 MEAN 12.6 MAX 47 MIN .02 AC-FT 9120

16063000 NORTH FORK WAILUA RIVER AT ALTITUDE 650 FT (198 M), NEAR LIHUE

LOCATION.--Lat 22°04'02", long 159°26'21", Hydrologic Unit 20070000, on right bank 0.5 mi (0.8 km) downstream from intake of Stable storm ditch and 7.6 mi (12.2 km) northwest of Lihue.

DRAINAGE AREA.--5.29 mi² (13.70 km²).

PERIOD OF RECORD.--September 1914 to March 1915, May 1915 to October 1918, December 1918, March 1919, June 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 555: 1921. WSP 1569: 1915-27(M), 1943-47(M), 1948-56(P). WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 650 ft (198 m), from topographic map. Prior to Sept. 9, 1944, at datum 2.0 ft (0.61 m) higher.

REMARKS.--Records good. Since 1925, Hanalei tunnel (see sta 16100000) has diverted from Hanalei River basin into North Fork Wailua River above station; North Wailua and Stable storm ditches (see sta 16061000 and 16062000) divert water above station for power development and irrigation in vicinity of Lihue. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--63 years (water years, 1916-18, 1920-79), 73.1 ft³/s (2.070 m³/s), 52,960 acre-ft/yr (65.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,200 ft³/s (374 m³/s) Nov. 12, 1955, gage height, 13.53 ft (4.124 m), from rating curve extended above 2,300 ft³/s (65.1 m³/s) on basis of slope-area measurement at gage height 10.65 ft (3.246 m); minimum, 0.23 ft³/s (0.007 m³/s) June 5, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,800 ft³/s (79.4 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1400	*3870	110	*8.38	2.554
Feb. 25	2330	3220	91.2	a7.80	2.377
Aug. 16	0700	3200	90.6	7.78	2.371

Minimum discharge, 0.99 ft³/s (0.028 m³/s) Aug. 15.

a Floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	235	53	29	47	92	28	14	1.6	82	3.5	3.0
2	47	132	40	29	47	76	16	25	1.4	70	2.7	3.0
3	56	271	37	28	310	68	8.0	47	1.6	66	62	3.0
4	79	108	227	14	101	59	37	113	1.3	68	48	24
5	90	76	47	4.2	59	54	52	54	1.3	148	22	39
6	39	66	42	5.1	48	49	17	81	1.2	110	20	5.1
7	40	58	106	4.2	129	46	20	69	1.1	78	18	5.0
8	38	52	56	5.9	70	56	33	86	1.1	62	10	5.2
9	34	47	42	138	627	43	85	27	1.1	56	46	10
10	33	43	72	24	182	36	49	48	8.7	53	4.4	10
11	34	44	77	171	832	34	21	63	11	49	2.8	4.0
12	16	40	55	108	150	37	31	52	38	48	17	1.4
13	8.6	40	181	79	112	36	17	50	38	46	2.2	1.4
14	11	354	136	188	179	34	14	32	33	45	1.3	1.6
15	12	304	120	149	440	34	14	5.4	70	50	4.9	1.4
16	7.7	81	69	78	624	34	10	1.9	169	23	649	1.3
17	6.9	60	58	64	640	35	8.0	8.4	224	8.1	97	1.3
18	7.7	52	59	52	369	35	7.2	2.3	120	8.0	70	1.3
19	46	47	54	43	379	46	7.5	1.6	186	3.6	53	1.6
20	29	77	46	46	158	80	7.5	2.6	133	3.4	47	1.4
21	20	158	43	81	102	63	6.9	1.3	82	2.7	43	1.4
22	54	86	43	124	84	41	6.6	1.2	193	36	20	2.2
23	48	58	42	72	266	34	6.6	1.2	211	9.5	9.3	1.4
24	39	47	39	58	363	34	20	1.2	102	9.8	8.5	1.6
25	21	43	36	48	362	31	20	1.3	81	9.3	8.0	1.6
26	13	44	34	44	498	54	7.2	1.6	117	10	7.5	1.6
27	12	42	33	42	217	36	4.9	5.9	75	5.9	6.9	1.6
28	12	38	32	57	132	32	3.2	19	139	3.2	6.4	14
29	11	35	34	56	---	30	12	1.6	128	16	4.2	12
30	46	34	35	60	---	29	15	1.4	126	3.8	3.9	5.3
31	1140	---	30	56	---	28	---	1.4	---	1.8	3.2	---
TOTAL	2094.9	2772	1978	1957.4	7527	1396	584.6	820.3	2296.4	1185.1	1301.7	166.7
MEAN	67.6	92.4	63.8	63.1	269	45.0	19.5	26.5	76.5	38.2	42.0	5.56
MAX	1140	354	227	188	832	92	85	113	224	148	649	39
MIN	6.9	34	30	4.2	47	28	3.2	1.2	1.1	1.8	1.3	1.3
AC-FT	4160	5500	3920	3880	14930	2770	1160	1630	4550	2350	2580	331

CAL YR 1978 TOTAL 24871.60 MEAN 68.1 MAX 1140 MIN .67 AC-FT 49330
WTR YR 1979 TOTAL 24080.10 MEAN 66.0 MAX 1140 MIN 1.1 AC-FT 47760

16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE

LOCATION.--Lat 22°04'19", long 159°25'05", Hydrologic Unit 20070000, on right bank 1,200 ft (366 m) upstream from mouth and 7.2 mi (11.6 km) northwest of Lihue.

DRAINAGE AREA.--6.27 mi² (16.24 km²).

PERIOD OF RECORD.--July 1912 to September 1914, December 1914 to March 1915, May 1915 to March 1919, June 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 770: 1932-33. WSP 1719: 1916. WSP 1937: 1918. WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 500 ft (152 m), from topographic map. Prior to Dec. 31, 1914, nonrecording gage at site 725 ft (221 m) downstream at different datum. Dec. 31, 1914, to May 10, 1934, water-stage recorder at site 75 ft (23 m) upstream at present datum.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--64 years (water years, 1913-14, 1916-17, 1920-79), 48.2 ft³/s (1.365 m³/s), 34,920 acre-ft/yr (43.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft³/s (521 m³/s) Nov. 12, 1955, gage height, 14.7 ft (4.48 m), from floodmarks, from rating curve extended above 2,700 ft³/s (76.5 m³/s); minimum, 6.8 ft³/s (0.19 m³/s) July 3, 13, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft³/s (53.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1400	*3230	91.5	*6.98	2.128
Feb. 9	1800	2800	79.3	6.60	2.012

Minimum discharge, 11.0 ft³/s (0.31 m³/s) Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	205	24	22	30	68	20	21	22	41	16	13
2	24	128	24	21	29	59	20	32	20	33	16	13
3	23	304	22	21	200	52	20	61	20	31	19	13
4	25	97	72	20	73	46	28	68	19	31	26	18
5	27	66	28	20	41	41	44	35	18	45	18	29
6	22	53	25	20	34	37	24	55	18	44	17	16
7	22	46	71	20	74	35	21	36	17	37	17	16
8	22	42	47	20	52	36	24	107	17	28	17	13
9	21	37	29	40	625	31	23	41	18	25	18	13
10	20	33	43	25	183	29	33	41	29	24	18	13
11	21	33	62	86	335	28	21	34	23	24	17	12
12	21	29	43	82	100	27	21	26	47	23	25	12
13	21	27	111	44	180	27	19	25	44	22	17	12
14	21	279	105	145	99	25	18	23	32	22	16	12
15	21	218	103	118	207	25	18	23	34	22	15	12
16	20	58	54	59	243	24	17	24	44	21	151	11
17	20	43	44	49	228	24	16	32	43	21	45	12
18	20	38	42	39	162	25	16	38	43	21	24	12
19	32	35	38	33	401	26	16	23	82	20	21	12
20	32	37	35	32	163	32	16	25	63	19	19	12
21	22	55	32	64	94	26	16	22	37	19	18	13
22	33	37	36	87	75	25	16	20	75	30	17	14
23	31	33	32	53	154	22	17	19	72	22	17	12
24	19	29	31	47	222	23	20	23	46	20	17	13
25	18	28	29	41	170	22	34	21	37	20	16	13
26	17	28	27	36	186	25	17	34	63	22	16	14
27	16	27	25	32	110	22	16	32	36	22	14	14
28	16	25	25	34	82	21	15	33	77	19	14	24
29	16	24	26	33	---	21	20	27	53	20	14	47
30	31	24	33	32	---	20	18	22	58	18	14	17
31	1260	---	24	32	---	20	---	25	---	17	13	---
TOTAL	1939	2118	1342	1407	4552	944	624	1048	1207	783	702	457
MEAN	62.5	70.6	43.3	45.4	163	30.5	20.8	33.8	40.2	25.3	22.6	15.2
MAX	1260	304	111	145	625	68	44	107	82	45	151	47
MIN	16	24	22	20	29	20	15	19	17	17	13	11
AC-FT	3850	4200	2660	2790	9030	1870	1240	2080	2390	1550	1390	906

CAL YR 1978 TOTAL 16637.0 MEAN 45.6 MAX 1260 MIN 9.4 AC-FT 33000
WTR YR 1979 TOTAL 17123.0 MEAN 46.9 MAX 1260 MIN 11 AC-FT 33960

16069000 WAILUA DITCH NEAR KAPAA

LOCATION.--Lat 22°04"34", long 159°24'04", Hydrologic Unit 20070000, on right bank 2,000 ft (610 m) downstream from Wailua Reservoir, 5.2 mi (8.4 km) west of Kapaa, and 7.0 mi (11.3 km) north of Lihue.

PERIOD OF RECORD.--November 1936 to current year.

GAGE.--Water-stage recorder. Sharp-crested weir since Feb. 4, 1965. Datum of gage is 462.3 ft (140.91 m) above mean sea level (by stadia survey).

REMARKS.--Records good. Ditch diverts water from North Fork Wailua River to reservoir, 2,000 ft (610 m) above station and thence to fields for irrigation of sugarcane in vicinity of Kapaa. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--42 years (water years 1938-79), 15.0 ft^3/s (0.425 m^3/s), 10,870 acre-ft/yr (13.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 63 ft^3/s (1.78 m^3/s) June 4, 1937; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 50 ft^3/s (1.42 m^3/s) Aug. 1; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	5.9	24	18	28	.00	19	26	27	18	50	27
2	22	.00	24	18	16	.00	19	26	27	17	45	26
3	26	.00	24	18	.00	.00	19	25	26	21	42	24
4	30	.00	9.8	18	.00	.00	19	25	27	24	44	23
5	31	.00	.20	18	.00	4.2	19	25	28	9.3	44	25
6	32	.00	19	18	.00	12	19	25	28	.43	43	26
7	33	.00	20	18	.00	16	19	25	27	.35	42	26
8	33	.00	.00	18	.00	20	19	25	26	.31	40	25
9	33	.00	.00	19	.06	19	19	25	25	16	34	24
10	33	.00	.00	19	.14	19	19	25	25	28	35	24
11	33	.00	.00	20	.00	19	19	4.4	26	28	24	24
12	33	.00	11	12	.00	20	14	16	28	29	31	22
13	33	.00	20	1.1	.00	23	.23	16	31	29	29	20
14	33	.00	21	1.1	.00	26	.17	13	32	26	21	18
15	33	.00	21	1.0	.00	23	.11	24	32	22	18	16
16	32	.00	21	.93	.00	20	7.7	24	33	22	36	14
17	32	.00	21	.86	.00	20	18	24	33	22	33	14
18	31	.00	21	.86	.00	20	24	24	29	23	24	13
19	32	.00	21	.86	.00	20	27	24	27	24	27	14
20	33	.00	21	.80	.00	20	27	24	27	23	29	14
21	33	.00	15	.75	.00	20	27	23	27	23	30	14
22	20	.00	.00	13	.00	20	27	23	28	24	36	16
23	4.6	.00	.00	26	.00	19	27	23	29	25	39	16
24	22	.00	.00	26	.00	19	27	23	30	25	38	15
25	29	.00	.00	21	.00	19	27	23	30	26	37	16
26	22	.00	14	11	.00	19	27	23	30	26	36	16
27	29	20	25	.31	.00	19	27	24	23	27	35	18
28	29	27	25	.31	.00	19	26	25	20	27	33	20
29	29	28	23	16	---	19	26	25	20	27	32	24
30	16	24	18	27	---	19	26	25	18	27	30	25
31	10	---	18	27	---	19	---	26	---	35	29	---
TOTAL	863.6	104.90	437.00	389.88	44.20	512.20	594.21	708.4	819	674.39	1066	599
MEAN	27.9	3.50	14.1	12.6	1.58	16.5	19.8	22.9	27.3	21.8	34.4	20.0
MAX	33	28	25	27	28	26	27	26	33	35	50	27
MIN	4.6	.00	.00	.31	.00	.00	.11	4.4	18	.31	18	13
AC-FT	1710	208	867	773	88	1020	1180	1410	1620	1340	2110	1190

CAL YR 1978 TOTAL 7209.80 MEAN 19.8 MAX 36 MIN .00 AC-FT 14300
WTR YR 1979 TOTAL 6812.78 MEAN 18.7 MAX 50 MIN .00 AC-FT 13510

16071000 NORTH FORK WAILUA RIVER NEAR KAPAA

LOCATION.--Lat 22°03'08", long 159°22'22", Hydrologic Unit 20070000, on right bank 1.1 mi (1.8 km) upstream from confluence with South Fork, 3.7 mi (6.0 km) southwest of Kapaa, and 5.0 mi (8.0 km) north of Lihue.

DRAINAGE AREA.-- 17.9 mi² (46.4 km²).

PERIOD OF RECORD.--July 1952 to current year.

REVISED RECORDS.--WSP 2137: Drainage area. WDR HI-75-1: 1974.

GAGE.--Water-stage recorder. Altitude of gage is 18 ft (5.5 m), from topographic map.

REMARKS.--Records good. Wailua and Aahoaka ditches (see stas 16069000 and 16070000) divert above station for irrigation of sugarcane in vicinities of Kapaa and Wailua, respectively. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--27 years, 127 ft³/s (3.600 m³/s), 92,010 acre-ft/yr (113 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,200 ft³/s (1,510 m³/s) Nov. 12, 1955, gage height, 19.88 ft (6.059 m) in gage well, 20.8 ft (6.34 m), from floodmarks, from rating curve extended above 3,700 ft³/s (105 m³/s) on basis of slope-area measurement of peak flow; minimum, 2.12 ft³/s (0.060 m³/s) Oct. 28, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,100 ft³/s (116 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1500	*6190	175	*8.27	2.521
Feb. 9	1800	4950	140	7.60	2.316

Minimum discharge, 4.8 ft³/s (0.14 m³/s) Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	798	70	37	62	225	35	27	16	155	8.3	5.2
2	59	501	58	35	76	189	30	34	13	117	8.0	5.4
3	59	655	51	34	498	165	14	96	12	76	34	5.2
4	57	318	339	27	317	148	57	165	11	65	47	9.0
5	125	195	110	10	155	135	90	66	10	198	11	59
6	30	138	65	9.7	118	124	43	143	10	179	7.8	7.5
7	26	122	143	10	232	116	30	101	11	145	7.8	5.8
8	26	105	157	8.3	186	126	45	179	10	111	7.5	5.4
9	22	110	94	148	1360	92	75	84	10	76	25	5.4
10	22	118	130	49	660	73	107	75	15	52	13	5.4
11	23	112	189	211	1230	68	40	158	11	47	7.3	5.2
12	22	103	112	239	421	44	56	103	43	44	16	5.2
13	7.5	96	311	138	268	11	53	97	38	60	7.8	5.2
14	6.9	418	258	392	342	10	47	59	34	99	7.0	5.2
15	12	742	260	371	679	20	47	13	70	91	7.0	5.2
16	7.7	201	135	170	930	47	35	11	153	37	568	5.2
17	6.7	148	103	142	976	58	10	11	303	9.7	136	5.0
18	6.7	126	92	112	609	59	9.3	25	184	9.7	60	5.0
19	28	116	89	97	1000	69	9.7	12	285	9.3	40	5.2
20	29	135	73	103	471	118	9.3	11	213	9.0	28	5.0
21	9.7	236	65	186	310	82	9.3	11	107	9.0	22	5.4
22	39	142	76	253	247	70	9.0	10	251	20	15	5.4
23	114	116	86	155	494	48	9.0	10	285	25	5.8	5.2
24	55	96	84	120	748	46	9.0	11	138	9.0	5.4	5.0
25	22	87	78	87	590	43	47	11	107	8.6	5.4	5.4
26	8.3	87	73	86	885	72	11	11	195	9.0	5.4	5.6
27	7.5	84	55	97	429	61	8.3	13	119	8.6	5.2	5.4
28	6.7	75	37	117	312	44	8.0	27	222	8.6	5.2	10
29	6.2	59	42	102	---	41	15	16	216	9.0	5.2	34
30	34	48	58	81	---	38	12	10	222	11	5.4	8.2
31	2500	---	40	79	---	36	---	18	---	8.3	5.2	---
TOTAL	3437.9	6287	3533	3706.0	14605	2478	979.9	1618	3314	1715.8	1131.7	254.3
MEAN	111	210	114	120	522	79.9	32.7	52.2	110	55.3	36.5	8.48
MAX	2500	798	339	392	1360	225	107	179	303	198	568	59
MIN	6.2	48	37	8.3	62	10	8.0	10	10	8.3	5.2	5.0
AC-FT	6820	12470	7010	7350	28970	4920	1940	3210	6570	3400	2240	504

CAL YR 1978 TOTAL 42634.2 MEAN 117 MAX 2500 MIN 3.9 AC-FT 84560
WTR YR 1979 TOTAL 43060.6 MEAN 118 MAX 2500 MIN 5.0 AC-FT 85410

HAWAII, ISLAND OF KAUAI

16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA

LOCATION.--Lat 22°04'43", long 159°23'55", Hydrologic Unit 20070000, on left bank 0.4 mi (0.6 km) upstream from mouth, 0.6 mi (1.0 km) northeast of Wailua Reservoir, and 4.9 mi (7.9 km) west of Kapaa.

DRAINAGE AREA.--0.65 mi² (1.68 km²).

PERIOD OF RECORD.--May 1960 to current year. Prior to July 1960, published as Left Branch Opaikaa Stream near Kapaa.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 458.4 ft (139.72 m) above mean sea level (by stadia survey).

REMARKS.--Records good. No diversion above station. Recording rain gage located at station. Observations of conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--19 years, 2.61 ft³/s (0.074 m³/s), 1,890 acre-ft/yr (2.33 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 724 ft³/s (20.5 m³/s) Jan. 31, 1975, gage height, 5.58 ft (1.701 m), from rating curve extended above 415 ft³/s (11.8 m³/s); minimum, 0.09 ft³/s (0.003 m³/s) Sept. 27-30, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 70 ft³/s (1.98 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1400	*334	9.46	*4.02	1.225
Feb. 9	1900	171	4.84	3.15	.960

Minimum discharge, 0.53 ft³/s (0.015 m³/s) Sept. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	20	2.0	1.7	2.0	5.3	2.0	1.1	1.9	1.9	1.0	.75
2	1.4	13	1.9	1.7	2.0	5.0	2.0	1.2	1.6	1.8	1.0	.83
3	1.3	21	1.9	1.7	5.8	4.8	2.0	1.8	1.6	1.8	1.1	.75
4	1.4	10	3.6	1.6	3.9	4.6	2.0	2.0	1.5	1.8	1.2	.75
5	1.3	7.4	2.1	1.6	2.5	4.4	2.7	1.7	1.4	1.7	1.1	1.0
6	1.3	6.1	1.9	1.6	2.3	4.3	2.0	1.8	1.4	1.7	1.0	.75
7	1.3	5.5	1.9	1.6	2.5	3.9	1.9	1.8	1.4	1.7	1.0	.67
8	1.2	5.0	1.9	1.6	3.1	3.9	1.9	2.3	1.3	1.6	1.0	.67
9	1.1	4.4	1.9	2.1	40	3.8	1.9	2.1	1.3	1.6	1.3	.67
10	1.1	4.1	2.0	1.8	13	3.6	1.8	1.8	1.4	1.6	1.2	.67
11	1.0	3.6	2.1	3.5	16	3.4	1.7	1.7	1.4	1.4	1.0	.67
12	1.0	3.2	1.9	3.2	8.0	3.4	1.8	1.6	1.4	1.4	1.1	.67
13	1.0	3.1	2.4	2.3	6.4	3.2	1.7	1.5	1.3	1.3	1.0	.67
14	1.0	3.8	2.8	2.5	5.9	3.2	1.7	1.5	1.2	1.3	1.0	.67
15	1.0	4.4	2.8	3.1	7.1	3.1	1.8	1.4	1.2	1.3	1.0	.60
16	1.0	3.1	2.4	2.5	5.7	3.1	1.8	1.4	1.2	1.3	2.6	.60
17	1.0	2.9	2.3	2.3	5.7	2.9	1.6	1.4	1.5	1.3	1.5	.60
18	1.0	2.8	2.2	2.2	5.7	2.9	1.6	1.7	1.4	1.3	1.2	.60
19	1.1	2.7	2.1	2.1	21	2.8	1.5	1.4	1.7	1.3	1.2	.67
20	1.1	2.7	2.1	2.0	8.9	2.8	1.5	1.3	1.9	1.3	1.1	.60
21	1.0	2.7	2.0	2.4	7.1	2.7	1.4	1.3	1.6	1.2	1.0	.67
22	1.0	2.5	2.0	2.5	6.1	2.7	1.4	1.2	1.8	1.3	1.0	.67
23	1.1	2.4	2.0	2.3	6.4	2.5	1.4	1.2	1.8	1.3	1.0	.53
24	.91	2.4	1.9	2.4	9.2	2.5	1.4	1.5	1.6	1.3	1.0	.60
25	.91	2.3	1.9	2.3	7.4	2.5	1.7	1.4	1.6	1.3	.91	.60
26	.91	2.3	1.9	2.2	6.6	2.7	1.4	2.4	2.1	1.3	.91	.60
27	.91	2.2	1.8	2.1	6.1	2.5	1.3	1.7	1.7	1.3	.83	.67
28	.91	2.2	1.8	2.1	5.7	2.3	1.3	1.8	2.4	1.3	.83	.83
29	.83	2.1	1.9	2.1	---	2.3	1.3	1.7	2.0	1.2	.83	.83
30	1.2	2.1	1.8	2.1	---	2.3	1.2	1.6	2.1	1.2	.83	.60
31	105	---	1.7	2.1	---	2.2	---	4.2	---	1.0	.83	---
TOTAL	137.68	152.0	68.9	67.3	222.1	101.6	50.7	52.5	47.7	44.1	33.57	20.46
MEAN	4.44	5.07	2.09	2.17	7.93	3.28	1.69	1.69	1.59	1.42	1.08	.68
MAX	105	21	3.6	3.5	40	5.3	2.7	4.2	2.4	1.9	2.6	1.0
MIN	.83	2.1	1.7	1.6	2.0	2.2	1.2	1.1	1.2	1.0	.83	.53
AC-FT	273	301	129	133	441	202	101	104	95	87	67	41

CAL YR 1978 TOTAL 811.00 MEAN 2.22 MAX 105 MIN .41 AC-FT 1610
WTR YR 1979 TOTAL 994.61 MEAN 2.72 MAX 105 MIN .53 AC-FT 1970

16077000 MAKALEHA DITCH NEAR KEALIA

LOCATION.--Lat 22°07'06", long 159°22'04", Hydrologic Unit 20070000, on left bank at end of last tunnel from which flow enters Mimino Reservoir, 3.9 mi (6.3 km) northwest of Kealia, and 4.0 mi (6.4 km) northwest of Kapaa.

PERIOD OF RECORD.--December 1936 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 518 ft (158 m) above mean sea level (by stadia survey).

REMARKS.--Records good. Ditch diverts from Makaleha Stream for irrigation of sugarcane in vicinity of Kealia. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--42 years (water years 1938-79), 6.73 ft^3/s (0.191 m^3/s), 4,880 acre-ft/yr (6.02 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 31 ft^3/s (0.88 m^3/s) Aug. 1, 1961; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 23 ft^3/s (0.65 m^3/s) Oct. 31; minimum daily, 0.11 ft^3/s (0.003 m^3/s) Nov. 13, 22-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	8.2	9.0	1.5	6.7	2.3	8.7	12	5.1	15	7.8	.93
2	7.4	4.9	10	1.4	7.3	9.0	8.6	14	9.4	12	8.0	2.7
3	7.1	10	8.9	1.3	2.5	10	9.4	10	9.3	11	11	2.1
4	10	5.3	10	4.7	1.9	10	16	2.2	8.7	12	13	4.9
5	12	1.9	6.9	7.9	1.1	9.4	21	2.1	8.9	8.7	8.3	14
6	7.5	.99	9.3	8.0	4.6	9.1	9.9	1.9	8.7	1.7	7.4	7.9
7	10	.63	11	8.4	6.7	9.0	3.6	1.8	8.6	1.4	8.6	7.3
8	9.8	.42	.81	7.9	1.2	10	3.4	12	8.6	1.2	8.0	7.4
9	9.3	.28	.74	12	9.2	6.9	3.3	14	10	5.0	13	7.3
10	9.3	.21	.74	10	7.5	2.1	10	11	13	8.6	11	7.0
11	9.0	.17	.74	12	4.5	2.0	11	3.6	14	8.3	9.4	6.6
12	7.1	.14	.74	3.3	2.5	5.6	8.0	3.5	17	8.0	15	6.6
13	7.9	.11	.93	2.4	1.4	8.1	1.3	3.4	16	7.8	6.5	6.8
14	8.3	.17	1.5	2.3	1.2	8.8	1.2	6.8	14	8.2	4.3	6.6
15	7.8	.47	1.4	2.3	1.5	7.0	1.1	12	14	8.1	8.3	6.8
16	7.0	.33	1.1	2.2	1.2	5.8	5.2	11	14	7.8	22	6.6
17	6.8	.24	.93	2.1	.99	2.2	8.9	13	13	11	17	6.4
18	7.1	.17	.81	1.9	.87	2.1	9.0	13	11	11	11	6.4
19	17	.14	6.7	1.8	4.9	5.2	9.1	3.8	13	7.9	7.7	7.0
20	14	.14	11	1.7	2.5	12	9.0	3.5	11	8.2	6.1	6.6
21	9.4	.14	9.4	1.6	1.4	12	9.0	9.0	7.3	7.7	5.8	7.0
22	6.6	.11	7.3	9.2	.99	9.5	8.7	9.4	11	17	4.3	6.9
23	4.4	.11	1.5	13	1.4	5.0	12	7.6	9.0	12	3.7	6.5
24	8.6	.11	1.5	6.6	2.9	2.9	10	16	7.4	11	6.0	7.0
25	7.4	.11	1.2	1.8	2.1	2.8	16	8.6	8.4	10	.24	7.8
26	7.0	.11	4.0	1.7	1.4	6.2	7.6	1.3	16	11	.21	7.3
27	6.9	4.7	8.3	1.5	.93	8.0	6.4	1.2	13	12	2.8	6.6
28	7.3	8.3	8.2	1.4	.69	7.4	3.9	2.0	16	10	5.0	16
29	7.4	8.7	7.9	1.3	---	7.3	3.8	1.5	17	10	5.1	17
30	6.6	7.9	1.8	1.3	---	8.4	8.7	1.5	18	9.4	5.4	11
31	23	---	1.5	1.2	---	8.6	---	1.5	---	7.6	2.8	---
TOTAL	277.7	65.20	145.84	135.7	82.07	212.7	243.8	214.2	350.4	280.6	244.75	220.53
MEAN	8.96	2.17	4.70	4.38	2.93	6.86	8.13	6.91	11.7	9.05	7.90	7.35
MAX	23	10	11	13	9.2	12	21	16	18	17	22	17
MIN	4.4	.11	.74	1.2	.69	2.0	1.1	1.2	5.1	1.2	.21	.93
AC-FT	551	129	289	269	163	422	484	425	695	557	485	437

CAL YR 1978 TOTAL 2539.03 MEAN 6.96 MAX 24 MIN .11 AC-FT 5040
WTR YR 1979 TOTAL 2473.49 MEAN 6.78 MAX 23 MIN .11 AC-FT 4910

16079000 KAPAHI DITCH NEAR KEALIA

LOCATION.--Lat 22°06'09", long 159°22'28", Hydrologic Unit 20070000, on right bank 500 ft (152 m) downstream from intake and 4.0 mi (6.4 km) west of Kealia.

PERIOD OF RECORD.--April 1909 to February 1911, May 1911, July 1911 to May 1914, July 1915 to April 1917, June 1917 to current year. Published as "at Kapahi, near Kapaa" prior to January 1914 and as "at Kapahi, near Kealia" January to December 1913.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 377.1 ft (114.94 m) above mean sea level (by stadia survey). Prior to Nov. 26, 1936, at site 61 ft (19 m) upstream at datum 2.52 ft (0.768 m) higher.

REMARKS.--Records good. Ditch diverts from Kapaa Stream for irrigation of sugarcane in vicinity of Kapaa. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--61 years (water years, 1918-20, 1922-79), 6.32 ft^3/s (0.179 m^3/s), 4,580 acre-ft/yr (5.65 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 138 ft^3/s (3.91 m^3/s) Feb. 6, 1913; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 46 ft^3/s (1.30 m^3/s) Aug. 16; minimum daily, 0.19 ft^3/s (0.005 m^3/s) Nov. 5-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	.66	4.6	.66	3.3	2.9	4.1	5.8	6.2	.51	3.2	8.4
2	3.8	.38	4.7	.66	.51	6.2	4.1	11	4.4	2.7	3.2	6.4
3	3.6	1.8	4.4	.66	.93	.99	3.9	5.1	3.9	4.9	6.6	6.8
4	4.1	.31	13	3.0	.51	.74	9.8	.62	3.6	6.3	13	13
5	5.4	.19	7.0	3.8	.51	2.2	16	.45	3.5	15	4.9	9.2
6	3.6	.19	4.9	3.9	6.8	8.2	10	.45	3.3	21	4.2	3.6
7	3.8	.19	6.0	4.1	7.0	8.0	14	.38	3.3	17	4.7	3.3
8	3.6	.19	.38	3.8	.38	8.4	16	.51	3.3	13	3.3	2.6
9	3.2	.99	.31	7.9	2.6	8.4	16	.45	3.2	9.1	16	2.6
10	3.0	.31	1.4	5.7	1.0	11	12	.45	7.6	3.8	6.2	2.4
11	3.0	.25	1.3	5.6	1.2	8.6	4.6	9.5	5.3	3.5	3.6	2.4
12	3.0	.25	.90	2.4	.25	7.9	4.1	14	14	3.3	10	2.3
13	3.0	.25	.78	.90	.25	6.6	2.6	13	12	3.2	6.9	2.4
14	3.0	7.3	.66	.74	.31	7.8	2.9	8.4	6.1	3.3	7.5	2.3
15	2.9	8.4	5.1	.58	.56	7.2	2.9	4.4	6.6	4.0	4.2	2.3
16	2.8	12	11	.58	.32	3.0	5.0	4.2	5.7	5.6	46	2.3
17	2.6	18	11	.58	.45	.58	3.6	6.0	.90	3.5	21	2.2
18	2.8	17	11	.58	.51	.58	3.6	14	1.6	4.1	5.7	2.2
19	9.6	12	8.6	3.0	2.0	3.6	3.5	13	.99	3.5	5.6	2.3
20	7.4	12	5.9	14	.45	8.7	3.5	14	.82	3.2	5.7	2.3
21	3.4	9.4	5.2	6.4	.38	8.7	3.3	7.4	.74	3.3	5.2	2.4
22	.58	1.5	7.5	4.6	.38	7.4	3.3	4.4	.82	13	6.1	2.3
23	2.5	4.4	.45	4.2	1.0	2.4	3.9	5.9	.74	6.2	7.1	2.2
24	4.4	14	.38	4.2	1.8	.58	4.6	10	9.7	3.6	4.5	2.3
25	3.6	13	6.1	4.1	.51	6.9	13	6.6	8.9	3.3	9.4	2.4
26	3.3	15	9.8	1.6	.45	8.6	6.6	11	2.8	3.9	9.0	2.6
27	3.2	9.1	4.4	.51	.51	6.6	6.6	8.0	.90	4.8	6.9	4.3
28	2.9	4.9	4.2	.38	.51	5.7	7.1	7.4	.82	3.3	4.3	18
29	2.9	4.7	7.6	2.9	---	5.7	11	7.4	.58	3.3	4.1	18
30	2.4	4.6	1.1	.51	---	4.9	6.6	7.2	.58	3.3	4.9	4.7
31	6.9	---	.74	.51	---	4.2	---	7.2	---	3.0	6.5	---
TOTAL	114.38	173.26	150.40	93.05	35.38	173.27	208.2	208.21	122.89	181.51	249.5	140.5
MEAN	3.69	5.78	4.85	3.00	1.26	5.59	6.94	6.72	4.10	5.86	8.05	4.68
MAX	9.6	18	13	14	7.0	11	16	14	14	21	46	18
MIN	.58	.19	.31	.38	.25	.58	2.6	.38	.58	.51	3.2	2.2
AC-FT	227	344	298	185	70	344	413	413	244	360	495	279

CAL YR 1978 TOTAL 2193.57 MEAN 6.01 MAX 29 MIN .19 AC-FT 4350
WTR YR 1979 TOTAL 1850.55 MEAN 5.07 MAX 46 MIN .19 AC-FT 3670

16080000 KAPAA STREAM AT KAPAHI DITCH INTAKE, NEAR KAPAA

LOCATION.--Lat 22°06'15", long 159°22'29", Hydrologic Unit 20070000, on right bank at Kapahi ditch intake, 3.8 mi (6.1 km) northwest of Kapaa, and 4.3 mi (6.9 km) northwest of Wailua.

DRAINAGE AREA.--3.86 mi^2 (10.00 km^2).

PERIOD OF RECORD.--July 1936 to current year. Prior to July 1959, published as Kapaa River at Kapahi ditch intake, near Kapaa.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete-masonry control. Datum of gage is 381.8 ft (116.37 m) above mean sea level (by stadia survey). Prior to July 1, 1962, at datum 0.07 ft (0.021 m) higher.

REMARKS.--Records good. Entire low flow is diverted above station at times for irrigation of sugarcane. Records do not include flow of Kapahi ditch (see sta 16079000). Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--43 years, 20.3 ft^3/s (0.575 m^3/s), 14,710 acre-ft/yr (18.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,670 ft^3/s (217 m^3/s) Jan. 25, 1956, gage height, 5.41 ft (1.649 m), present datum, from rating curve extended above 2,800 ft^3/s (79.3 m^3/s); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft^3/s (53.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 31	0800	*2600	73.6	*3.38	1.030
Feb. 9	1630	1920	54.4	2.98	.908

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
PEAK VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	123	.00	10	8.4	16	.00	.00	3.0	9.2	.00	.00
2	.00	72	.00	9.8	12	8.2	.00	16	.00	3.1	.00	.00
3	.00	378	.00	9.5	123	10	.00	61	.00	.00	.00	.00
4	.00	56	34	3.0	39	9.3	2.5	87	.00	.00	.00	.01
5	.00	32	3.5	.00	20	6.0	.25	38	.00	.46	.00	.00
6	.00	24	.00	.00	5.0	.00	.00	42	.00	.67	.00	.00
7	.00	21	45	.00	34	.00	.00	24	.00	.05	.00	.00
8	.00	20	30	.00	45	.00	.00	45	.00	.00	.00	.00
9	.00	19	17	.05	438	.93	5.1	13	.00	.00	6.9	.00
10	.00	17	35	.00	100	3.2	3.5	21	.02	.00	.00	.00
11	.00	28	50	118	198	4.8	.00	10	.00	.00	.00	.00
12	.00	19	26	53	42	1.6	5.1	.00	1.2	.00	.00	.00
13	.00	18	79	24	36	.00	13	.00	.20	.00	.00	.00
14	.00	176	74	66	62	.00	11	.00	.00	.00	.00	.00
15	.00	79	41	49	100	.00	12	.00	.00	.00	.05	.00
16	.00	11	14	24	82	5.7	4.1	.00	1.8	.00	16	.00
17	.00	.00	9.3	24	77	12	.00	5.0	7.7	.00	1.2	.00
18	.00	.00	10	18	69	12	.00	5.2	15	.00	.00	.00
19	.00	4.7	3.0	13	250	6.7	.00	.00	38	.00	.00	.00
20	.00	8.3	.00	2.5	56	.00	.00	3.8	30	.00	.00	.00
21	.61	21	.00	32	32	.00	.00	.00	12	.00	.00	.00
22	32	20	1.9	23	24	.00	.00	.00	30	.74	.00	.00
23	14	12	15	13	149	7.1	.00	.00	20	.00	.00	.00
24	.00	.00	16	18	196	11	.35	2.6	4.4	.00	.00	.00
25	.00	.00	7.8	17	77	3.1	12	.00	.00	.00	.00	.00
26	.00	.00	.00	15	50	.00	.00	23	14	.00	.00	.00
27	.00	.00	.00	15	35	.00	1.1	11	4.0	.00	.00	.00
28	.00	.00	.00	17	26	.00	3.2	9.0	36	.00	.00	3.0
29	.00	.00	.13	14	---	.00	11	8.0	17	.00	.00	.00
30	25	.00	26	17	---	.00	4.2	6.0	21	.00	.00	.00
31	585	---	13	17	---	.00	---	4.0	---	.00	.00	---
TOTAL	656.61	1159.00	550.63	621.85	2385.4	117.63	88.40	434.60	255.32	14.22	24.15	3.01
MEAN	21.2	38.6	17.8	20.1	85.2	3.79	2.95	14.0	8.51	.46	.78	.10
MAX	585	378	79	118	438	16	13	87	38	9.2	16	3.0
MIN	.00	.00	.00	.00	5.0	.00	.00	.00	.00	.00	.00	.00
AC-FT	1300	2300	1090	1230	4730	233	175	862	506	28	48	6.0

CAL YR 1978 TOTAL 5153.25 MEAN 14.1 MAX 585 MIN .00 AC-FT 10220
WTR YR 1979 TOTAL 6310.82 MEAN 17.3 MAX 585 MIN .00 AC-FT 12520

16087000 ANAHOLA DITCH WASTEWAY NEAR KEALIA

LOCATION.--Lat 22°08'16", long 159°22'28", Hydrologic Unit 20070000, on right bank 300 ft (91 m) downstream from wasteway gates on Anahola ditch, 500 ft (152 m) north of Kaneha Reservoir, 3.8 mi (6.1 km) west of Anahola and 4.9 mi (7.9 km) northwest of Kealia.

PERIOD OF RECORD.--July 1936 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 825 ft (251 m) above mean sea level (by stadia survey).

REMARKS.--Records good. Water that passes station flows into Kaupaku Stream and thence into Anahola Stream 2 mi (3 km) below gaging station 16089000 on Anahola Stream. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--43 years, 4.51 ft^3/s (0.128 m^3/s), 3,270 acre-ft/yr (4.03 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 84 ft^3/s (2.38 m^3/s) Nov. 12, 1955; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 27 ft^3/s (0.76 m^3/s) Feb. 9; no flow May 6-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.94	16	.33	.04	.11	10	.11	.19	.19	.04	.19	.11
2	.94	13	.47	.04	.11	9.3	.11	.11	.11	.04	.19	.19
3	.78	24	.47	.04	5.7	8.3	.19	.11	.19	.04	.33	.33
4	.62	14	7.1	.04	8.6	7.7	.25	.11	.11	.04	.33	.47
5	.19	11	2.7	.04	6.0	7.1	.33	.04	.11	.04	.19	.33
6	.04	9.3	.47	.04	2.0	3.9	.19	.00	.11	.04	.33	.19
7	.19	7.7	6.6	.04	7.0	.62	.19	.00	.11	.04	.33	.19
8	.47	7.1	8.9	.04	13	.47	.19	.00	.11	.04	.19	.19
9	.78	6.8	5.7	.11	27	.47	.11	.00	.19	.04	.33	.47
10	.62	6.3	8.4	.19	19	.47	.11	.00	.19	.04	.19	.47
11	.78	13	12	8.6	19	.47	.11	.00	.19	.04	.19	.19
12	.62	8.3	4.9	11	12	.47	.11	.00	.19	.04	.47	.11
13	.62	6.3	6.7	6.9	11	.47	.19	.04	.19	.04	.19	.33
14	.62	18	12	11	14	.47	.19	.04	.19	.11	.19	.47
15	.62	20	11	11	15	.47	.19	.04	.19	.11	.33	.62
16	.47	11	7.7	8.0	17	.33	.11	.04	.11	.11	.19	.62
17	.62	8.0	6.6	7.7	16	.33	.11	.04	.11	.11	.11	.62
18	.62	6.8	5.7	6.3	16	.33	.11	.11	.11	.11	.04	.78
19	.47	6.3	3.3	5.1	24	.33	.11	.19	.11	.04	.04	.78
20	.33	9.1	.62	4.9	15	.33	.11	.11	.04	.04	.04	.62
21	.19	8.7	.62	8.0	11	.19	.11	.04	.04	.04	.04	.19
22	.19	8.0	.62	8.9	9.9	.11	.11	.11	.04	.11	.04	.04
23	.04	6.3	.78	7.7	25	.11	.19	.19	.04	.04	.04	.11
24	.04	4.9	.78	7.4	25	.11	.19	.19	.04	.04	.11	.19
25	.11	4.4	.62	6.3	17	.11	.33	.11	.04	.04	.04	.04
26	.19	6.4	.47	3.3	18	.11	.19	.11	.04	.04	.04	.11
27	.19	2.9	.33	.47	14	.11	.11	.04	.04	.11	.04	.11
28	.11	.33	.19	.47	11	.11	.11	.04	.04	.11	.04	.11
29	.11	.33	.33	.33	---	.11	.19	.04	.04	.11	.04	.19
30	.32	.33	.19	.33	---	.11	.11	.11	.04	.04	.11	.04
31	18	---	.11	.11	---	.11	---	.11	---	.11	.04	---
TOTAL	30.83	264.59	116.70	124.43	378.42	53.62	4.76	2.26	3.25	1.94	4.97	9.21
MEAN	.99	8.82	3.76	4.01	13.5	1.73	.16	.073	.11	.063	.16	.31
MAX	18	24	12	11	27	10	.33	.19	.19	.11	.47	.78
MIN	.04	.33	.11	.04	.11	.11	.11	.00	.04	.04	.04	.04
AC-FT	61	525	231	247	751	106	9.4	4.5	6.4	3.8	9.9	18

CAL YR 1978 TOTAL 726.54 MEAN 1.99 MAX 24 MIN .04 AC-FT 1440
WTR YR 1979 TOTAL 994.98 MEAN 2.73 MAX 27 MIN .00 AC-FT 1970

16088000 ANAHOLA DITCH ABOVE KANEHA RESERVOIR, NEAR KEALIA

LOCATION.--Lat 22°08'10", long 159°22'28", Hydrologic Unit 20070000, on left bank at point of discharge into Kaneha Reservoir, 500 ft (152 m) below wasteway gates, and 4.8 mi (7.7 km) northwest of Kealia.

PERIOD OF RECORD.--December 1921 to current year. Records for May 1915 to December 1921 at site 520 ft (158 m) upstream not equivalent owing to intervening diversion.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 821.8 ft (250.48 m) above mean sea level (Lihue Plantation bench mark). Dec. 9, 1921, to June 2, 1934, at site 480 ft (146 m) upstream at different datum.

REMARKS.--Records good. Ditch diverts water from Anahola Stream to Kaneha Reservoir, where it is stored for irrigation. Flow sometimes diverted above station by Anahola ditch wasteway (see sta 16087000). Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--55 years (water years, 1923-25, 1928-79), 4.15 ft^3/s (0.118 m^3/s) 3,010 acre-ft/yr (3.71 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 62 ft^3/s (1.76 m^3/s) Nov. 12, 1947; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 30 ft^3/s (0.85 m^3/s) Oct. 31; minimum daily, 0.02 ft^3/s (<0.001 m^3/s) Nov. 23-26, Feb. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	.24	2.9	3.0	3.8	.09	1.9	3.6	3.0	6.6	2.0	1.6
2	3.2	.20	2.9	2.9	5.0	.06	1.8	8.7	2.9	4.8	1.9	1.6
3	3.6	.60	2.8	2.8	7.2	.06	1.8	14	2.6	4.1	4.0	1.4
4	7.0	.13	2.8	2.6	.04	.06	6.4	16	2.4	5.5	8.0	4.6
5	8.0	.13	1.5	2.4	.06	.04	8.7	9.5	2.2	5.9	2.6	7.3
6	3.3	.13	3.2	3.2	2.6	2.3	4.8	10	2.2	8.4	2.0	2.3
7	3.6	.13	6.3	2.4	3.7	4.8	3.8	7.8	2.2	6.8	3.7	1.8
8	3.5	.06	1.1	2.2	.02	5.3	3.8	9.6	2.2	4.1	2.4	1.4
9	2.9	.04	.20	4.2	.59	4.3	4.8	7.8	2.3	3.6	3.9	1.4
10	2.6	.04	.24	4.6	.06	3.9	6.8	7.2	4.5	3.3	2.9	1.8
11	2.6	.06	.24	5.3	.13	3.8	3.2	6.8	5.7	3.2	1.9	1.4
12	2.4	.04	2.4	.09	.06	3.6	3.5	4.8	8.2	3.0	6.3	1.2
13	3.0	.04	6.2	.06	.06	3.9	2.6	5.9	7.4	2.9	2.6	1.4
14	3.0	.16	.16	.20	.09	3.3	2.2	4.3	6.6	3.5	1.9	1.0
15	2.6	.09	.13	.16	.06	3.2	2.0	3.9	7.2	3.3	2.7	1.0
16	2.2	.04	.13	.09	.06	2.9	1.9	3.9	5.0	2.9	18	1.0
17	2.0	.04	.13	.09	.06	2.9	1.8	4.1	5.0	3.0	9.8	.97
18	2.3	.04	.13	.09	.06	2.8	1.7	8.7	5.6	3.6	4.1	.97
19	8.7	.04	1.7	.06	.29	2.9	1.7	5.1	9.5	2.6	3.2	1.2
20	9.4	.04	4.1	.09	.04	6.8	1.6	5.3	8.5	2.4	2.8	1.0
21	3.6	.04	3.9	.16	.04	4.7	1.6	3.8	5.0	2.4	2.6	4.5
22	8.8	.04	4.4	.09	.04	4.3	1.6	3.2	7.4	9.5	2.3	2.0
23	7.0	.02	3.8	.06	.24	2.8	2.0	4.1	7.2	4.9	2.4	.97
24	3.5	.02	6.4	.06	.20	2.6	2.0	7.7	5.9	3.0	2.9	2.1
25	2.9	.02	5.9	.04	.13	2.4	5.8	4.6	4.3	4.3	2.4	1.9
26	2.8	.02	3.8	1.4	.20	2.6	1.8	6.9	6.4	5.9	1.9	3.4
27	2.4	1.5	3.3	3.3	.09	2.4	1.7	4.3	4.3	5.4	1.8	6.3
28	2.6	3.3	3.0	4.1	.09	2.2	1.6	4.5	7.2	3.0	1.8	9.1
29	2.4	3.2	5.6	5.0	---	2.0	6.6	4.4	7.4	4.4	1.7	11
30	8.3	3.0	9.1	5.5	---	2.0	3.9	3.2	8.9	2.9	2.3	4.1
31	30	---	3.5	4.6	---	1.9	---	2.8	---	2.2	1.8	---
TOTAL	153.7	13.45	91.96	60.84	25.01	86.91	95.4	196.5	159.2	131.4	110.6	81.71
MEAN	4.96	.45	2.97	1.96	.89	2.80	3.18	6.34	5.31	4.24	3.57	2.72
MAX	30	3.3	9.1	5.5	7.2	6.8	8.7	16	9.5	9.5	18	11
MIN	2.0	.02	.13	.04	.02	.04	1.6	2.8	2.2	2.2	1.7	.97
AC-FT	305	27	182	121	50	172	189	390	316	261	219	162

CAL YR 1978 TOTAL 1938.84 MEAN 5.31 MAX 30 MIN .02 AC-FT 3850
WTR YR 1979 TOTAL 1206.68 MEAN 3.31 MAX 30 MIN .02 AC-FT 2390

16089000 ANAHOLA STREAM NEAR KEALIA

LOCATION.--Lat 22°09'05", long 159°21'17", Hydrologic Unit 20070000, on right bank at intake of Lower Anahola ditch and 4.7 mi (7.6 km) northwest of Kealia.

DRAINAGE AREA.--4.27 mi² (11.06 km²).

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

REVISED RECORDS.--WSP 1719: 1915, 1916-18(M), WSP 2137: 1965(P), drainage area.

GAGE.--Water-stage recorder and combination concrete dam and orifice control. Datum of gage is 295.11 ft (89.950 m) above mean sea level (Highway Department bench mark). Prior to May 4, 1934, at site 0.1 mi (0.2 km) upstream at different datum.

REMARKS.--Records poor. Records include flow in Lower Anahola ditch (see sta 16091000). Anahola ditch (see sta 16088000) diverts 3 mi (5 km) above station for irrigation in vicinity of Kealia. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--64 years (water years, 1914-17, 1920-79), 22.4 ft³/s (0.634 m³/s), 16,230 acre-ft/yr (20.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,600 ft³/s (555 m³/s) Jan. 25, 1956, gage height, 14.6 ft (4.45 m), from floodmarks, from rating curve extended above 590 ft³/s (16.7 m³/s); minimum, 1.9 ft³/s (0.054 m³/s) Oct. 30 to Nov. 1, Nov. 7-11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,600 ft³/s (73.6 m³/s) Oct. 31, gage height, 6.27 ft (1.911 m), from rating curve extended above 240 ft³/s (6.80 m³/s) on basis of slope-area measurement at gage height 10.6 ft (3.23 m), no other peak above base of 2,200 ft³/s (62.3 m³/s); minimum, 2.1 ft³/s (0.059 m³/s) Sept. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	122	8.9	7.0	8.5	25	9.4	6.3	7.0	12	3.4	3.5
2	6.0	85	8.7	6.8	8.5	23	9.4	25	5.9	6.3	3.4	3.4
3	6.3	407	8.9	6.8	101	21	9.4	47	5.7	5.6	4.1	3.5
4	8.5	103	24	6.6	27	19	14	54	5.5	5.5	7.2	4.3
5	12	52	7.3	6.7	14	18	15	13	5.2	5.6	3.6	9.2
6	6.5	40	6.6	9.4	12	17	11	33	5.1	13	3.0	4.6
7	6.5	32	29	7.4	82	16	9.4	12	5.1	11	3.9	3.7
8	6.3	27	12	6.6	44	17	9.4	25	4.5	4.3	3.5	3.3
9	6.2	23	7.3	9.4	325	15	10	12	4.5	3.7	6.8	3.2
10	5.9	21	10	12	129	14	15	14	5.4	3.5	5.8	3.0
11	6.0	46	19	84	107	14	10	13	6.8	3.2	3.2	3.0
12	6.2	21	8.5	53	44	13	10	9.4	10	2.8	6.4	2.8
13	6.3	18	33	17	35	14	10	9.4	7.7	2.8	3.7	3.2
14	7.1	102	24	62	55	12	9.6	8.9	6.2	2.7	2.7	2.8
15	6.0	82	15	50	58	12	9.6	8.5	7.0	3.0	4.9	2.8
16	5.6	20	10	21	65	12	9.4	8.5	6.5	3.0	49	2.7
17	5.5	16	9.4	17	66	12	8.9	8.3	5.5	3.2	12	2.6
18	5.7	14	8.9	15	55	11	8.7	19	4.2	3.6	6.2	2.7
19	8.6	13	8.5	12	199	12	8.9	9.4	17	3.1	5.6	2.8
20	9.6	17	8.3	11	60	15	8.9	8.5	14	3.1	5.4	2.7
21	6.5	19	7.8	15	41	12	8.7	8.3	7.0	3.2	5.1	6.3
22	21	14	7.8	23	31	12	8.5	7.6	6.6	6.6	5.0	3.3
23	14	12	8.0	15	155	11	9.1	7.6	7.3	5.9	5.0	2.3
24	8.7	12	8.9	14	201	10	9.4	21	7.0	3.2	5.1	3.2
25	7.4	11	8.0	11	89	10	15	11	5.5	3.6	5.0	3.1
26	6.8	11	7.3	9.6	87	11	9.8	15	8.8	4.2	4.6	2.8
27	6.5	10	7.1	8.9	44	10	9.1	8.9	6.5	5.7	4.2	7.2
28	6.8	9.8	7.0	8.9	31	9.4	8.9	8.5	19	4.1	3.6	9.0
29	7.4	9.4	8.7	10	---	9.1	14	8.5	10	4.1	3.5	14
30	27	9.0	17	10	---	9.1	8.7	7.6	21	3.9	4.5	5.7
31	781	---	7.3	8.7	---	9.1	---	7.4	---	3.4	4.0	---
TOTAL	1030.4	1378.2	362.2	554.8	2174.0	424.7	307.2	455.6	237.5	148.9	153.4	126.7
MEAN	33.2	45.9	11.7	17.9	77.6	13.7	10.2	14.7	7.92	4.80	6.24	4.22
MAX	781	407	33	84	325	25	15	54	21	13	49	14
MIN	5.5	9.0	6.6	6.6	8.5	9.1	8.5	6.3	4.2	2.7	2.7	2.3
AC-FT	2040	2730	718	1100	4310	842	609	904	471	295	304	251

CAL YR 1978 TOTAL 8123.3 MEAN 22.3 MAX 781 MIN 3.2 AC-FT 16110
WTR YR 1979 TOTAL 7393.6 MEAN 20.3 MAX 781 MIN 2.3 AC-FT 14670

16091000 LOWER ANAHOLA DITCH NEAR KEALIA

LOCATION.--Lat 22°08'14", long 159°19'31", Hydrologic Unit 20070000, on left bank 100 ft (30 m) downstream from last wasteway, 1.5 mi (2.4 km) southwest of mouth of Anahola Stream, and 2.8 mi (4.5 km) northwest of Kealia.

PERIOD OF RECORD.--December 1936 to current year.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 276.11 ft (84.158 m) above mean sea level (Highway Department bench mark).

REMARKS.--Records good. Ditch diverts from Anahola Stream for irrigation of sugarcane in vicinity of Anahola. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--42 years (water years 1938-79), 3.06 ft^3/s (0.087 m^3/s), 2,220 acre-ft/yr (2.74 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18.6 ft^3/s (0.53 m^3/s) June 1, 1938; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 6.1 ft^3/s (0.173 m^3/s) Apr. 6; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	.09	5.2	.02	4.2	.05	.00	3.8	.00	.75	2.8	2.8
2	3.5	.09	4.7	.02	4.2	.06	.00	2.5	1.6	.70	2.8	2.6
3	3.6	.10	4.7	.02	3.4	.02	1.5	.38	3.9	.51	2.7	2.6
4	3.6	.02	2.1	.10	.31	.02	5.2	.80	4.1	.46	3.5	3.0
5	3.4	.02	.13	.02	.28	.08	5.9	.35	4.0	.46	3.1	3.8
6	3.0	.04	.10	.00	.24	.06	6.1	.35	3.8	.42	3.0	3.0
7	2.6	.02	.08	.00	1.5	.31	5.7	.89	3.8	.24	3.0	2.6
8	2.6	.02	.06	.00	.09	.08	5.3	.11	3.8	.02	3.0	2.9
9	2.6	.02	.09	.00	.54	.12	4.2	.20	3.7	1.3	3.9	2.2
10	2.6	.02	.09	.00	.00	.00	.08	.02	3.7	3.4	5.4	2.2
11	2.6	.04	.10	.04	.00	.00	.10	.00	4.1	3.4	3.3	2.2
12	3.0	.02	.10	.00	.00	.12	.11	.00	4.4	3.4	3.4	2.2
13	2.7	.05	.08	.02	.00	.07	.00	.00	3.0	3.4	3.4	2.3
14	2.5	.05	.11	.02	.02	.10	.00	.00	.46	2.9	2.9	2.1
15	2.3	.00	.07	.02	.02	.11	.00	.00	.76	2.9	2.8	2.0
16	2.5	.00	.06	.02	.06	.20	.05	.00	.56	3.2	5.2	2.0
17	2.5	.01	.04	.02	.09	.00	.11	.10	.51	3.1	4.6	2.0
18	4.6	.00	.11	.02	.09	.00	.80	1.1	1.8	3.3	3.8	2.0
19	4.6	.00	1.3	.06	.12	.34	.38	.31	2.0	3.0	3.5	1.9
20	3.4	.00	3.6	.02	.02	.05	.20	.06	1.0	2.9	3.1	2.0
21	2.7	.03	3.3	.02	.11	.02	.04	.32	.81	2.8	3.0	2.4
22	2.6	.35	1.1	.07	.09	.02	.04	.09	.61	3.2	3.0	2.6
23	2.9	.85	.00	.03	.01	.00	.13	.01	.46	4.1	3.0	2.0
24	2.2	.85	.00	.01	.02	.00	.09	.51	.38	3.4	3.1	2.0
25	2.5	1.8	.00	1.1	.01	.00	.02	.40	.38	3.0	3.1	2.2
26	2.5	1.8	.03	5.6	.03	.00	1.0	.09	2.1	3.1	3.0	2.0
27	2.3	.56	.01	4.2	.01	.00	3.1	.09	4.3	3.7	3.0	2.6
28	1.8	.56	.05	4.1	.07	.00	3.0	.13	4.6	3.2	2.9	3.0
29	1.7	1.9	.04	4.3	---	.00	3.5	.05	5.4	3.0	2.9	3.2
30	1.3	5.0	.02	4.2	---	.00	3.8	.02	2.5	3.0	3.0	3.0
31	.92	---	.02	3.8	---	.00	---	.02	---	2.9	3.0	---
TOTAL	84.82	14.31	27.39	27.85	15.53	1.83	50.45	12.70	72.53	75.16	102.2	72.9
MEAN	2.74	.48	.88	.90	.55	.059	1.68	.41	2.42	2.42	3.30	2.43
MAX	4.6	5.0	5.2	5.6	4.2	.34	6.1	3.8	5.4	4.1	5.4	3.8
MIN	.92	.00	.00	.00	.00	.00	.00	.00	.00	.02	2.7	1.9
AC-FT	168	28	54	55	31	3.6	100	25	144	149	203	145

CAL YR 1978 TOTAL 649.86 MEAN 1.78 MAX 7.0 MIN .00 AC-FT 1290
WTR YR 1979 TOTAL 557.67 MEAN 1.53 MAX 6.1 MIN .00 AC-FT 1110

16093200 ANAHOLA STREAM AT ANAHOLA

LOCATION.--Lat 22°08'42", long 159°18'59", Hydrologic Unit 20070000, on downstream side of old highway bridge at Anahola, 0.1 mi (0.2 km) upstream from Highway 56, and 0.9 mi (1.4 km) upstream from mouth.

DRAINAGE.--9.24 mi² (23.93 km²).

PERIOD OF RECORD.--Annual maximum, water years 1962-65, November 1964 to current year.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (by stadia survey). Apr. 12, 1962, to Nov. 19, 1964, crest-stage gage at same site and datum.

REMARKS.--Records fair. Anahola and Lower Anahola ditches (see sta 16088000 and 16091000) divert above station for irrigation of sugarcane in vicinities of Kealia and Anahola, respectively. Observations of specific conductance, pH, and water temperature are published elsewhere in this report.

AVERAGE DISCHARGE.--14 years (water years 1966-79), 34.2 ft³/s (0.969 m³/s), 24,780 acre-ft/yr (30.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s (379 m³/s) May 15, 1965, gage height, 15.84 ft (4.83 m), present site, from rating curve extended above 5,800 ft³/s (164 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 2.1 ft³/s (0.059 m³/s) Oct. 25, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,200 ft³/s (62.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1200	*4420	125	*11.71	3.569
Feb. 9	1830	3060	86.7	10.56	3.219

Minimum discharge, 3.6 ft³/s (0.10 m³/s) July 9-13, 24, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	216	11	16	9.4	48	15	7.8	9.8	16	4.1	4.1
2	7.8	144	10	15	9.4	43	15	24	7.8	11	4.4	4.1
3	8.2	651	10	15	113	40	13	58	5.7	10	4.4	4.1
4	9.0	156	38	14	64	37	14	70	5.7	11	6.7	4.4
5	15	66	22	12	29	38	15	20	5.4	11	5.1	7.4
6	9.0	49	16	12	18	33	13	41	5.4	15	4.1	5.4
7	7.4	40	36	12	88	28	9.0	17	5.4	13	4.8	4.1
8	7.4	34	40	12	75	27	9.0	30	5.4	6.7	5.1	3.8
9	7.8	31	21	14	607	25	9.8	17	5.7	5.7	7.4	4.1
10	7.8	30	20	18	228	23	19	15	6.0	3.6	8.2	4.1
11	7.8	59	45	72	146	22	14	17	7.0	3.6	4.8	4.1
12	7.8	37	24	88	66	23	13	12	11	3.6	6.4	3.8
13	7.4	28	47	37	50	23	12	11	8.6	3.6	5.1	4.4
14	8.2	81	54	78	67	22	12	10	9.4	3.8	4.4	4.1
15	7.4	152	41	79	70	21	12	9.8	9.8	4.1	4.4	4.1
16	7.8	40	28	37	76	20	12	9.8	9.8	4.1	80	4.1
17	7.8	31	24	31	84	20	11	9.8	8.6	4.1	21	4.1
18	9.0	28	22	25	78	19	13	49	7.8	4.8	7.0	4.1
19	12	25	19	21	299	20	12	16	22	4.4	5.7	4.1
20	14	31	13	21	92	20	11	12	21	4.1	4.8	4.1
21	9.0	31	12	31	80	18	11	12	12	4.1	4.4	6.9
22	23	27	13	44	61	19	10	11	12	5.7	4.1	5.4
23	24	25	14	26	175	17	12	10	12	6.7	4.4	4.4
24	7.8	21	15	27	261	17	12	36	12	3.8	4.4	5.1
25	7.0	20	15	20	108	17	17	18	11	3.6	5.1	4.8
26	6.7	20	14	14	121	17	11	20	11	4.1	4.1	4.4
27	6.7	21	13	11	70	17	8.2	13	9.0	5.1	4.1	9.6
28	6.7	16	13	9.8	55	17	7.0	12	18	4.1	4.1	11
29	7.0	15	16	12	---	16	12	12	11	4.1	3.8	18
30	22	12	25	12	---	15	9.4	10	20	4.4	4.8	8.1
31	1520	---	17	11	---	15	---	10	---	4.1	4.4	---
TOTAL	1816.7	2137	708	846.8	3199.8	737	363.4	616.2	305.3	193.0	245.6	164.3
MEAN	58.6	71.2	22.8	27.3	119	23.8	12.1	19.9	10.2	6.23	7.92	5.48
MAX	1520	651	54	88	607	48	19	70	22	16	80	18
MIN	6.7	12	10	9.8	9.4	15	7.0	7.8	5.4	3.6	3.8	3.8
AC-FT	3600	4240	1400	1680	6350	1460	721	1220	606	383	487	326

CAL YR 1978 TOTAL 12571.0 MEAN 34.4 MAX 1520 MIN 3.7 AC-FT 24930
WTR YR 1979 TOTAL 11333.1 MEAN 31.0 MAX 1520 MIN 3.6 AC-FT 22480

16097500 HALAULANI STREAM AT ALTITUDE 400 FT (122 M), NEAR KILAUEA

LOCATION.--Lat 22°10'54", long 159°25'17", Hydrologic Unit 20070000, on left bank 0.5 mi (0.8 km) upstream from confluence with Pohakuhonu Stream and 2.3 mi (3.7 km) south of Kilauea.

DRAINAGE AREA.--1.9 mi² (3.08 km²).

PERIOD OF RECORD.--November 1957 to current year.

REVISED RECORDS.--WSP 2137: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 391.8 ft (119.42 m) above mean sea level (by stadia survey).

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--21 years (water years 1959-79), 11.2 ft³/s (0.317 m³/s), 8,110 acre-ft/yr (10.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,070 ft³/s (58.6 m³/s) Aug. 6, 1959, gage height, 8.30 ft (2.530 m), from rating curve extended above 190 ft³/s (5.38 m³/s) on basis of slope-area measurement of peak flow; minimum, 1.8 ft³/s (0.051 m³/s) Sept. 6-8, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 860 ft³/s (24.4 m³/s) Oct. 31, gage height, 5.43 ft (1.655 m), no other peak above base of 580 ft³/s (16.4 m³/s); minimum, 4.3 ft³/s (0.12 m³/s) Sept. 15-20, 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	40	6.6	7.8	6.8	12	5.4	5.0	6.6	9.1	5.3	4.6
2	7.9	29	6.6	7.4	8.4	10	5.6	9.5	6.2	7.7	5.2	4.6
3	7.9	119	6.4	7.4	43	9.5	5.7	28	6.0	7.3	5.7	4.6
4	16	30	10	6.6	15	8.8	7.7	24	6.0	7.5	6.8	5.6
5	14	17	6.8	6.0	9.1	8.1	8.6	13	5.9	7.9	5.3	6.2
6	10	12	6.6	6.0	7.7	7.7	6.6	23	6.0	10	5.2	4.9
7	10	11	14	5.9	44	7.5	6.0	10	5.9	8.4	6.0	4.7
8	9.3	10	10	5.9	19	7.3	5.9	13	5.9	7.1	5.3	4.6
9	8.8	11	7.7	5.9	83	7.1	6.2	9.3	6.8	6.6	8.1	4.6
10	7.9	9.5	11	6.2	32	7.0	7.3	12	7.3	6.4	5.7	4.6
11	7.0	23	16	24	25	6.8	6.4	9.7	7.3	6.2	5.4	4.5
12	6.8	12	10	17	13	6.6	7.1	7.9	7.7	6.0	7.0	4.5
13	6.6	10	27	8.1	11	6.6	5.9	10	10	5.9	5.4	4.5
14	6.6	45	22	21	17	6.4	5.6	7.7	9.3	5.9	5.0	4.4
15	6.8	43	16	16	26	6.4	5.6	7.3	10	5.9	5.7	4.4
16	6.4	14	12	9.5	35	6.2	5.6	7.3	8.4	5.7	43	4.4
17	6.4	11	10	8.6	32	6.2	5.6	7.3	7.9	5.7	17	4.3
18	7.7	10	9.0	7.7	43	6.2	5.3	8.6	9.3	5.7	7.5	4.4
19	12	9.5	8.6	7.1	70	6.4	5.3	7.1	23	5.6	6.4	4.4
20	9.5	11	7.9	7.0	27	7.3	5.2	7.0	15	5.6	5.9	4.4
21	7.5	15	7.3	7.9	16	6.4	5.2	6.8	9.7	5.6	5.6	5.0
22	11	10	7.1	10	12	6.2	5.2	6.6	11	7.3	5.4	4.5
23	8.8	9.0	7.0	9.1	36	6.0	5.2	6.8	11	6.4	5.4	4.3
24	7.3	8.0	7.9	8.1	71	5.9	5.3	8.8	9.7	5.7	5.4	5.0
25	7.0	8.0	7.3	7.3	36	5.7	5.7	7.0	8.4	5.7	5.3	4.6
26	6.8	8.2	7.0	7.0	46	5.7	4.7	10	10	6.2	5.2	4.4
27	6.6	8.6	7.0	6.6	23	5.7	4.6	7.3	7.9	5.7	5.0	8.1
28	8.1	7.6	7.0	7.3	15	5.6	4.5	8.1	15	5.9	4.9	12
29	7.1	7.0	9.0	7.1	---	5.6	5.4	7.3	10	6.4	4.7	14
30	13	6.8	11	7.1	---	5.6	5.0	6.6	12	5.6	5.0	7.7
31	230	---	8.4	7.0	---	5.4	---	6.8	---	5.3	4.7	---
TOTAL	488.9	565.2	310.2	275.6	822.0	213.9	173.4	308.8	275.2	202.0	223.5	162.8
MEAN	15.8	18.8	10.0	8.89	29.4	6.90	5.78	9.96	9.17	6.52	7.21	5.43
MAX	230	119	27	24	83	12	8.6	28	23	10	43	14
MIN	6.4	6.8	6.4	5.9	6.8	5.4	4.5	5.0	5.9	5.3	4.7	4.3
AC-FT	970	1120	615	547	1630	424	344	613	546	401	443	323

CAL YR 1978 TOTAL 4655.0 MEAN 12.8 MAX 230 MIN 3.6 AC-FT 9230
WTR YR 1979 TOTAL 4021.5 MEAN 11.0 MAX 230 MIN 4.3 AC-FT 7980

HAWAII, ISLAND OF KAUAI

16100000 HANALEI TUNNEL OUTLET NEAR LIHUE

LOCATION.--Lat 22°05'02", long 159°27'50", Hydrologic Unit 2007000, on right bank at outlet of Hanalei tunnel, 2.2 mi (3.5 km) downstream from intake on Kaapoko Stream, and 9.4 mi (15.1 km) northwest of Lihue.

PERIOD OF RECORD.--July 1932 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 1,210 ft (369 m), from tunnel-profile.

REMARKS.--Records good. Tunnel diverts water from Kaapoko Stream and Hanalei River into North Branch of North Fork Wailua River, from which it is later diverted for irrigation in vicinity of Lihue and Kapaa. Prior to Feb. 24, 1976 records do not include water by-passing at times above station.

AVERAGE DISCHARGE.--47 years, 27.3 ft^3/s (0.773 m^3/s), 19,780 acre-ft (24.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 99 ft^3/s (2.80 m^3/s) Apr. 11, 25, 26, 1942; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 60 ft^3/s (1.70 m^3/s) Aug. 16; minimum daily, 0.25 ft^3/s (0.007 m^3/s) May 16-27, 29-31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	43	25	19	26	27	14	19	19	42	30	25
2	23	36	20	18	25	25	14	24	29	38	28	25
3	23	45	19	18	47	23	15	30	30	37	41	25
4	29	35	35	18	31	21	23	32	28	38	37	35
5	31	30	22	18	25	21	30	23	28	46	28	37
6	23	28	22	18	22	19	19	27	28	47	28	27
7	24	27	33	17	33	19	20	27	27	40	27	27
8	24	26	25	18	28	23	24	27	27	35	28	25
9	23	25	23	39	43	19	30	18	27	33	34	28
10	23	23	28	23	38	12	25	16	35	32	29	25
11	23	27	30	41	58	13	19	30	36	30	28	24
12	23	21	27	35	35	16	21	28	45	30	35	24
13	23	20	39	32	31	16	17	30	43	29	28	24
14	27	41	38	46	40	16	17	30	42	29	27	23
15	26	43	36	42	52	15	17	15	43	30	28	23
16	23	28	28	33	56	15	17	.25	52	30	60	23
17	23	25	26	30	56	16	17	.25	55	30	40	23
18	25	23	27	27	48	15	17	.25	48	29	34	23
19	35	22	25	23	45	16	17	.25	52	28	32	23
20	29	29	23	26	34	23	17	.25	47	28	30	23
21	25	34	21	31	28	20	16	.25	42	27	30	23
22	31	28	22	38	27	16	16	.25	52	39	29	27
23	28	23	22	33	51	15	16	.25	52	31	28	22
24	25	21	23	28	50	14	17	.25	45	34	27	24
25	24	20	20	25	46	14	19	.25	42	32	27	23
26	23	21	20	24	52	16	16	.25	47	32	27	25
27	22	20	19	25	43	14	16	.25	40	30	26	24
28	22	19	19	28	33	14	16	.90	48	27	26	32
29	22	19	21	29	---	14	20	.25	48	34	26	28
30	25	18	21	28	---	14	21	.25	48	28	27	27
31	55	---	19	29	---	14	---	.25	---	27	26	---
TOTAL	807	820	778	859	1103	535	563	372.65	1205	1022	951	767
MEAN	26.0	27.3	25.1	27.7	39.4	17.3	18.8	12.0	40.2	33.0	30.7	25.6
MAX	55	45	39	46	58	27	30	32	55	47	60	37
MIN	22	18	19	17	22	12	14	.25	19	27	26	22
AC-FT	1600	1630	1540	1700	2190	1060	1120	739	2390	2030	1890	1520

CAL YR 1978 TOTAL 9732.00 MEAN 26.7 MAX 55 MIN 13 AC-FT 19300
WTR YR 1979 TOTAL 9782.65 MEAN 26.8 MAX 60 MIN .25 AC-FT 19400

16103000 HANALEI RIVER NEAR HANALEI

LOCATION.--Lat 22°11'31", long 159°27'57", Hydrologic Unit 20070000, on right bank 2.6 mi (4.2 km) southeast of Hanalei School and 4.9 mi (7.9 km) upstream from mouth.

DRAINAGE AREA.--19.1 mi² (49.5 km²).

PERIOD OF RECORD.--January 1912 to November 1919, annual maximum, water years 1962-63, December 1962 to current year.

REVISED RECORDS.--WSP 1937: Drainage area. WSP 2137: 1962(M), 1963-65(P). WDR HI-77-1: 1970-76(M), 1975-76.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 35.8 ft (10.91 m) above mean sea level (by stadia survey). Jan. 1, 1912, to Nov. 20, 1919, nonrecording gage at site 0.2 mi (0.3 km) upstream at different datum. Jan. 26 to Dec. 26, 1962, crest-stage gage at present site and datum.

REMARKS.--Records good. Since 1925, Hanalei tunnel (see sta 16100000) has diverted from Hanalei River and its tributary Kaapoko Stream above station to North Branch of North Fork Wailua River for irrigation. China ditch above station diverts for irrigation of taro in vicinity of Hanalei. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since diversion to Hanalei tunnel).--16 years (water years 1964-79), 216 ft³/s (6.117 m³/s) 156,500 acre-ft/yr (193 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s (705 m³/s), Apr. 19, 1974, gage height, 14.28 ft (4.353 m), from rating curve extended above 9,600 ft³/s (272 m³/s); minimum, 31 ft³/s (0.88 m³/s) Sept. 30, Oct. 1, 2, 5, 12, 13, Nov. 3, 1975 (revised).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,840 ft³/s (222 m³/s) Oct. 31, gage height, 9.32 ft (2.841 m), no peak above base of 9,200 ft³/s (261 m³/s); minimum, 41 ft³/s (1.16 m³/s) Sept. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	638	98	85	200	200	78	90	72	114	58	45
2	75	411	84	82	300	190	74	225	60	93	56	45
3	75	2230	81	80	700	170	76	430	59	87	83	45
4	160	522	271	78	300	140	133	577	57	87	82	69
5	170	235	92	77	130	130	187	201	56	183	58	104
6	77	168	84	78	120	120	96	400	56	237	55	49
7	75	135	429	75	200	120	96	219	55	146	64	46
8	76	117	246	74	140	150	139	188	54	90	62	46
9	71	109	112	305	1200	110	130	125	65	81	89	46
10	68	102	188	110	400	109	186	141	103	76	62	46
11	68	155	334	736	2000	108	90	119	75	72	55	44
12	68	119	180	474	350	99	90	92	164	70	74	44
13	67	96	680	206	250	98	81	90	168	66	56	44
14	69	1150	523	1260	400	93	75	81	139	65	53	43
15	98	1510	471	1020	900	92	74	82	129	64	54	43
16	69	256	202	370	800	92	72	108	268	63	1480	42
17	65	170	153	290	1200	92	70	126	430	62	234	42
18	80	137	139	200	400	97	69	161	202	61	98	42
19	243	119	139	120	300	112	69	98	497	60	79	42
20	125	202	123	150	200	179	69	100	250	59	69	42
21	88	417	106	400	140	108	69	92	123	58	63	49
22	278	184	100	700	200	100	68	88	293	78	61	44
23	197	145	100	350	1000	89	74	92	324	71	59	42
24	90	110	125	200	1400	86	70	92	162	63	57	42
25	79	102	108	150	1000	85	115	87	110	74	56	44
26	74	100	94	130	1700	89	69	121	176	76	52	46
27	71	94	88	120	400	87	67	96	96	78	49	53
28	74	88	85	200	250	81	65	148	383	64	49	87
29	73	87	98	250	---	79	176	100	227	79	48	119
30	111	85	183	200	---	78	96	86	180	64	48	70
31	3200	---	89	300	---	79	---	86	---	56	46	---
TOTAL	6214	9993	5805	8870	16580	3462	2823	4741	5033	2597	3509	1565
MEAN	200	333	187	286	592	112	94.1	153	168	83.8	113	52.2
MAX	3200	2230	680	1260	2000	200	187	577	497	237	1480	119
MIN	65	85	81	74	120	78	65	81	54	56	46	42
AC-FT	12330	19820	11510	17590	32890	6870	5600	9400	9980	5150	6960	3100

CAL YR 1978 TOTAL 77706 MEAN 213 MAX 3200 MIN 39 AC-FT 154100
WTR YR 1979 TOTAL 71192 MEAN 195 MAX 3200 MIN 42 AC-FT 141200

NOTE.--No gage-height record Jan. 18 to Mar. 8.

16108000 WAINIHA RIVER NEAR HANALEI

LOCATION.--Lat 22°08'20", long 159°33'38", Hydrologic Unit 20070000, on left bank at Puwainui Falls, 1.5 mi (2.4 km) upstream from Wainiha powerplant intake, and 6.0 mi (9.6 km) southwest of Hanalei.

DRAINAGE AREA.--10.2 mi² (26.4 km²).

PERIOD OF RECORD.--August 1952 to February 1956, October 1957 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 960 ft (293 m), from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--24 years (water years, 1953-55, 1959-79), 138 ft³/s (3.908 m³/s), 99,980 acre-ft/yr (123 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s (796 m³/s) Apr. 19, 1974, gage height, 9.47 ft (2.886 m), from rating curve extended above 1,100 ft³/s (31.2 m³/s) on basis of slope-area measurement at gage height 7.72 ft (2.353 m); minimum, 33.0 ft³/s (0.93 m³/s) Feb. 11, 12, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 17, 1956, which destroyed the station, reached a stage of 14.1 ft (4.30 m), from floodmarks, discharge, about 40,000 ft³/s (1,130 m³/s), from unit-discharge study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,050 ft³/s (86.4 m³/s) Oct. 31, gage height, 5.00 ft (1.524 m), no peak above base of 3,600 ft³/s (102 m³/s); minimum, 40 ft³/s (1.13 m³/s) Sept. 16-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	225	62	52	105	82	53	85	51	89	69	42
2	50	172	49	50	147	76	53	167	51	89	70	42
3	50	624	44	48	411	65	63	225	56	89	112	42
4	109	150	251	47	164	65	144	262	51	92	84	88
5	113	77	59	45	79	65	236	155	49	154	55	88
6	50	62	54	47	64	60	86	256	47	117	56	48
7	55	56	260	45	122	55	100	186	47	98	54	49
8	58	52	253	46	81	87	155	111	48	68	55	43
9	49	50	79	365	636	60	176	70	53	58	65	51
10	46	49	108	95	227	56	136	71	107	56	60	49
11	45	58	218	398	1070	54	70	70	119	54	60	43
12	46	61	132	284	155	54	100	60	188	53	86	42
13	45	53	437	305	136	56	63	68	178	51	55	42
14	45	206	325	1200	255	54	57	71	134	49	52	41
15	49	457	316	626	527	54	54	76	135	54	51	41
16	45	90	118	197	486	55	53	87	205	54	766	40
17	44	64	87	152	642	60	53	74	470	55	54	40
18	55	57	108	92	221	56	51	66	168	61	101	40
19	183	52	120	70	200	74	51	56	368	50	66	42
20	83	159	100	93	125	158	51	67	158	51	56	43
21	52	127	80	265	84	89	51	54	93	51	52	45
22	79	104	96	437	86	68	51	52	256	121	50	50
23	85	74	102	203	563	56	51	52	250	74	48	42
24	56	52	93	116	757	56	68	52	118	111	53	45
25	50	49	72	90	585	56	104	52	84	100	49	50
26	46	50	60	77	885	88	56	77	130	110	45	55
27	44	51	53	69	235	65	53	75	71	84	45	52
28	44	47	50	112	124	56	51	100	192	68	43	74
29	44	44	55	128	---	56	107	63	156	89	42	47
30	96	43	93	122	---	54	102	53	105	57	51	49
31	1100	---	56	144	---	53	---	51	---	53	43	---
TOTAL	2970	3415	3990	6020	9172	2043	2499	2964	4138	2360	2588	1465
MEAN	95.8	114	129	194	328	65.9	83.3	95.6	138	76.1	83.5	48.8
MAX	1100	624	437	1200	1070	158	236	262	470	154	766	88
MIN	44	43	44	45	64	53	51	51	47	49	42	40
AC-FT	5890	6770	7910	11940	18190	4050	4960	5880	8210	4680	5130	2910

CAL YR 1978 TOTAL 39874 MEAN 109 MAX 1100 MIN 34 AC-FT 79090
WTR YR 1979 TOTAL 43624 MEAN 120 MAX 1200 MIN 40 AC-FT 86530

16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA

LOCATION.--Lat 21°31'09", long 157°56'53", Hydrologic Unit 20060000, on left bank 140 ft (43 m) upstream from Mauka ditch intake and Right Branch, and 4.5 mi (7.2 km) northeast of Wahiawa.

DRAINAGE AREA.--1.38 mi² (3.57 km²).

PERIOD OF RECORD.--May 1913 to July 1953, April 1960 to current year. Monthly discharge only for some periods, published in WSP 1319. Prior to August 1953, published as Left Branch of North Fork Kaukonahua Stream near Wahiawa.

REVISED RECORDS.--WSP 1219: 1931-33(M), 1935(M), 1937-38(M). WSP 1319: 1914, 1917-18(M), 1920-23(M), 1925(M), 1927-30(M). WSP 1719: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,150 ft (351 m), from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--56 years (water years, 1914-24, 1927-52, 1961-79), 16.5 ft³/s (0.467 m³/s), 11,950 acre-ft/yr (14.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,490 ft³/s (155 m³/s) Jan. 1, 1933, gage height, 11.7 ft (3.57 m), from floodmarks, from rating curve extended above 68 ft³/s (1.93 m³/s) by test of model of station site; maximum gage height, 12.46 ft (3.798 m) Apr. 15, 1963; minimum, 0.12 ft³/s (0.003 m³/s) Mar. 2, 13, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,140 ft³/s (60.6 m³/s) Feb. 10, gage height, 7.74 ft (2.360 m), no other peak above base of 1,300 ft³/s (36.8 m³/s); minimum, 0.85 ft³/s (0.024 m³/s) Apr. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	14	4.1	2.7	5.1	12	2.0	29	9.2	7.6	2.7	2.0
2	4.9	21	5.9	2.5	4.1	11	2.2	2.5	6.1	6.4	23	1.9
3	6.2	15	5.0	2.4	16	10	11	26	3.6	5.5	20	1.9
4	21	7.6	14	2.2	49	8.6	23	3.4	2.1	26	5.5	26
5	7.1	4.7	6.7	2.1	11	7.6	10	1.9	1.4	14	3.1	5.8
6	6.1	4.2	49	2.0	5.3	6.8	3.2	3.5	1.3	22	3.5	7.8
7	8.0	3.8	36	1.9	11	6.4	3.0	3.2	1.2	20	2.6	5.3
8	28	3.5	9.7	2.7	11	12	3.6	5.2	5.1	7.8	3.8	3.2
9	8.1	3.2	50	23	18	9.9	6.2	3.6	15	5.9	2.8	5.9
10	4.6	3.1	28	10	189	5.3	14	2.5	2.3	5.1	6.7	4.5
11	4.2	8.1	12	73	29	4.7	3.0	2.2	2.5	4.6	2.7	2.2
12	4.0	6.5	7.6	30	9.4	4.4	3.2	2.0	4.7	4.2	2.5	1.9
13	3.6	50	27	137	8.7	4.2	2.6	4.6	25	4.0	43	1.8
14	3.5	53	12	63	34	4.0	2.0	1.7	6.7	3.8	30	1.7
15	7.2	13	11	34	108	3.8	1.8	1.3	9.0	3.8	65	1.6
16	3.7	7.4	6.8	14	136	3.5	1.7	40	17	3.5	99	1.5
17	3.0	4.6	5.7	8.6	58	3.4	1.6	23	21	3.5	14	1.4
18	13	4.0	20	7.3	38	3.2	1.6	8.4	56	8.5	7.6	1.3
19	7.3	5.6	20	5.7	49	5.9	1.4	6.1	41	4.4	5.9	1.3
20	3.8	63	7.3	5.1	23	31	1.3	3.8	16	8.4	4.7	1.2
21	3.1	81	5.3	8.2	21	16	1.3	2.3	25	3.4	4.1	1.2
22	2.8	18	4.9	25	12	5.1	1.2	2.0	42	10	3.8	1.5
23	4.4	9.1	4.9	6.4	10	3.5	1.1	1.7	50	3.8	3.0	1.3
24	2.5	8.7	5.1	4.9	90	3.1	1.1	5.6	8.8	5.1	5.6	6.8
25	2.2	5.5	4.4	5.7	88	3.0	3.8	1.9	12	4.1	3.2	2.3
26	2.1	7.0	3.6	4.2	83	2.8	1.2	11	40	6.9	2.8	5.7
27	2.0	4.6	3.5	4.2	26	3.1	1.0	2.3	12	3.0	2.6	3.0
28	6.0	6.7	3.2	17	15	2.8	.90	1.8	33	29	2.5	11
29	2.1	5.6	3.2	12	---	2.4	.85	2.5	39	7.8	3.5	4.0
30	110	3.8	3.4	4.9	---	2.3	15	1.6	13	3.5	6.2	1.6
31	77	---	2.8	4.9	---	2.2	---	2.2	---	3.0	2.3	---
TOTAL	366.8	445.3	382.1	526.6	1157.6	204.0	125.85	208.8	521.0	268.6	367.7	118.6
MEAN	11.8	14.8	12.3	17.0	41.3	6.58	4.20	6.74	17.4	8.66	12.5	3.95
MAX	110	81	50	137	189	31	23	40	56	34	99	26
MIN	2.0	3.1	2.8	1.9	4.1	2.2	.85	1.3	1.2	3.0	2.3	1.2
AC-FT	728	883	758	1040	2300	405	250	414	1030	533	769	235

CAL YR 1978 TOTAL 5526.36 MEAN 15.1 MAX 256 MIN .18 AC-FT 10960
WTR YR 1979 TOTAL 4712.95 MEAN 12.9 MAX 189 MIN .85 AC-FT 9350

16208000 SOUTH FORK KAUKONAHUA STREAM AT EAST PUMP RESERVOIR, NEAR WAHIAWA

LOCATION.--Lat 21°29'32", long 157°59'54", Hydrologic Unit 20060000, on right bank on upstream side of dam at East Pump Reservoir, 2.3 mi (3.7 km) east of Wahiawa Post Office, and 7.1 mi (11.4 km) north of Waipahu.

DRAINAGE AREA.--4.04 mi² (10.46 km²).

PERIOD OF RECORD.--July 1957 to June 1963, water years 1963-64 (annual maximum), July 1964 to current year.

GAGE.--Water-stage recorder and Ogee-type dam control. Datum of gage is 860.35 ft (262.235 m) above mean sea level. July 1, 1963, to June 30, 1964, crest-stage gage at same site and datum.

REMARKS.--Records good. Prior to 1960, diversions from reservoirs above station for use at Schofield Barracks. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since termination of diversions to Schofield Barracks).--17 years (water years, 1961-62, (1965-79), 21.4 ft³/s (0.606 m³/s), 15,500 acre-ft/yr (19.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,460 ft³/s (155 m³/s) Apr. 15, 1963, gage height, 11.33 ft (3.453 m), from rating curve extended above 1,100 ft³/s (31.2 m³/s) on basis of computation of peak flow over dam; no flow Dec. 24, 25, 27, 28, 1960, Feb. 23, 24, 1963, and many days in 1977, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,050 ft³/s (58.1 m³/s) Feb. 10, gage height, 6.68 ft (2.036 m), no other peak above base of 1,100 ft³/s (31.2 m³/s); minimum, 0.56 ft³/s (0.016 m³/s) Sept. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	49	4.2	4.4	10	18	2.7	3.6	11	6.3	3.4	1.5
2	5.5	46	4.2	4.1	10	16	3.6	3.2	4.0	6.0	5.9	1.2
3	5.0	24	5.8	3.9	15	15	3.6	3.2	3.7	6.3	7.2	1.1
4	16	19	16	3.7	124	13	62	6.1	2.6	19	12	10
5	12	10	16	3.4	28	12	24	2.5	1.5	22	4.2	5.0
6	7.0	8.6	50	3.2	16	11	12	2.6	1.1	45	3.1	9.6
7	11	7.6	100	3.1	12	10	15	5.3	.95	35	3.3	6.6
8	38	6.9	28	3.3	24	23	9.8	3.5	3.8	11	2.5	4.3
9	24	6.3	22	33	26	18	5.8	8.0	19	6.7	3.3	4.7
10	7.6	5.8	65	31	361	9.4	20	3.1	4.3	5.6	13	4.4
11	6.5	5.4	22	101	53	8.1	7.1	2.6	7.4	5.1	3.4	2.2
12	5.7	13	11	58	30	7.5	5.1	2.3	82	4.7	2.3	1.6
13	5.3	77	37	320	18	7.2	7.1	3.0	40	4.3	4.1	1.7
14	4.8	89	29	162	31	6.6	4.1	3.0	14	4.0	24	1.6
15	6.8	31	16	79	86	6.3	3.4	1.7	11	3.8	24	1.5
16	7.3	9.7	10	44	98	5.9	3.1	50	14	3.6	53	1.3
17	4.4	7.5	8.1	22	72	5.4	2.9	22	15	3.4	16	1.3
18	18	6.0	18	17	38	5.3	2.8	6.6	65	4.4	5.5	1.0
19	7.8	6.5	60	14	77	5.7	2.6	4.5	31	6.0	4.0	.65
20	5.4	56	22	13	34	20	2.4	6.7	17	4.4	3.2	.61
21	4.1	56	11	22	53	7.7	2.3	3.2	43	4.1	2.7	.58
22	3.7	19	9.4	81	26	6.1	2.1	2.0	19	32	2.4	.61
23	4.3	9.5	8.9	23	19	4.7	2.0	1.7	29	9.1	2.2	.72
24	4.1	15	8.9	15	120	4.2	1.9	1.4	14	6.5	5.1	1.7
25	3.1	6.2	7.4	16	112	4.0	7.4	1.3	36	9.4	3.7	6.2
26	2.7	6.5	6.6	12	79	3.8	3.5	4.1	21	10	2.3	4.7
27	2.6	6.2	5.9	11	31	4.3	2.1	4.9	26	5.1	1.9	4.5
28	3.8	5.3	5.5	11	22	4.7	1.8	3.3	15	12	1.7	3.4
29	3.7	7.7	5.3	17	---	3.8	1.6	3.4	20	11	1.6	3.2
30	203	4.8	5.0	9.4	---	3.4	1.4	2.3	8.1	4.2	2.8	1.5
31	150	---	4.8	9.8	---	3.1	---	7.8	---	3.1	2.5	---
TOTAL	589.4	620.5	623.0	1150.3	1625	273.2	225.2	178.9	579.45	313.1	226.3	88.97
MEAN	19.0	20.7	20.1	37.1	58.0	8.81	7.51	5.77	19.3	10.1	7.30	2.97
MAX	203	89	100	320	361	23	62	50	82	45	53	10
MIN	2.6	4.8	4.2	3.1	10	3.1	1.4	1.3	.95	3.1	1.6	.58
AC-FT	1170	1230	1240	2280	3220	542	447	355	1150	621	449	176

CAL YR 1978 TOTAL 6701.77 MEAN 18.4 MAX 268 MIN .00 AC-FT 13290
WTR YR 1979 TOTAL 6493.32 MEAN 17.8 MAX 361 MIN .58 AC-FT 12880

16210900 POAMOHO TUNNEL NEAR WAHIAWA

LOCATION.--Lat 21°31'12", long 157°58'51", Hydrologic Unit 20060000, on left bank 5 ft (2 m) downstream from tunnel outlet and 3.6 mi (5.8 km) northeast of Wahiawa Post Office.

PERIOD OF RECORD.--July 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (341 m), from topographic map.

REMARKS.--Records good. Tunnel diverts from Poamoho Stream to North Fork Kaukonahua Stream to augment storage in Wahiawa Reservoir. Periodic determinations of water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--21 years, 4.85 ft^3/s (0.137 m^3/s), 3,510 acre-ft/yr (4.33 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 265 ft^3/s (7.50 m^3/s) Mar. 16, 1968; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 86 ft^3/s (2.44 m^3/s) Oct. 30, minimum daily, 0.09 ft^3/s (0.003 m^3/s) Sept. 20, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	16	2.5	1.4	7.7	12	1.2	2.7	.74	2.4	.66	.32
2	1.2	23	4.3	1.3	8.2	10	1.2	1.3	.50	1.8	1.2	.27
3	1.1	11	2.4	1.3	12	8.9	1.3	3.7	.44	1.5	5.5	.23
4	3.5	7.0	17	1.1	25	7.8	3.5	1.8	.38	3.[illegible]	2.1	1.6
5	2.6	3.8	8.6	1.1	15	7.1	2.2	.93	.34	12	1.0	1.8
6	1.3	3.1	17	1.0	7.5	5.9	1.7	.83	.30	11	1.2	.66
7	1.1	2.6	29	.98	8.4	5.4	1.4	1.1	.27	7.2	.93	1.0
8	3.3	2.3	12	1.1	9.8	11	1.4	3.4	.25	2.6	.62	1.2
9	3.6	2.0	16	16	13	7.8	1.3	1.8	.23	1.8	.62	2.3
10	1.6	1.9	11	11	31	4.8	4.4	1.0	.23	1.5	3.5	2.3
11	1.4	1.8	6.6	24	23	4.2	1.6	1.0	.27	1.3	1.1	.78
12	1.4	5.3	4.2	22	12	3.9	1.2	.83	.32	1.3	.66	.41
13	1.1	35	9.7	52	8.6	3.4	1.1	.66	6.4	1.1	.50	.32
14	1.0	25	5.5	35	11	3.1	1.0	.62	2.4	1.0	2.4	.27
15	1.0	9.6	4.8	20	28	3.0	.98	.54	1.7	.98	4.4	.25
16	1.6	3.9	3.6	12	35	2.7	.93	2.7	13	.93	27	.23
17	.98	2.9	2.9	6.9	24	2.4	.88	4.3	22	.83	4.4	.16
18	8.0	2.4	3.9	5.6	20	2.4	.83	1.8	21	.88	1.8	.12
19	3.4	2.3	6.1	4.7	26	5.0	.83	1.1	19	1.0	1.2	.10
20	1.7	15	4.4	4.4	18	12	.78	.74	4.5	1.1	.93	.09
21	1.1	24	2.9	5.5	22	4.8	.74	.58	2.8	.93	.78	.09
22	.98	7.8	2.6	13	13	3.4	.70	.47	11	1.4	.62	.11
23	2.9	4.9	2.6	5.0	10	2.2	.70	.44	12	1.8	.58	.12
24	1.2	5.0	3.2	3.8	22	1.9	.70	.47	3.3	.93	.62	.12
25	.78	2.7	2.6	3.9	23	1.8	.83	.88	4.2	1.3	.58	.32
26	.66	7.9	2.2	3.4	31	1.7	.83	4.2	21	2.0	.47	.44
27	.58	2.7	1.9	7.2	25	1.8	.62	2.1	3.9	1.[illegible]	.44	1.3
28	1.5	5.1	1.8	15	16	1.8	.58	1.4	6.1	4.2	.38	4.7
29	.88	5.7	1.7	14	---	1.4	.58	1.6	6.7	2.7	.38	1.9
30	86	2.7	1.7	5.4	---	1.3	.54	.74	4.8	1.4	.83	.70
31	55	---	1.6	11	---	1.3	---	.62	---	.83	.44	---
TOTAL	193.76	244.4	196.3	310.08	505.2	146.2	36.55	45.95	170.07	74.71	67.84	24.21
MEAN	6.25	8.15	6.33	10.0	18.0	4.72	1.22	1.48	5.67	2.41	2.19	.81
MAX	86	35	29	52	35	12	4.4	4.3	22	12	27	4.7
MIN	.58	1.8	1.6	.98	7.5	1.3	.54	.44	.23	.83	.38	.09
AC-FT	384	485	389	615	1000	290	72	91	337	148	135	48

CAL YR 1978 TOTAL 1896.78 MEAN 5.20 MAX 86 MIN .00 AC-FT 3760
WTR YR 1979 TOTAL 2015.27 MEAN 5.52 MAX 86 MIN .09 AC-FT 4000

16211600 MAKAHA STREAM NEAR MAKAHA

LOCATION.--Lat 21°30'16", long 158°10'59", Hydrologic Unit 20060000, on right bank 1.5 mi (2.4 km) northeast of Kaneaki Heiau and 3.4 mi (5.5 km) northeast of Makaha.

DRAINAGE AREA.--2.31 mi² (5.98 km²).

PERIOD OF RECORD.--July 1959 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete-masonry control. Datum of gage is 938.64 ft (286.097 m) above mean sea level (Waianae Plantation bench mark).

REMARKS.--Records good. Wells and water-development tunnels in the vicinity and above the station may affect low-flow records. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--20 years, 1.93 ft³/s (0.055 m³/s), 1,400 acre-ft/yr (1.73 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft³/s (33.1 m³/s) Mar. 13, 1962, gage height, 6.50 ft (1.981 m), from floodmarks, from rating curve extended above 51 ft³/s (1.44 m³/s) on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1953, about 7.8 ft (2.38 m) Nov. 24, 1954, from information by local resident. Discharge, about 1,700 ft³/s (48.1 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 554 ft³/s (15.7 m³/s) Feb. 10, gage height, 4.68 ft (1.426 m), from rating curve extended as explained above, no other peak above base of 200 ft³/s (5.66 m³/s); minimum, 0.02 ft³/s (0.001 m³/s), on several days in September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	15	.78	.85	1.1	4.7	.99	.49	.31	.21	.07	.04
2	.09	11	.78	.78	1.1	4.1	.92	.49	.31	.18	.07	.04
3	.08	30	.72	.72	4.9	3.6	.92	.49	.31	.18	.05	.03
4	.08	16	4.5	.72	17	3.1	.85	.49	.27	.18	.05	.09
5	.08	8.5	2.5	.66	5.7	2.7	.85	.44	.27	.18	.05	.05
6	.06	5.3	6.5	.66	3.8	2.4	.85	.49	.27	.18	.07	.04
7	.06	4.0	12	.60	3.0	2.2	.78	.49	.27	.18	.05	.04
8	.06	3.0	5.3	.60	3.0	12	.85	.44	.27	.18	.05	.04
9	.06	2.4	3.4	11	10	6.9	.85	.49	.27	.18	.05	.05
10	.05	2.0	2.4	4.9	113	4.5	.85	.49	.24	.21	.04	.05
11	.05	4.0	2.0	37	53	3.6	.85	.49	.24	.18	.05	.04
12	.05	5.1	1.7	18	28	3.0	.85	.44	.24	.18	.04	.04
13	.05	8.8	3.6	25	14	2.5	.92	.44	.24	.18	.04	.03
14	.05	10	2.7	17	10	2.3	.85	.39	.39	.15	.05	.04
15	.07	6.9	2.2	10	7.7	2.0	.78	.39	.39	.15	.07	.03
16	.08	4.5	1.7	7.2	6.0	1.9	.78	.39	.39	.13	.13	.03
17	6.7	3.3	1.5	5.3	5.1	1.7	.72	.39	.39	.13	.07	.03
18	1.1	2.7	1.5	4.1	4.1	1.6	.72	.39	.35	.13	.05	.03
19	.55	2.3	2.2	3.4	15	1.5	.60	.39	.31	.11	.07	.02
20	.42	2.0	2.0	3.3	43	1.4	.54	.35	.27	.11	.07	.05
21	.37	1.9	1.5	3.4	26	1.3	.54	.35	.24	.11	.05	.03
22	.66	1.6	1.4	3.1	13	1.3	.54	.31	.24	.11	.07	.03
23	1.7	1.5	1.4	2.4	12	1.3	.54	.31	.24	.09	.05	.03
24	.63	1.3	1.4	1.9	12	1.2	.54	.31	.24	.11	.04	.04
25	.46	1.3	1.2	1.8	9.5	1.2	.54	.31	.27	.09	.04	.03
26	.38	1.1	.99	1.6	8.2	1.2	.54	.31	.24	.09	.10	.05
27	.34	.99	.99	1.4	6.9	1.8	.54	.31	.24	.11	.07	.05
28	.32	.92	.92	1.3	5.7	1.7	.54	.31	.24	.09	.05	.05
29	.29	.92	.85	1.3	---	1.3	.49	.31	.21	.09	.05	.04
30	23	.85	1.7	1.2	---	1.2	.49	.31	.21	.09	.05	.03
31	28	---	.99	1.2	---	1.1	---	.35	---	.09	.04	---
TOTAL	65.99	159.18	73.32	168.39	441.8	82.3	21.62	12.35	8.37	4.38	1.80	1.19
MEAN	2.13	5.31	2.37	5.43	15.8	2.65	.72	.40	.28	.14	.058	.040
MAX	28	30	12	33	113	12	.99	.49	.39	.21	.13	.09
MIN	.05	.85	.72	.60	1.1	1.1	.49	.31	.21	.09	.04	.02
AC-FT	131	316	145	334	876	163	43	24	17	8.7	3.6	2.4

CAL YR 1978 TOTAL 705.24 MEAN 1.93 MAX 30 MIN .05 AC-FT 1400
WTR YR 1979 TOTAL 1040.49 MEAN 2.85 MAX 113 MIN .02 AC-FT 2060

16212800 KIPAPA STREAM NEAR WAHIAWA

LOCATION.--Lat 12°28'13", long 157°57'40", Hydrologic Unit 20060000, on left bank 1,700 ft (520 m) downstream from forest-reserve boundary, 4.9 mi (7.9 km) southeast of Wahiawa Post Office, and 6.3 mi (10.1 km) northeast of Waipahu.

DRAINAGE AREA.--4.29 mi² (11.11 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1957 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 690 ft (210 m), from topographic map.

REMARKS.--Records fair. At times, a small amount of water is diverted from the gage pool for domestic use. Recording rain gage located at station.

AVERAGE DISCHARGE.--22 years, 10.5 ft³/s (0.297 m³/s), 7,610 acre-ft/yr (9.38 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,680 ft³/s (161 m³/s) May 14, 1963, gage height, 12.29 ft (3.746 m), from rating curve extended above 300 ft³/s (8.50 m³/s) on basis of slope-area measurements at gage heights 7.96 ft (2.426 m) and 12.29 ft (3.746 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 930 ft³/s (26.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 10	0530	*2390	67.7	*9.42	2.871
Feb. 26	0730	984	27.9	7.01	2.137

Minimum discharge, 0.13 ft³/s (0.004 m³/s) May 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	34	1.6	1.2	3.4	9.0	.80	.57	7.7	2.8	.36	.26
2	1.3	35	1.5	1.2	3.4	7.6	.92	.86	2.8	1.9	2.2	.26
3	1.3	19	12	1.1	4.5	6.8	.92	.48	1.2	1.8	6.4	.26
4	4.2	13	31	.92	87	6.0	7.6	1.7	.74	1.7	4.9	4.8
5	6.9	6.3	13	.86	20	5.4	8.0	.48	.52	7.9	1.2	2.5
6	1.7	4.5	30	.80	9.0	4.7	2.9	.36	.34	17	1.7	5.3
7	1.3	3.6	47	.74	9.5	5.6	2.8	.36	.20	22	1.4	1.7
8	10	2.9	18	.68	16	13	1.9	5.0	.23	3.7	.48	5.0
9	12	2.5	7.0	12	15	9.3	1.7	6.9	2.2	1.9	5.7	11
10	1.9	2.1	9.5	21	254	4.1	11	1.5	1.9	1.2	13	6.5
11	1.2	1.8	8.7	69	42	3.2	3.8	2.0	1.0	1.0	1.2	1.3
12	1.0	5.9	3.7	51	14	2.9	2.4	1.0	1.1	.80	.44	.62
13	.86	26	15	182	7.8	2.6	1.6	.36	6.9	.68	.26	.40
14	.74	74	13	98	10	2.5	1.1	.20	4.9	.62	.29	.36
15	6.4	22	7.0	53	44	2.4	.86	.20	1.7	.48	5.5	.40
16	4.0	5.8	4.7	27	93	2.1	.74	3.5	6.3	.44	30	.26
17	1.7	3.6	3.2	13	54	1.9	.62	9.7	2.4	.40	6.6	.23
18	21	2.6	10	9.0	31	1.7	.62	2.9	11	.44	3.1	.26
19	5.3	2.6	16	6.8	66	2.2	.52	1.0	16	.74	2.0	.26
20	3.1	19	10	8.1	29	4.1	.40	.44	7.3	.80	.74	.23
21	1.2	26	4.7	9.5	36	2.4	.36	.26	3.1	.52	.40	.26
22	.92	7.8	3.6	28	12	2.4	.36	.20	28	4.0	.29	.29
23	1.7	17	4.5	12	9.0	1.5	.36	.20	7.9	3.9	.26	.23
24	1.5	23	4.9	6.5	41	1.2	.36	.17	3.4	1.1	5.0	.55
25	.74	3.6	3.7	6.3	45	1.1	6.2	.57	2.9	.68	1.2	2.2
26	.52	5.2	2.4	4.3	83	1.1	1.2	9.4	27	.62	.48	.74
27	.44	2.9	1.9	4.5	18	1.7	.48	2.6	3.7	.86	.40	.52
28	1.7	2.0	1.6	6.9	11	1.6	.32	5.1	19	1.9	.36	.80
29	1.2	6.1	1.6	7.8	---	1.1	.23	6.3	16	2.2	1.5	.80
30	130	2.0	1.5	4.5	---	.92	.23	1.4	6.8	1.2	1.4	.44
31	114	---	1.2	3.6	---	.86	---	19	---	.48	.48	---
TOTAL	341.32	381.8	293.5	651.30	1067.6	112.98	61.30	84.71	194.23	85.76	103.24	48.73
MEAN	11.0	12.7	9.47	21.0	38.1	3.64	2.04	2.73	6.47	2.77	3.33	1.62
MAX	130	74	47	182	254	13	11	19	28	22	30	11
MIN	.44	1.8	1.2	.68	3.4	.86	.23	.17	.20	.40	.26	.23
AC-FT	677	757	582	1290	2120	224	122	168	385	170	205	97

CAL YR 1978 TOTAL 3706.21 MEAN 10.2 MAX 210 MIN .00 AC-FT 7360
WTR YR 1979 TOTAL 3426.47 MEAN 9.39 MAX 254 MIN .17 AC-FT 6800

16212800 KIPAPA STREAM NEAR WAHIAWA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970-73, February 1973 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: February 1973 to current year.

INSTRUMENTATION.--Automatic pumping sediment sampler since February 1973.

REMARKS.--In addition to the sediment sampler record, water-quality samples were collected at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 905 mg/L Apr. 19, 1974; minimum daily mean, 0 mg/L on many days each year.
SEDIMENT DISCHARGE: Maximum daily 4,110 tons (3,730 tonnes) Apr. 19, 1974; minimum daily, 0 ton (0 tonne) on many days each year.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 457 mg/L Feb. 10; minimum daily mean, 2 mg/L on many days during the year.
SEDIMENT DISCHARGE: Maximum daily, 1,230 tons (1,120 tonnes) Feb. 10; minimum daily, 0 ton (0 tonne) on many days during the year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT						MAR					
12...	1430	.98	57	6.9	24.0	27...	1130	2.0	75	7.3	22.5
NOV						MAY					
01...	1420	26	60	6.8	21.0	04...	1250	1.6	70	7.3	24.0
DEC						JUN					
04...	1330	2.5	60	6.9	22.0	29...	1100	3.4	82	7.1	23.0
JAN						JUL					
08...	1300	.64	85	7.6	20.0	31...	1100	.50	85	7.5	26.0
FEB						SEP					
02...	1330	3.2	85	7.5	20.0	11...	1130	1.3	82	7.0	26.0

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM
DEC								
04...	1710	144	1590	618	34	54	--	89
FEB								
10...	0530	2130	2780	16000	25	29	52	66

DATE	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 2.00 MM
DEC							
04...	--	98	--	100	--	--	--
FEB							
10...	81	88	91	96	98	99	100

16212800 KIPAPA STREAM NEAR WAHIAWA--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	1.5	3	.01	34	25	2.3	1.6	4	.02
2	1.3	3	.01	35	38	3.6	1.5	4	.02
3	1.3	3	.01	19	20	1.0	12	12	.58
4	4.2	8	.09	13	10	.35	31	288	89
5	6.9	10	.19	6.3	6	.10	13	59	3.4
6	1.7	5	.02	4.5	4	.05	30	46	11
7	1.3	4	.01	3.6	4	.04	47	25	3.2
8	10	20	.54	2.9	4	.03	18	15	.73
9	12	14	.45	2.5	3	.02	7.0	8	.15
10	1.9	6	.03	2.1	3	.02	9.5	8	.21
11	1.2	5	.02	1.8	3	.01	8.7	8	.19
12	1.0	4	.01	5.9	6	.10	3.7	5	.05
13	.86	4	.01	26	40	2.8	15	25	1.0
14	.74	4	.01	74	119	51	13	25	.88
15	6.4	16	.28	22	30	1.8	7.0	8	.15
16	4.0	10	.11	5.8	8	.13	4.7	6	.08
17	1.7	8	.04	3.6	5	.05	3.2	6	.05
18	21	32	1.8	2.6	5	.04	10	20	.54
19	5.3	20	.29	2.6	5	.04	16	30	1.3
20	3.1	10	.08	19	22	1.1	10	12	.32
21	1.2	8	.03	26	50	3.5	4.7	5	.06
22	.92	8	.02	7.8	10	.21	3.6	4	.04
23	1.7	8	.04	17	79	22	4.5	4	.05
24	1.5	6	.02	23	62	10	4.9	4	.05
25	.74	5	.01	3.6	10	.10	3.7	4	.04
26	.52	4	.01	5.2	12	.17	2.4	2	.01
27	.44	4	.00	2.9	8	.06	1.9	2	.01
28	1.7	8	.04	2.0	8	.04	1.6	2	.01
29	1.2	4	.01	6.1	6	.10	1.6	2	.01
30	130	80	51	2.0	4	.02	1.5	2	.01
31	114	77	42	---	---	---	1.2	2	.01
TOTAL	341.32	---	97.19	381.8	---	100.78	293.5	---	113.17
		JANUARY			FEBRUARY			MARCH	
1	1.2	2	.01	3.4	6	.06	9.0	4	.10
2	1.2	2	.01	3.4	4	.04	7.6	3	.06
3	1.1	2	.01	4.5	20	.24	6.8	3	.06
4	.92	2	.00	87	332	181	6.0	3	.05
5	.86	2	.00	20	25	1.4	5.4	2	.03
6	.80	2	.00	9.0	10	.24	4.7	2	.03
7	.74	2	.00	9.5	20	.51	5.6	3	.05
8	.68	2	.00	16	20	.86	13	15	.53
9	12	25	.81	15	25	1.0	9.3	10	.25
10	21	35	2.0	254	457	1230	4.1	5	.06
11	69	82	35	42	35	4.0	3.2	3	.03
12	51	40	5.5	14	15	.57	2.9	3	.02
13	182	120	86	7.8	10	.21	2.6	3	.02
14	98	40	11	10	10	.27	2.5	2	.01
15	53	22	3.1	44	50	5.9	2.4	2	.01
16	27	15	1.1	93	55	14	2.1	2	.01
17	13	4	.14	54	25	3.6	1.9	2	.01
18	9.0	3	.07	31	20	1.7	1.7	2	.01
19	6.8	3	.06	66	53	13	2.2	4	.02
20	8.1	10	.22	29	25	2.0	4.1	18	.20
21	9.5	10	.26	36	40	3.9	2.4	8	.05
22	28	45	3.4	12	8	.26	2.4	6	.04
23	12	12	.39	9.0	4	.10	1.5	4	.02
24	6.5	6	.11	41	50	5.5	1.2	3	.01
25	6.3	10	.17	45	28	3.4	1.1	3	.01
26	4.3	8	.09	83	244	136	1.1	3	.01
27	4.5	12	.15	18	16	.78	1.7	3	.01
28	6.9	12	.22	11	6	.18	1.6	3	.01
29	7.8	10	.21	---	---	---	1.1	2	.01
30	4.5	8	.10	---	---	---	.92	2	.00
31	3.6	8	.08	---	---	---	.86	2	.00
TOTAL	651.30	---	156.21	1067.6	---	1610.72	112.98	---	1.73

16212800 KIPAPA STREAM NEAR WAHIAWA--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	.80	2	.00	.57	4	.01	7.7	35	.73
2	.92	3	.01	.86	4	.01	2.8	10	.08
3	.92	3	.01	.48	4	.01	1.2	8	.03
4	7.6	20	.41	1.7	8	.04	.74	6	.01
5	8.0	15	.32	.48	3	.00	.52	6	.01
6	2.9	8	.06	.36	3	.00	.34	5	.00
7	2.8	8	.06	.36	3	.00	.20	5	.00
8	1.9	8	.04	5.0	10	.14	.23	5	.00
9	1.7	8	.04	6.9	8	.15	2.2	10	.06
10	11	15	.45	1.5	5	.02	1.9	6	.03
11	3.8	8	.08	2.0	5	.03	1.0	5	.01
12	2.4	8	.05	1.0	3	.01	1.1	4	.01
13	1.6	5	.02	.36	2	.00	6.9	20	.37
14	1.1	3	.01	.20	2	.00	4.9	12	.16
15	.86	3	.01	.20	2	.00	1.7	8	.04
16	.74	3	.01	3.5	10	.09	6.3	15	.26
17	.62	3	.01	9.7	15	.39	2.4	10	.06
18	.62	3	.01	2.9	8	.06	11	20	.59
19	.52	2	.00	1.0	6	.02	16	20	.86
20	.40	2	.00	.44	6	.01	7.3	15	.30
21	.36	2	.00	.26	6	.00	3.1	8	.07
22	.36	2	.00	.20	5	.00	28	65	12
23	.36	2	.00	.20	5	.00	7.0	15	.32
24	.36	2	.00	.17	4	.00	3.4	8	.07
25	6.2	20	.33	.57	6	.01	2.9	8	.06
26	1.2	6	.02	9.4	20	.51	27	60	4.4
27	.48	4	.01	2.6	12	.08	3.7	15	.15
28	.32	3	.00	5.1	20	.28	19	45	2.3
29	.23	3	.00	6.3	12	.20	16	25	1.1
30	.23	3	.00	1.4	7	.03	6.8	20	.37
31	---	---	---	19	63	10	---	---	---
TOTAL	61.30	---	1.96	84.71	---	12.10	194.23	---	24.45
		JULY			AUGUST			SEPTEMBER	
1	2.8	10	.08	.36	4	.00	.26	3	.00
2	1.9	8	.04	2.2	6	.04	.26	3	.00
3	1.8	6	.03	6.4	8	.14	.26	3	.00
4	1.7	6	.03	4.9	8	.11	4.8	10	.13
5	7.9	12	.26	1.2	5	.02	2.5	6	.04
6	17	22	1.0	1.7	8	.04	5.3	8	.11
7	22	60	3.6	1.4	8	.03	1.7	5	.02
8	3.7	18	.18	.48	4	.01	5.0	10	.14
9	1.9	10	.05	5.7	46	12	11	20	.59
10	1.2	6	.02	13	165	14	6.5	15	.26
11	1.0	4	.01	1.2	20	.06	1.3	8	.03
12	.80	4	.01	.44	8	.01	.62	6	.01
13	.68	4	.01	.26	6	.00	.40	5	.01
14	.62	4	.01	.29	7	.01	.36	5	.00
15	.48	3	.00	9.5	30	.77	.40	5	.01
16	.44	3	.00	30	20	1.6	.26	5	.00
17	.40	3	.00	6.6	15	.27	.23	5	.00
18	.44	3	.00	3.1	15	.13	.26	5	.00
19	.74	4	.01	2.0	10	.05	.26	5	.00
20	.80	4	.01	.74	8	.02	.23	5	.00
21	.52	4	.01	.40	6	.01	.26	5	.00
22	4.0	8	.09	.29	4	.00	.29	5	.00
23	3.9	6	.06	.26	5	.00	.23	5	.00
24	1.1	4	.01	5.0	15	.20	.55	5	.01
25	.68	3	.01	1.2	6	.02	2.2	5	.03
26	.62	3	.01	.48	5	.01	.74	5	.01
27	.86	3	.01	.40	4	.00	.52	3	.00
28	1.9	6	.03	.36	4	.00	.80	3	.01
29	2.2	6	.04	1.5	8	.03	.80	3	.01
30	1.2	6	.02	1.4	5	.02	.44	3	.00
31	.48	4	.01	.48	3	.00	---	---	---
TOTAL	85.76	---	5.65	103.24	---	29.60	48.73	---	1.42
YEAR	3426.47		2148.58						

16213000 WAIKELE STREAM AT WAIPAHU
(National stream-quality accounting network station)

LOCATION.--Lat 21°23'11", long 158°00'49", Hydrologic Unit 20060000, on left bank 300 ft (91 m) upstream from bridge on Highway 90 and 0.3 mi (0.5 km) southwest of sugar refinery at Waipahu.

DRAINAGE AREA.--45.7 mi² (118.4 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to October 1951, December 1951 to October 1959, July 1960 to current year.

REVISED RECORDS.--WSP 1639: 1955(M). WSP 1937: Drainage area. WSP 2137: 1965.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1.37 ft (0.418 m) above mean sea level. Prior to July 1, 1960, at site 300 ft (91 m) downstream at datum 1.30 ft (0.396 m) higher.

REMARKS.--Records good. Diversions above station for irrigation of sugarcane in vicinity of Waipahu.

AVERAGE DISCHARGE.--26 years (water years, 1953-59, 1961-79), 37.9 ft³/s (1.073 m³/s), 27,460 acre-ft/yr (33.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft³/s (385 m³/s) Nov. 28, 1954, gage height, 14.82 ft (4.517 m), site and datum then in use, from rating curve extended above 730 ft³/s (20.7 m³/s) on basis of slope-area measurement of peak flow; no flow for part of Feb. 25, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,140 ft³/s (259 m³/s) Feb. 10, gage height, 10.80 ft (3.292 m), no other peak above base of 1,300 ft³/s (36.8 m³/s); minimum, 1.0 ft³/s (0.028 m³/s) Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	180	13	22	30	62	26	16	43	34	10	13
2	9.2	143	17	22	32	58	22	18	19	30	8.9	14
3	4.3	71	29	21	65	48	18	18	16	27	8.5	17
4	6.0	75	59	11	276	46	22	13	14	31	14	15
5	6.7	53	56	11	75	40	21	16	14	25	14	13
6	5.1	46	20	14	50	29	20	25	13	31	11	14
7	3.3	50	125	22	38	24	22	18	13	59	12	14
8	6.6	47	58	23	57	30	33	15	12	33	12	15
9	40	27	28	35	98	46	21	21	11	19	29	24
10	9.4	15	27	71	1620	26	21	24	15	15	33	22
11	4.8	14	27	133	135	28	23	21	15	12	20	17
12	4.7	16	28	134	99	28	20	15	18	10	21	12
13	3.9	31	37	421	58	18	22	17	20	11	14	8.6
14	4.7	106	46	242	53	19	30	14	31	11	14	8.3
15	8.4	99	30	113	93	19	21	14	17	9.3	12	13
16	18	24	20	102	182	18	18	17	19	10	33	17
17	9.1	16	16	54	161	21	15	24	29	11	30	9.8
18	15	17	17	43	86	27	16	25	23	10	18	6.8
19	12	24	35	38	203	19	17	19	31	8.0	16	7.5
20	7.5	25	40	38	383	16	17	14	25	11	13	11
21	11	40	19	45	389	19	17	15	20	14	11	9.6
22	22	26	13	98	119	16	22	17	43	18	11	8.2
23	15	23	13	64	80	15	18	16	27	13	11	9.2
24	6.7	66	15	40	126	16	17	17	31	12	12	6.8
25	3.5	25	15	35	137	24	17	17	18	12	11	5.7
26	4.1	17	20	31	183	20	18	20	18	12	15	6.1
27	2.7	19	20	30	81	18	14	22	27	11	16	7.1
28	5.2	20	12	29	69	17	14	21	29	10	13	9.9
29	15	15	11	34	---	15	14	24	24	14	13	14
30	460	14	11	30	---	15	13	16	29	13	12	15
31	418	---	15	29	---	18	---	51	---	11	14	---
TOTAL	1152.9	1344	892	2035	4978	815	589	600	684	547.3	462.4	363.6
MEAN	37.2	44.8	28.8	65.6	178	26.3	19.6	19.4	22.8	17.7	15.6	12.1
MAX	460	180	125	421	1620	62	33	51	43	59	33	24
MIN	2.7	14	11	11	30	15	13	13	11	8.0	8.5	5.7
AC-FT	2290	2670	1770	4040	9870	1620	1170	1190	1360	1090	957	721

CAL YR 1978 TOTAL 9972.10 MEAN 27.3 MAX 460 MIN .61 AC-FT 19780
WTR YR 1979 TOTAL 14483.20 MEAN 39.7 MAX 1620 MIN 2.7 AC-FT 28730

16213000 WAIKELE STREAM AT WAIPAHU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-72; April 1973 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1973 to current year.
WATER TEMPERATURES: April 1973 to current year.
SUSPENDED SEDIMENT DISCHARGE: July 1972 to current year.

INSTRUMENTATION.--Water-quality monitor since April 1973. Automatic pumping sediment sampler since July 1972.

REMARKS.--In addition to the water-quality monitor record, water-quality samples were collected once a month. No record Oct. 1-31.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 730 micromhos/cm June 25, 1979; minimum, 30 micromhos/cm Apr. 19, 1974.
WATER TEMPERATURES: Maximum, 30.0°C May 6, 1973; minimum, 16.0°C Mar. 16, 1976.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,420 mg/L Feb. 7, 1976; minimum daily mean, 10 mg/L May 10, Aug. 10, 29-31, Sept. 1, 1974, Oct. 29 to Nov. 2, Nov. 15-17, Dec. 11, 12, 1975.
SEDIMENT DISCHARGE: Maximum daily, 32,200 tons (29,200 tonnes) Apr. 19, 1974; minimum daily, 0.07 ton (0.06 tonne) Sept. 4, Oct. 1, 1975.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum recorded, 730 micromhos/cm June 25; minimum recorded, 86 micromhos/cm Jan. 13.
WATER TEMPERATURES: Maximum recorded, 27.0°C Apr. 2, Aug. 21, Sept. 9; minimum recorded, 16.5°C Jan. 13.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,590 mg/L Feb. 10; minimum daily mean 15 mg/L several days in March, May, and September.
SEDIMENT DISCHARGE: Maximum daily, 31,800 tons (28,800 tonnes) Feb. 10; minimum daily, 0.22 ton (0.20 tonne) Oct. 27.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT											
10...	0815	9.4	265	6.9	22.2	8.9	6.4	11000	--	40	5
30...	1030	374	--	--	--	43	--	--	--	56	36
31...	1140	180	110	6.9	20.6	25	--	--	--	24	8
NOV											
07...	0915	47	280	6.9	21.0	5.0	7.5	760	2900	50	3
DEC											
05...	1030	64	210	6.9	22.0	70	8.2	4100	6400	41	20
JAN											
09...	0930	35	380	7.2	22.2	23	6.3	3100	11000	55	26
FEB											
05...	1030	78	190	7.1	19.3	35	8.4	4700	30000	37	12
10...	0930	2300	--	--	--	--	--	--	--	--	--
MAR											
19...	0945	24	500	7.2	22.4	1.9	7.5	5700	1800	80	23
APR											
23...	0900	--	510	7.1	22.5	1.0	6.4	2400	960	78	27
MAY											
21...	1015	12	470	7.1	22.9	5.0	6.8	2100	K220	69	17
JUN											
18...	0900	16	450	7.0	23.0	5.4	6.6	--	--	65	24
JUL											
17...	1130	11	465	6.9	23.7	4.0	7.0	560	770	65	11
AUG											
20...	0900	13	460	6.9	24.0	3.4	5.8	51000	K340	75	36
SEP											
17...	0930	8.6	440	6.8	23.5	1.7	5.7	7000	1400	64	6

K Results based on colony count outside the acceptable range (non-ideal colony count).

16213000 WAIKELE STREAM AT WAIPAHU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT											
10...	7.0	5.5	34	63	2.3	--	3.0	35	16	42	.1
30...	15	4.5	13	31	.8	--	6.3	20	21	41	.1
31...	5.0	2.8	11	47	1.0	--	2.2	16	9.8	16	.1
NOV											
07...	9.3	6.4	34	60	2.1	--	.6	47	20	40	.1
DEC											
05...	8.5	4.7	22	53	1.5	--	2.1	21	10	38	.1
JAN											
09...	11	6.7	45	60	2.6	--	7.5	29	24	51	.3
FEB											
05...	7.2	4.5	23	56	1.7	--	1.9	25	18	31	.1
10...	--	--	--	--	--	--	--	--	--	--	--
MAR											
19...	14	11	63	62	3.1	--	3.7	57	28	84	.2
APR											
23...	13	11	72	65	3.6	--	4.6	51	29	91	.2
MAY											
21...	11	10	65	66	3.4	69	3.8	52	29	80	.1
JUN											
18...	11	9.0	55	63	3.0	59	3.8	41	26	77	.2
JUL											
17...	11	9.2	60	66	3.2	62	2.3	54	31	80	.2
AUG											
20...	12	11	61	79	3.1	65	3.6	49	30	88	.2
SEP											
17...	11	8.9	67	68	3.6	72	4.5	58	29	82	.2

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)
OCT										
10...	34	178	163	.24	4.52	2.4	--	.38	--	.62
30...	9.4	121	122	.16	122	1.8	--	.46	--	4.5
31...	10	68	67	.09	33.0	.80	--	.16	--	.75
NOV										
07...	42	190	181	.26	24.1	1.8	--	.22	--	.46
DEC										
05...	18	131	116	.18	22.6	1.0	--	.09	--	1.1
JAN										
09...	53	255	216	.35	24.1	4.9	--	3.3	--	1.4
FEB										
05...	20	130	121	.18	27.4	1.3	--	.26	--	.60
10...	--	--	--	--	--	--	--	--	--	--
MAR										
19...	56	301	294	.41	19.5	2.9	--	.09	--	.42
APR										
23...	65	331	316	.45	--	3.0	--	1.8	2.2	.30
MAY										
21...	60	298	290	.41	9.40	2.9	--	.59	.71	.29
JUN										
18...	58	288	265	.39	13.0	3.7	--	.01	.01	.51
JUL										
17...	62	308	288	.42	9.15	.13	--	.02	.02	.21
AUG										
20...	7.2	312	243	.42	11.4	3.1	--	.81	.98	1.1
SEP										
17...	61	320	312	.44	7.43	3.1	3.1	1.1	1.3	.40

16213000 WAIKELE STREAM AT WAIPAHU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	NITROGEN, DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS TOTAL (MG/L AS PO4)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHATE, TOTAL (MG/L AS PO4)	PHOSPHORUS, DISSOLVED (MG/L AS P)
OCT										
10...	--	1.0	.03	.97	3.4	15	--	1.6	--	1.5
30...	--	5.0	3.9	1.1	6.8	30	--	1.0	--	.15
31...	--	.91	.00	1.1	1.7	7.6	--	.31	--	.17
NOV										
07...	--	.68	.00	--	2.5	11	--	1.1	--	1.0
DEC										
05...	--	1.2	.52	.68	2.2	9.7	--	.70	--	.43
JAN										
09...	--	4.7	.30	4.4	9.6	43	--	3.9	--	3.8
FEB										
05...	--	.86	.38	.48	2.2	9.6	--	.57	--	.39
10...	--	--	--	--	--	--	--	--	--	--
MAR										
19...	--	.51	.06	.45	3.4	15	--	1.0	--	1.2
APR										
23...	--	2.1	.00	2.3	5.1	23	7.4	2.4	7.4	2.4
MAY										
21...	--	.88	.07	.81	3.8	17	4.3	1.4	4.3	1.3
JUN										
18...	--	.52	.00	--	4.2	19	1.4	.44	1.4	.40
JUL										
17...	--	.23	.05	.18	.36	1.6	.18	.06	--	.02
AUG										
20...	--	1.9	.70	1.2	5.0	22	2.5	2.2	--	2.2
SEP										
17...	4.4	1.5	.20	1.3	4.6	20	7.1	2.3	--	2.2

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CADMIUM SUSPENDED RECOVERABLE (UG/L AS CD)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
OCT										
30...	1030	9	--	--	--	--	20	--	--	180
31...	1140	1	0	0	0	0	14	12	2	30
NOV										
07...	0915	1	0	100	80	20	28	21	7	0
FEB										
05...	1030	2	1	100	100	0	1	1	0	30
MAY										
21...	1015	0	0	0	0	0	8	5	3	0
AUG										
20...	0900	1	1	100	90	10	<1	0	<1	10

DATE	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, TOTAL RECOVERABLE (UG/L AS CO)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)	COPPER, DISSOLVED (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
OCT										
30...	--	--	--	--	--	--	--	--	--	--
31...	30	0	4	4	0	11	7	4	4900	4900
NOV										
07...	0	0	1	0	1	9	2	7	670	610
FEB										
05...	20	10	7	7	0	16	8	8	5600	5500
MAY										
21...	0	0	2	2	0	9	0	9	380	350
AUG										
20...	10	0	<3	0	<3	4	0	4	680	660

< Actual value is known to be less than the value shown.

16213000 WAIKELE STREAM AT WAIPAHU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT										
30...	--	400	--	--	--	--	--	.6	--	--
31...	20	150	150	0	180	150	30	.0	.0	.0
NOV										
07...	60	280	280	3	80	30	50	.0	.0	.0
FEB										
05...	80	18	18	0	250	240	10	.0	.0	.0
MAY										
21...	30	98	75	23	120	20	100	.0	.0	.0
AUG										
20...	20	5	1	4	140	20	120	.0	.0	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT									
30...	0	--	--	--	--	--	--	--	--
31...	1	1	0	0	0	0	20	20	0
NOV									
07...	2	0	2	0	0	0	20	10	6
FEB									
05...	1	0	1	1	1	0	50	50	0
MAY									
21...	2	0	2	0	0	0	10	0	10
AUG									
20...	1	0	1	4	0	4	3	0	<3

DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	CHLOR-DANE, TOTAL (UG/L)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDD, TOTAL (UG/L)	P,P' DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DDE, TOTAL (UG/L)	P,P' DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
NOV											
07...	0915	ND	ND	ND	ND	ND	26	ND	4.0	ND	13
MAR											
19...	0945	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	DDT, TOTAL (UG/L)	P,P' DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DI-AZINON, TOTAL (UG/L)	DI-AZINON, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	DI-ELDRIN TOTAL (UG/L)	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
NOV										
07...	ND	4.5	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
19...	ND	--	ND	--	ND	--	ND	--	ND	--

< Actual value is known to be less than the value shown.
ND Material specifically analyzed for but not detected.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	MALA-THION, TOTAL (UG/L)	MALA-THION, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	METH-OXY-CHLOR, TOTAL (UG/L)	METH-OXY-CHLOR, TOT. IN BOTTOM MATL. (UG/KG)
NOV										
07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
19...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL PARA-THION, TOT. IN BOTTOM MATL. (UG/KG)	METHYL TRI-THION, TOTAL (UG/L)	METHYL TRI-THION, TOT. IN BOTTOM MATL. (UG/KG)	PARA-THION, TOTAL (UG/L)	PARA-THION, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOX-APHENE, TOTAL (UG/L)	TOXA-PHENE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)	TOTAL TRI-THION (UG/L)	TRI-THION, TOTAL IN BOT-TOM MA-TERIAL (UG/KG)
NOV										
07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
19...	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
OCT				
10...	0815	5.4	--	--
NOV				
07...	0915	--	3.5	.3
DEC				
05...	1030	19	--	--
JAN				
09...	0930	9.9	--	--
FEB				
05...	1030	--	2.8	3.0
MAR				
19...	0945	2.9	--	--
APR				
23...	0900	3.9	--	--
MAY				
21...	1015	--	2.3	.2
JUN				
18...	0900	3.1	--	--
JUL				
17...	1130	2.7	--	--
AUG				
20...	0900	--	4.8	.1

ND Material specifically analyzed for but not detected.

16213000 WAIKELE STREAM AT WAIPAHU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	LENGTH OF EXPO-SURE (DAYS)
OCT								
10...	0815	930	--	--	--	--	--	--
NOV								
07...	0915	160	4.33	3.54	2.81	1.24	--	--
DEC								
05...	1030	120	--	--	--	--	--	--
JAN								
09...	0930	870	--	--	--	--	--	--
FEB								
05...	1030	490	.550	.390	3.44	1.08	--	27
MAR								
19...	0945	740	--	--	--	--	--	--
APR								
23...	0900	690	--	--	--	--	--	--
MAY								
21...	1015	120	3.07	1.73	60.1	23.4	22.3	25
JUN								
18...	0900	530	--	--	--	--	--	--
JUL								
17...	1130	1500	--	--	--	--	--	--
AUG								
20...	0900	0	3.31	2.36	45.1	22.1	21.1	34
SEP								
17...	0930	1800	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM
OCT									
10...	0815	9.4	36	.91	--	--	--	100	--
30...	1030	374	1700	1720	--	--	--	100	--
31...	1140	180	--	--	--	--	--	--	--
NOV									
07...	0915	47	20	2.5	--	--	--	100	--
DEC									
05...	1030	64	154	27	--	--	--	100	--
JAN									
09...	0930	35	57	5.4	--	--	--	100	--
FEB									
05...	1030	78	116	24	--	--	--	100	--
10...	0430	2300	1560	9690	30	43	66	86	100
MAR									
19...	0945	28	3	.19	--	--	--	100	--
APR									
23...	0900	--	11	--	--	--	--	100	--
MAY									
21...	1015	12	5	.16	--	--	--	100	--
JUN									
18...	0900	16	11	.50	--	--	--	100	--
JUL									
17...	1130	11	7	.21	--	--	--	100	--
AUG									
20...	0900	13	12	.49	--	--	--	100	--
SEP									
17...	0930	8.6	4	--	--	--	--	100	--

16213000 WAIKELE STREAM AT WAIPAHU--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1				378	267	298	431	389	408	450	438	446
2				334	197	207	550	415	444	453	445	449
3				316	216	244	552	419	492	456	446	450
4				257	199	225	462	162	354	462	450	457
5				279	241	263	276	192	249	468	455	460
6				325	272	289	359	250	315	467	455	462
7				384	276	304	313	118	139	483	460	473
8				474	314	394	204	160	178	502	473	482
9				594	484	551	309	213	266	543	427	502
10				576	469	543	340	282	310	281	237	258
11				462	434	449	372	315	342	361	118	231
12				456	438	446	511	310	416	198	114	138
13				474	245	442	523	283	457	206	86	146
14				188	105	147	293	246	261	240	111	167
15				212	95	137	317	254	281	193	144	167
16				331	215	281	448	307	352	215	144	180
17				370	324	351	415	375	397	271	225	249
18				448	367	388	415	388	403	316	269	299
19				539	443	504	405	297	334	345	308	333
20				526	267	430	295	228	257	352	315	336
21				288	160	242	334	262	307	343	260	318
22				327	198	267	385	337	366	282	143	196
23				451	317	368	392	378	383	258	174	217
24				461	164	255	396	361	387	340	254	304
25				383	304	335	394	358	382	364	307	336
26				390	355	378	414	377	398	377	336	361
27				404	366	389	429	401	415	397	367	380
28				467	384	414	432	411	423	408	381	390
29				438	393	419	441	422	431	387	330	358
30				403	366	385	448	431	438	392	326	361
31				---	---	---	446	432	440	407	357	383
MONTH				594	95	345	552	118	356	543	86	332

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	446	376	412	373	329	351	607	512	555	491	478	485
2	467	428	447	438	366	406	608	508	548	490	480	484
3	454	184	421	420	374	398	576	512	535	484	473	481
4	212	98	153	444	386	409	568	501	525	491	479	484
5	250	179	209	576	405	443	503	404	451	560	478	491
6	306	230	272	476	443	460	422	375	402	575	541	559
7	358	304	334	477	439	455	548	424	454	573	486	531
8	325	246	280	450	402	440	548	483	518	488	461	474
9	310	152	228	386	345	355	526	469	498	470	383	435
10	333	117	242	411	356	386	505	403	470	563	359	434
11	400	339	378	458	412	434	401	336	374	484	434	455
12	429	394	409	490	457	472	430	401	414	484	441	455
13	486	431	466	487	470	476	466	409	432	502	476	491
14	518	487	504	493	442	461	550	506	526	481	465	473
15	526	492	512	475	438	449	557	473	517	473	453	464
16	493	463	475	466	443	452	493	473	482	474	452	462
17	466	457	461	516	457	470	485	473	482	492	424	461
18	481	466	473	535	501	522	488	480	485	418	355	380
19	489	481	486	527	480	492	491	477	485	456	408	433
20	489	435	471	491	479	485	490	461	476	481	447	465
21	451	435	441	486	444	456	485	474	480	495	468	479
22	467	451	459	480	444	459	543	479	501	495	479	486
23	489	468	478	481	458	468	544	488	505	498	479	487
24	520	490	504	483	468	477	502	482	489	492	476	481
25	556	522	538	523	482	497	491	480	485	483	459	469
26	572	554	564	531	493	511	489	449	466	501	464	474
27	573	459	533	500	447	482	472	449	460	510	385	443
28	455	301	384	476	447	461	483	470	477	447	393	419
29	---	---	---	478	458	469	492	475	483	407	324	364
30	---	---	---	493	471	481	499	483	488	460	366	404
31	---	---	---	604	482	502	---	---	---	474	169	359
MONTH	573	98	412	604	329	454	608	336	482	575	169	460

16213000 WAIKELE STREAM AT WAIPAHU--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	328	182	257	644	460	547	474	457	466	485	472	479
2	392	307	358	604	509	571	471	447	459	501	470	480
3	448	393	431	602	471	538	468	458	462	541	519	534
4	487	436	465	602	577	591	460	364	426	533	489	512
5	479	462	474	591	448	529	463	384	428	495	464	482
6	486	471	480	450	255	389	486	462	474	520	461	479
7	489	472	481	275	171	230	481	445	460	467	427	442
8	495	487	490	335	200	263	456	433	446	452	432	441
9	493	487	490	403	352	382	451	253	394	558	453	522
10	547	489	508	443	392	418	340	216	279	505	359	413
11	516	489	499	450	424	435	430	306	373	465	399	432
12	509	429	476	456	442	450	594	432	491	482	458	471
13	547	449	488	463	451	456	485	447	465	479	449	462
14	507	327	420	470	455	462	492	451	463	483	458	469
15	413	362	383	479	467	471	501	451	486	558	469	486
16	532	414	443	480	470	475	515	220	366	570	498	538
17	538	423	471	477	467	472	334	251	287	530	467	488
18	606	425	460	480	469	474	394	339	372	513	472	485
19	515	260	365	478	459	471	463	398	441	511	475	490
20	349	278	316	478	461	470	487	452	471	493	469	478
21	377	339	355	515	467	481	488	467	474	519	479	490
22	385	189	286	520	495	509	496	468	479	522	478	496
23	351	238	311	496	473	479	485	454	472	490	475	480
24	602	348	405	479	429	446	510	448	467	491	468	478
25	730	376	444	462	437	452	508	460	491	509	484	498
26	713	210	376	471	451	461	528	445	485	509	487	497
27	441	228	304	472	455	463	498	461	480	491	468	482
28	401	226	316	479	456	467	486	469	479	491	476	483
29	361	285	338	512	470	489	486	466	474	472	398	427
30	452	281	314	507	470	487	496	472	482	562	467	509
31	---	---	---	485	451	467	493	468	479	---	---	---
MONTH	730	182	407	644	171	461	594	216	444	570	359	481
YEAR	730	86	421									

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1				22.5	20.5	21.5	23.0	21.5	22.5	22.0	20.5	21.0
2				22.5	20.5	21.5	25.0	22.0	23.0	22.0	21.0	21.5
3				23.0	21.5	22.0	24.0	23.5	23.5	22.0	20.5	21.0
4				22.0	20.5	21.5	23.5	22.0	23.0	22.0	20.5	21.0
5				22.0	20.0	21.0	22.5	21.5	22.0	22.5	20.5	21.5
6				22.5	21.0	21.5	22.5	21.0	21.5	22.5	21.0	21.5
7				22.0	20.5	21.5	22.0	20.5	21.0	22.5	21.0	21.5
8				23.5	21.0	22.0	22.0	20.5	21.5	23.0	21.5	22.0
9				24.0	22.0	23.5	22.0	20.5	21.5	22.0	20.0	21.0
10				23.0	22.0	22.5	22.5	21.5	22.0	22.0	20.0	21.0
11				23.0	22.0	22.5	23.0	22.0	22.5	21.5	19.5	20.5
12				23.0	21.5	22.5	25.5	21.5	23.0	19.5	18.0	18.0
13				23.5	22.0	23.0	22.5	21.0	21.5	19.0	16.5	17.5
14				22.5	21.0	21.5	21.5	20.5	21.0	19.0	17.5	18.0
15				22.0	20.0	21.0	21.5	20.5	21.0	19.5	18.5	19.0
16				22.5	21.0	21.5	22.0	21.0	21.5	20.0	18.5	19.5
17				23.0	21.0	22.0	22.5	21.0	21.5	21.0	19.5	20.0
18				23.0	21.0	22.0	22.0	21.0	21.5	21.5	20.0	21.0
19				24.0	23.0	23.5	21.5	21.0	21.5	21.5	20.5	21.0
20				23.5	22.5	23.5	21.0	20.0	20.5	21.5	20.5	21.0
21				23.5	22.0	22.5	21.5	20.0	20.5	21.5	20.5	21.0
22				23.0	22.0	22.5	21.5	20.0	20.5	20.5	19.5	20.0
23				23.5	21.5	22.5	22.0	20.0	21.0	21.0	19.0	20.0
24				22.5	20.5	21.5	21.5	20.5	21.0	21.5	20.0	20.5
25				22.5	21.0	22.0	22.0	20.5	21.0	22.0	20.0	21.0
26				23.0	21.5	22.5	22.0	20.5	21.0	21.5	20.5	21.0
27				23.5	22.0	22.5	22.0	20.5	21.5	22.5	20.5	21.5
28				23.5	21.5	22.5	22.0	21.0	21.5	22.5	21.0	21.5
29				22.5	21.5	22.0	22.5	21.0	21.5	22.0	21.0	21.5
30				23.0	21.5	22.0	22.0	21.0	21.5	22.5	20.5	21.5
31				---	---	---	21.5	20.5	21.0	22.5	21.0	21.5
MONTH				24.0	20.0	22.0	25.5	20.0	21.5	23.0	16.5	20.5

16213000 WAIKELE STREAM AT WAIPAHU--Continued

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	22.0	20.5	21.5	22.5	20.5	21.5	26.0	22.0	24.0	25.0	22.0	23.0
2	22.5	21.0	21.5	22.5	21.0	22.0	27.0	22.5	24.5	24.5	22.0	23.0
3	22.0	18.5	21.5	24.5	21.5	22.5	26.0	23.5	24.5	24.5	22.0	23.0
4	20.0	17.5	19.0	24.0	21.0	22.5	26.5	23.0	24.5	25.5	22.0	23.5
5	20.5	19.0	20.0	23.0	21.5	22.5	24.5	22.0	23.0	25.0	22.0	23.5
6	22.0	19.5	20.5	24.0	21.0	22.5	25.0	21.5	23.5	25.0	24.0	24.5
7	22.0	21.0	21.5	23.5	21.5	22.5	25.0	22.0	23.5	25.0	23.0	24.5
8	22.0	21.5	21.5	22.0	21.0	21.5	26.5	23.5	24.5	24.0	22.5	23.0
9	21.5	21.0	21.5	23.5	20.0	21.5	25.0	22.5	24.0	24.5	22.0	23.5
10	21.5	19.5	20.5	23.5	20.5	22.0	23.5	22.0	23.0	25.5	22.0	24.0
11	21.5	19.5	20.0	23.0	20.5	22.0	25.0	22.0	23.0	25.0	23.0	24.0
12	20.0	18.5	19.5	24.0	22.0	23.0	24.0	22.0	23.0	25.0	22.0	23.5
13	20.5	19.0	20.0	23.5	21.5	22.5	24.5	22.0	23.0	25.5	23.0	24.0
14	21.5	19.5	20.5	24.0	21.5	22.5	25.5	23.5	24.0	25.0	22.0	23.5
15	21.0	20.0	20.5	24.0	21.5	22.5	25.0	22.5	24.0	25.0	22.0	23.0
16	20.0	19.0	19.5	24.0	21.5	22.5	24.0	22.0	23.0	24.0	22.0	23.0
17	20.0	19.0	19.5	24.5	21.5	23.0	24.5	22.0	23.0	24.5	22.0	23.0
18	21.0	20.0	20.5	24.0	22.0	23.0	25.0	22.0	23.5	24.5	21.5	23.0
19	20.5	19.5	20.0	24.0	22.0	22.5	25.0	22.0	23.0	25.5	22.5	23.5
20	21.0	20.0	20.5	24.5	22.0	23.0	24.5	21.5	23.0	25.0	22.5	23.5
21	21.5	19.5	20.5	23.5	21.5	22.5	24.5	22.0	23.0	25.0	22.0	23.5
22	21.5	20.5	21.0	24.5	21.5	22.5	25.0	22.0	23.5	25.5	22.5	24.0
23	22.5	20.0	21.5	24.5	21.5	22.5	24.0	22.0	23.0	25.0	22.5	23.5
24	22.0	21.0	21.5	22.5	21.0	22.0	24.0	22.0	22.5	24.5	22.5	23.5
25	22.0	20.0	21.0	24.0	20.5	22.5	24.5	21.5	22.5	24.5	22.0	23.0
26	21.5	19.5	21.0	24.0	22.0	23.0	22.5	21.5	22.0	24.5	22.5	23.0
27	22.5	20.5	21.5	24.5	22.0	23.0	23.5	21.0	22.0	24.5	23.0	24.0
28	23.5	21.0	22.0	24.5	21.5	23.0	22.5	21.0	22.0	23.5	22.0	23.0
29	---	---	---	24.5	21.5	22.5	24.5	21.0	22.5	23.5	22.0	23.0
30	---	---	---	22.5	21.5	22.0	24.5	21.5	23.0	25.0	22.0	23.5
31	---	---	---	25.0	21.0	22.5	---	---	---	24.5	22.0	23.0
MONTH	23.5	17.5	20.5	25.0	20.0	22.5	27.0	21.0	23.5	25.5	21.5	23.5
		JUNE			JULY			AUGUST			SEPTEMBER	
1	25.5	21.5	23.5	25.0	22.5	24.0	24.0	22.5	23.5	25.5	23.5	24.0
2	25.5	22.5	24.0	25.0	22.0	23.0	24.5	22.5	23.5	25.0	23.0	24.0
3	25.0	22.5	23.5	24.5	22.0	23.0	24.5	22.5	23.5	25.5	24.0	24.5
4	25.0	22.0	23.5	24.0	22.0	22.5	26.0	23.0	24.0	24.5	24.0	24.0
5	25.0	22.0	23.5	26.0	22.0	23.5	25.0	22.5	24.0	25.5	22.5	24.0
6	25.0	22.0	23.5	24.5	23.0	23.5	26.0	23.5	24.0	26.0	23.5	24.5
7	24.0	22.0	23.0	25.5	22.0	23.0	25.0	22.5	23.5	26.0	23.0	24.5
8	25.0	21.5	23.0	25.5	21.5	23.5	25.0	22.5	23.5	25.5	23.0	24.5
9	25.5	22.0	23.5	25.5	23.0	24.0	25.0	22.5	23.5	27.0	25.0	25.5
10	24.5	22.5	23.0	25.5	22.5	23.5	25.0	22.5	24.0	25.5	24.0	25.0
11	24.5	22.5	23.5	25.5	22.5	23.5	26.0	23.0	24.0	26.5	24.5	25.5
12	25.0	22.5	23.5	25.5	22.0	23.5	27.0	23.5	25.5	26.0	23.5	25.0
13	25.0	22.5	23.5	25.5	22.5	23.5	25.5	23.0	24.0	25.5	22.5	23.5
14	26.5	22.5	24.0	25.5	22.5	23.5	25.5	23.0	24.0	24.5	22.5	23.5
15	24.5	23.0	23.5	24.0	22.5	23.0	25.5	23.0	24.5	26.0	22.5	24.0
16	24.5	23.0	23.5	25.0	22.5	23.5	26.5	24.5	25.5	26.5	23.0	25.0
17	25.5	23.5	24.5	24.0	22.5	23.0	26.5	24.0	25.0	24.5	22.5	23.5
18	25.0	23.0	23.5	25.0	22.0	23.0	25.5	23.5	24.5	24.5	22.0	23.5
19	26.5	23.0	24.5	25.0	22.0	23.5	25.0	24.0	24.5	25.0	22.5	23.5
20	25.5	23.0	24.0	25.5	22.0	23.5	26.5	23.0	24.5	24.5	22.5	23.5
21	25.5	23.0	24.0	25.5	22.5	24.0	27.0	23.5	25.0	25.0	22.5	23.5
22	26.0	23.0	24.0	26.0	23.0	24.0	25.5	23.5	24.5	25.0	23.0	24.0
23	25.0	22.5	23.5	25.5	22.5	23.5	25.0	23.0	24.0	25.0	22.5	23.5
24	25.0	23.0	24.0	25.0	22.5	23.5	26.0	22.5	24.0	24.0	22.5	23.0
25	25.5	22.5	23.5	25.0	22.5	23.5	26.0	24.0	24.5	26.0	23.0	24.0
26	26.5	22.5	23.5	24.5	22.5	23.5	26.0	22.5	24.5	25.5	23.0	24.0
27	25.5	22.0	23.5	25.0	22.0	23.5	25.0	23.0	24.0	25.0	23.0	23.5
28	25.5	23.0	24.0	25.0	22.0	23.5	25.5	23.0	24.0	25.0	22.5	23.5
29	24.0	22.5	23.5	25.5	22.5	23.5	26.0	23.0	24.5	24.5	23.0	24.0
30	24.5	23.0	23.5	25.5	22.5	23.5	25.5	23.0	24.0	26.0	23.0	24.0
31	---	---	---	25.0	22.5	23.5	26.0	23.0	24.5	---	---	---
MONTH	26.5	21.5	23.5	26.0	21.5	23.5	27.0	22.5	24.0	27.0	22.0	24.0
YEAR	27.0	16.5	22.5									

16213000 WAIKELE STREAM AT WAIPAHU--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	11	50	1.5	180	151	109	13	40	1.4
2	9.2	60	1.5	143	123	57	17	40	1.8
3	4.3	40	.46	71	40	7.7	29	30	2.3
4	6.0	35	.57	75	35	7.1	59	220	35
5	6.7	40	.72	53	25	3.6	56	150	23
6	5.1	40	.55	46	25	3.1	20	50	2.7
7	3.3	40	.36	50	20	2.7	125	180	61
8	6.6	50	.89	47	20	2.5	58	40	9.4
9	40	80	8.6	27	20	1.5	28	40	3.0
10	9.4	40	1.0	15	20	.81	27	40	2.9
11	4.8	40	.52	14	20	.76	27	40	2.9
12	4.7	30	.38	16	20	.86	28	40	3.0
13	3.9	30	.32	31	30	2.5	37	50	5.0
14	4.7	40	.51	106	90	26	46	70	8.7
15	8.4	40	.91	99	130	35	30	50	4.1
16	18	40	1.9	24	40	2.6	20	40	2.2
17	9.1	40	.98	16	25	1.1	16	40	1.7
18	15	40	1.6	17	25	1.1	17	40	1.8
19	12	40	1.3	24	25	1.6	35	50	4.7
20	7.5	30	.61	25	25	1.7	40	50	5.4
21	11	20	.59	40	50	5.4	19	35	1.8
22	22	20	1.2	26	50	3.5	13	35	1.2
23	15	20	.81	23	40	2.5	13	35	1.2
24	6.7	30	.54	66	120	21	15	30	1.2
25	3.5	30	.28	25	35	2.4	15	30	1.2
26	4.1	30	.33	17	35	1.6	20	30	1.6
27	2.7	30	.22	19	35	1.8	20	30	1.6
28	5.2	30	.42	20	35	1.9	12	30	.97
29	15	40	1.6	15	35	1.4	11	30	.89
30	460	820	1450	14	35	1.3	11	30	.89
31	418	208	320	---	---	---	15	30	1.2
TOTAL	1152.9	---	1801.17	1344	---	311.03	892	---	195.75
		JANUARY			FEBRUARY			MARCH	
1	22	30	1.8	30	20	1.6	62	20	3.3
2	22	30	1.8	32	20	1.7	58	20	3.1
3	21	30	1.7	65	97	138	48	15	1.9
4	11	30	.89	276	568	584	46	15	1.9
5	11	30	.89	75	100	20	40	15	1.6
6	14	30	1.1	50	40	5.4	29	20	1.6
7	22	30	1.8	38	40	4.1	24	15	.97
8	23	30	1.9	57	60	9.2	30	30	2.4
9	35	90	8.5	98	280	74	46	40	5.0
10	71	140	27	1620	2590	31800	26	20	1.4
11	133	140	50	135	110	40	28	20	1.5
12	134	130	47	99	90	24	28	20	1.5
13	421	350	398	58	40	6.3	18	20	.97
14	242	130	85	53	30	4.3	19	20	1.0
15	113	50	15	93	60	15	19	20	1.0
16	102	50	14	182	110	54	18	20	.97
17	54	30	4.4	161	70	30	21	20	1.1
18	43	20	2.3	86	30	7.0	27	15	1.1
19	38	20	2.1	203	170	93	19	15	.77
20	38	20	2.1	383	608	881	16	15	.65
21	45	20	2.4	389	510	659	19	15	.77
22	98	80	21	119	80	26	16	20	.86
23	64	40	6.9	80	30	6.5	15	20	.81
24	40	25	2.7	126	80	27	16	15	.65
25	35	20	1.9	137	80	30	24	15	.97
26	31	20	1.7	183	305	255	20	15	.81
27	30	20	1.6	81	50	11	18	20	.97
28	29	20	1.6	69	25	4.7	17	20	.92
29	34	20	1.8	---	---	---	15	20	.81
30	30	20	1.6	---	---	---	15	20	.81
31	29	20	1.6	---	---	---	18	20	.97
TOTAL	2035	---	712.08	4978	---	34811.8	815	---	43.08

16213000 WAIKELE STREAM AT WAIPAHU--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	26	20	1.4	16	20	.86	43	119	17
2	22	20	1.2	18	20	.97	19	40	2.1
3	18	30	1.5	18	20	.97	16	40	1.7
4	22	30	1.8	13	20	.70	14	30	1.1
5	21	30	1.7	16	20	.86	14	30	1.1
6	20	30	1.6	25	20	1.4	13	25	.88
7	22	30	1.8	18	20	.97	13	25	.88
8	33	30	2.7	15	20	.81	12	25	.81
9	21	30	1.7	21	30	1.7	11	25	.74
10	21	30	1.7	24	30	1.9	15	25	1.0
11	23	30	1.9	21	30	1.7	15	25	1.0
12	20	30	1.6	15	20	.81	18	40	1.9
13	22	30	1.8	17	20	.92	20	40	2.2
14	30	20	1.6	14	20	.76	31	40	3.3
15	21	20	1.1	14	20	.76	17	25	1.1
16	18	40	1.9	17	20	.92	19	30	1.5
17	15	40	1.6	24	40	2.6	29	25	2.0
18	16	40	1.7	25	40	2.7	23	25	1.6
19	17	40	1.8	19	30	1.5	31	40	3.3
20	17	40	1.8	14	20	.76	25	35	2.4
21	17	40	1.8	15	20	.81	20	30	1.6
22	22	40	2.4	17	15	.69	43	50	6.8
23	18	30	1.5	16	15	.65	27	40	2.9
24	17	30	1.4	17	20	.92	31	30	2.5
25	17	20	.92	17	20	.92	18	25	1.2
26	18	20	.97	20	20	1.1	38	60	6.2
27	14	20	.76	22	25	1.5	27	40	2.9
28	14	20	.76	21	25	1.4	29	40	3.1
29	14	20	.76	24	30	1.9	24	30	1.9
30	13	20	.70	16	30	1.3	29	30	2.3
31	---	---	---	51	163	52	---	---	---
TOTAL	589	---	45.87	600	---	87.76	684	---	79.01
		JULY			AUGUST			SEPTEMBER	
1	34	25	2.3	10	20	.54	13	20	.70
2	30	20	1.6	8.9	20	.48	14	15	.57
3	27	20	1.5	8.5	20	.46	17	15	.69
4	31	20	1.7	14	30	1.1	15	15	.61
5	25	20	1.4	14	25	.95	13	20	.70
6	31	40	3.3	11	25	.74	14	20	.76
7	59	60	9.6	12	20	.65	14	20	.76
8	33	40	3.6	12	20	.65	15	20	.81
9	19	30	1.5	29	170	13	24	25	1.6
10	15	20	.81	33	150	13	22	30	1.8
11	12	20	.65	20	80	4.3	17	30	1.4
12	10	20	.54	21	40	2.3	12	30	.97
13	11	20	.59	14	30	1.1	8.6	20	.46
14	11	20	.59	14	20	.76	8.3	20	.45
15	9.3	20	.50	12	20	.65	13	20	.70
16	10	20	.54	33	50	4.5	17	20	.92
17	11	20	.59	30	40	3.2	9.8	20	.53
18	10	20	.54	18	30	1.5	6.8	20	.37
19	8.0	20	.43	16	30	1.3	7.5	25	.51
20	11	20	.59	13	25	.88	11	20	.59
21	14	20	.76	11	20	.59	9.6	20	.52
22	18	20	.97	11	20	.59	8.2	20	.44
23	13	20	.70	11	20	.59	9.2	20	.50
24	12	20	.65	12	20	.65	6.8	20	.37
25	12	20	.65	11	20	.59	5.7	20	.31
26	12	20	.65	15	20	.81	6.1	20	.33
27	11	20	.59	16	20	.86	7.1	20	.38
28	10	20	.54	13	20	.70	9.9	20	.53
29	14	20	.76	13	20	.70	14	80	3.0
30	13	20	.70	12	20	.65	15	30	1.2
31	11	20	.59	14	20	.76	---	---	---
TOTAL	547.3	---	40.43	482.4	---	59.55	363.6	---	23.48
YEAR	14483.2		38211.01						

16213000 WAIKELE STREAM AT WAIPAHU--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, MAY 1978 TO SEPTEMBER 1978

DATE	MAY 16,78	JUN 14,78	JUL 17,78	AUG 15,78	SEP 12,78
TIME	1030	1000	0945	0900	0830
TOTAL CELLS/ML	460	58	1000	2500	1500
DIVERSITY: DIVISION	1.1	0.0	1.6	1.1	0.8
.CLASS	1.1	0.0	1.6	1.1	0.8
..ORDER	1.5	0.0	1.6	1.2	0.8
...FAMILY	2.4	0.8	2.3	1.9	1.2
....GENUS	2.7	0.8	2.3	2.0	2.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	--	-	330	14	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	100	10	29	1	14	1
....CHODATELLA	--	-	--	-	14	1	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	29	1	--	-
....OOCYSTIS	38	8	--	-	--	-	460#	19	--	-
....SELENASTRUM	38	8	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	140	14	230	9	--	-
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	19	4	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	38	8	--	-	--	-	--	-	--	-
....STAURASTRUM	--	-	--	-	--	-	43	2	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	14	1
....COCCONETS	--	-	--	-	--	-	14	1	--	-
...EUNOTIACEAE										
....EUNOTIA	38	8	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	29	3	--	-	83	6
...GOMPHONEMATACEAE										
....GOMPHONEMA	76#	17	14#	25	230#	22	--	-	69	5
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	170#	38	43#	75	57	5	14	1	97	7
....STAURONEIS	19	4	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	29	3	--	-	28	2
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	1300#	52	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	450#	31
....OSCILLATORIA	--	-	--	-	--	-	--	-	720#	49
...SCYTONEMATACEAE										
....PLECTONEMA	--	-	--	-	450#	42	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	19	4	--	-	--	-	14	1	--	-

- DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

NOTE: DATA FOR OCTOBER 1977 TO APRIL 1978 PUBLISHED IN 1978 REPORT.

HAWAII, ISLAND OF OAHU

16213000 WAIKELE STREAM AT WAIPAHU--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	OCT 10,78	NOV 7,78	DEC 5,78	JAN 9,79	FEB 5,79	MAR 19,79
TIME	0815	0915	1030	0930	1030	0945
TOTAL CELLS/ML	930	160	120	870	490	740
DIVERSITY: DIVISION	1.0	0.0	0.0	1.3	0.9	1.0
.CLASS	1.0	0.0	0.0	1.3	0.9	1.0
..ORDER	1.1	0.8	0.0	1.9	0.9	1.0
...FAMILY	1.5	0.8	0.0	2.7	1.1	1.9
....GENUS	1.5	0.8	0.0	2.8	1.1	2.0

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	46	5	--	-	--	-	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	23	2	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....CRUCIGENIA	--	-	--	-	--	-	81	9	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	5	1	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	61	7	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	8	1	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	5	1	--	-	10	1
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	5	1	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	5	1	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	15	2
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	5	1
...GOMPHONEMATACEAE												
....GOMPHONEMA	46	5	--	-	--	-	160#	18	35	7	85	12
...NAVICULACEAE												
....NAVICULA	39	4	--	-	--	-	120	14	--	-	320#	44
....PINNULARIA	--	-	--	-	--	-	5	1	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	39	4	--	-	120#	100	130#	15	110#	21	45	6
...TABELLARIACEAE												
....TABELLARIA	15	2	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	23	2	120#	73	--	-	40	5	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....OSCILLATORIA	690#	74	--	-	--	-	250#	29	350#	71	250#	34
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	43#	27	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	5	1
....PHACUS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16213000 WAIKELE STREAM AT WAIPAHU--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	APR 23,79	MAY 21,79	JUN 18,79	JUL 17,79	AUG 20,79	SEP 17,79
TIME	0900	1015	0900	1130	0900	0930
TOTAL CELLS/ML	690	120	530	1500	0	1800
DIVERSITY: DIVISION	0.7	1.0	0.2	1.0	0.0	0.3
.CLASS	0.7	1.0	0.2	1.0	0.0	0.3
..ORDER	0.7	1.4	0.2	1.1	0.0	0.3
...FAMILY	0.8	1.8	0.2	1.4	0.0	0.3
....GENUS	0.8	1.8	0.2	1.4	0.0	0.6

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-	25	1
....TREUBARIA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	52#	44	--	-	28	2	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	13	2	14	1	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	13	11	--	-	28	2	--	-	10	1
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-	*	0
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	15	1
...GOMPHONEMATACEAE												
....GOMPHONEMA	86	13	--	-	--	-	130	9	--	-	--	-
...NAVICULACEAE												
....NAVICULA	--	-	26#	22	--	-	70	5	--	-	*	0
....PINNULARIA	--	-	--	-	--	-	14	1	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	29	4	26#	22	--	-	97	7	--	-	--	-
...TABELLARIACEAE												
....TABELLARIA	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....OSCILLATORIA	580#	83	--	-	510#	98	1100#	74	--	-	1700#	92
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-	80	4
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....PHACUS	--	-	--	-	--	-	--	-	--	-	*	0

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16216000 WAIAWA STREAM NEAR PEARL CITY

LOCATION.--Lat 21°23'57", long 157°58'51", Hydrologic Unit 20060000, on left bank 100 ft (30 m) upstream from lower bridge on Highway 90, 0.6 mi (1.0 km) northwest of Pearl City, and 2.0 mi (3.2 km) northeast of Waipahu.

DRAINAGE AREA.--26.4 mi² (68.4 km²).

PERIOD OF RECORD.--June 1952 to current year.

REVISED RECORDS.--WSP 1569: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1.81 ft (0.552 m) above mean sea level.

REMARKS.--Records good except those above 100 ft³/s (2.8 m³/s), which are poor. Low flow affected by effluent from sewage treatment plant and occasional small irrigation diversion and return flow above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--27 years, 32.1 ft³/s (0.909 m³/s), 23,260 acre-ft/yr (28.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,400 ft³/s (663 m³/s) Jan. 5, 1968, gage height, 20.56 ft (6.267 m), from rating curve extended above 1,100 ft³/s (31.2 m³/s) on basis of slope-area measurements at gage heights 17.1 ft (5.21 m) and 20.56 ft (6.267 m); minimum, 1.7 ft³/s (0.048 m³/s) Nov. 8, 9, 1973, Jan. 26, Sept. 25, 27, 1977, Mar. 25, Apr. 2-4, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s (65.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 30	1530	4,170	118	10.92	3.328	Feb. 10	0600	*11,000	312	*15.84	4.828
Oct. 31	2100	3,290	93.2	10.04	3.060	Feb. 26	0830	4,040	114	10.79	3.289
Jan. 13	0545	3,520	99.7	10.27	3.130						

Minimum discharge, 2.1 ft³/s (0.059 m³/s) Oct. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	210	3.5	4.5	6.3	28	4.7	4.0	9.9	8.6	5.0	3.9
2	3.1	118	3.4	4.2	7.0	20	4.4	4.4	7.1	6.0	4.7	5.3
3	3.6	55	3.3	4.1	11	16	4.3	4.3	6.2	5.1	6.1	5.4
4	3.3	35	82	4.2	313	13	4.2	5.5	6.2	4.6	6.4	7.2
5	6.5	16	39	4.2	68	10	7.1	9.1	6.0	6.0	5.2	6.5
6	4.5	11	43	4.3	36	8.5	7.4	9.0	5.4	9.3	5.7	8.9
7	3.8	8.1	130	4.3	45	8.5	6.5	5.7	5.2	49	6.7	6.6
8	3.4	6.6	45	5.4	50	11	5.1	5.5	5.6	15	5.0	4.8
9	8.8	5.5	18	9.9	45	15	4.4	6.1	5.0	6.8	4.6	49
10	5.2	5.2	17	36	1660	8.8	4.7	9.5	4.8	5.3	41	17
11	3.8	4.4	13	393	114	6.5	5.7	5.8	5.0	4.8	6.7	6.0
12	3.8	5.9	9.1	161	55	5.8	4.9	5.4	5.2	4.9	4.7	4.2
13	3.1	67	27	1020	26	6.5	5.3	5.1	5.4	5.2	4.7	3.8
14	3.7	262	29	291	20	6.5	6.5	5.6	5.4	4.9	4.5	3.6
15	3.4	81	16	125	74	4.8	8.0	5.3	5.2	5.3	4.8	4.2
16	3.3	17	13	90	150	4.4	8.4	5.0	6.0	5.1	112	3.9
17	4.3	9.2	8.7	41	140	4.3	8.8	4.7	10	5.4	25	3.9
18	15	7.1	11	24	68	4.3	6.1	4.6	9.7	4.8	7.6	3.7
19	9.6	5.0	24	16	151	4.6	5.4	4.2	23	5.2	4.5	3.4
20	4.2	16	33	15	179	5.6	5.0	4.2	16	5.3	4.0	3.5
21	3.7	37	16	19	207	6.1	4.8	4.9	11	5.1	4.0	3.3
22	3.6	16	11	52	62	5.4	4.7	4.8	29	5.3	4.1	3.3
23	3.6	8.9	9.4	30	38	5.7	4.7	4.2	13	5.3	4.2	3.3
24	4.2	41	8.1	16	132	5.7	4.7	4.0	9.4	5.2	4.0	3.4
25	3.1	7.6	6.7	12	131	5.1	4.9	4.1	7.6	5.1	3.9	3.2
26	2.7	6.6	5.7	10	481	5.2	4.8	4.2	34	5.0	3.8	3.4
27	3.0	5.6	4.9	8.2	71	5.6	4.7	5.0	13	4.9	4.0	3.4
28	3.3	4.3	4.7	7.9	46	5.4	4.5	8.8	38	4.8	3.6	3.4
29	3.4	3.8	4.4	8.8	---	5.3	4.2	14	23	4.7	3.6	3.2
30	1650	3.7	5.2	7.2	---	5.8	4.2	6.1	16	4.4	3.6	3.1
31	942	---	5.4	6.1	---	5.1	---	43	---	4.3	3.5	---
TOTAL	2722.3	1079.5	649.5	2434.3	4386.3	252.5	163.1	216.1	346.3	220.7	311.2	187.8
MEAN	87.8	36.0	21.0	78.5	157	8.15	5.44	6.97	11.5	7.12	10.0	6.26
MAX	1650	262	130	1020	1660	28	8.8	43	38	49	112	49
MIN	2.7	3.7	3.3	4.1	6.3	4.3	4.2	4.0	4.8	4.3	3.5	3.1
AC-FT	5400	2140	1290	4830	8700	501	324	429	687	438	617	373

CAL YR 1978 TOTAL 11268.1 MEAN 30.9 MAX 1650 MIN 2.1 AC-FT 22350
WTR YR 1979 TOTAL 12969.6 MEAN 35.5 MAX 1660 MIN 2.7 AC-FT 25730

16224500 KALAUAO STREAM AT MOANALUA ROAD, AT AIEA

LOCATION.--Lat 21°23'07", long 157°56'22", Hydrologic Unit 20060000, on left bank at downstream side of Moanalua Road bridge, 0.4 mi (0.6 km) northwest of Aiea Post Office, and 2.3 mi (3.7 km) southeast of Pearl City Post Office.

DRAINAGE AREA.--2.59 mi² (6.71 km²).

PERIOD OF RECORD.--July 1957 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 11.71 ft (3.569 m) above mean sea level. Nov. 15, 1965, to June 16, 1966, at datum 0.04 ft (0.012 m) higher. Prior to Nov. 15, 1965, and June 17, 1966, to Sept. 30, 1970, at datum 1.04 ft (0.317 m) higher.

REMARKS.--Records poor. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--22 years, 2.81 ft³/s (0.080 m³/s), 2,040 acre-ft/yr (2.52 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,580 ft³/s (73.1 m³/s) May 14, 1963, gage height, 6.63 ft (2.021 m), datum then in use, from rating curve extended above 77 ft³/s (2.18 m³/s) on basis of slope-area measurements at gage heights 6.29 ft (1.917 m) and 6.63 ft (2.021 m); no flow for many days in 1970-74, 1977, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft³/s (8.50 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 30	a1100	376	10.6	3.68	1.122	Jan. 13	0445	452	12.8	3.85	1.173
Jan. 11	1330	416	11.8	3.77	1.149	Feb. 10	0530	*585	16.6	*4.13	1.259

No flow for many days in October.

a About.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	42	.16	.14	.12	2.2	.12	.11	.12	.35	.12	.06
2	.00	17	.10	.12	.11	1.4	.18	.11	.13	.15	.08	.06
3	.00	6.6	.08	.07	4.1	.87	.30	.11	.10	.13	.08	.06
4	.00	2.2	32	.07	47	.54	.37	.11	.11	.13	.08	.08
5	.00	1.4	5.9	.08	11	.33	.12	.12	.11	.12	.09	.06
6	.00	1.0	18	.08	4.9	.26	.13	.12	.12	.16	.09	.06
7	.00	.66	50	.08	4.7	.36	.20	.11	.11	.15	.09	.09
8	.00	.45	9.0	.08	5.0	3.1	.14	.12	.10	.13	1.2	.17
9	.00	.30	4.9	.54	5.0	2.2	.12	.11	.10	.13	.10	.24
10	.01	.08	3.2	1.6	82	.80	.13	.40	.10	.13	.08	.33
11	.00	3.0	1.6	109	21	.36	.11	.13	.11	.13	.08	.14
12	.00	2.0	1.0	37	5.7	.27	.11	.13	.14	.12	.07	.06
13	.00	24	6.0	145	2.4	.23	.12	.18	.13	.12	.07	.06
14	.00	60	3.6	43	1.6	.20	.16	.36	.12	.12	.08	.12
15	.00	22	3.5	23	9.1	.18	.14	.51	.11	.11	.07	.24
16	.00	5.0	2.1	8.9	15	.17	.25	.62	.12	.11	2.7	.24
17	.01	2.0	1.4	3.9	11	.16	.15	.74	.11	.10	.50	.07
18	.00	1.0	.89	2.3	7.0	.15	.16	.56	.13	.11	.07	.07
19	.00	.80	2.0	1.5	20	.17	.22	.12	.12	.10	.06	.07
20	.00	5.3	1.0	2.2	40	.16	.15	.11	.11	.09	.08	.08
21	.00	5.1	.45	2.0	71	.15	.13	.12	.12	.09	.07	.07
22	.00	2.1	.29	6.6	12	.14	.14	.12	.12	.11	.06	.07
23	.00	1.3	.20	3.9	4.7	.13	.11	.13	.12	.10	.06	.06
24	.00	.88	.14	1.8	16	.13	.13	.14	.13	.27	.06	.14
25	.00	.71	.10	.93	15	.13	.12	.13	.14	.34	.06	.06
26	.00	.65	.10	.47	33	.23	.12	.14	.23	.10	.07	.08
27	.00	.55	.08	.30	6.1	.46	.13	.15	.30	.10	.06	.07
28	.00	.47	.13	.40	3.5	.15	.13	.62	.12	.10	.06	.07
29	.14	.39	.25	.86	---	.12	.13	.17	.40	.10	.06	.07
30	130	.25	.25	.90	---	.12	.13	.62	1.1	.09	.06	.07
31	110	---	.20	.70	---	.12	---	.50	---	.09	.07	---
TOTAL	240.16	209.19	128.62	357.52	458.03	15.99	4.65	7.72	5.08	4.18	6.48	3.12
MEAN	7.75	6.97	4.15	12.8	16.4	.52	.16	.25	.17	.13	.21	.10
MAX	130	60	50	145	82	3.1	.37	.74	1.1	.35	2.7	.33
MIN	.00	.08	.08	.07	.11	.12	.11	.11	.10	.09	.06	.06
AC-FT	476	415	255	788	909	32	9.2	15	10	8.3	13	6.2

CAL YR 1978 TOTAL 1009.93 MEAN 2.77 MAX 130 MIN .00 AC-FT 2000
WTR YR 1979 TOTAL 1480.74 MEAN 4.06 MAX 145 MIN .00 AC-FT 2940

NOTE.--No gage-height record Oct. 26 to Dec. 26.

16226000 NORTH HALAWA STREAM NEAR AIEA

LOCATION.--Lat 21°23'46", long 157°53'37", Hydrologic Unit 20060000, on left bank 2.7 mi (4.3 km) upstream from confluence with South Halawa Stream and 2.7 mi (4.3 km) northeast of Aiea Post Office.

DRAINAGE AREA.--3.45 mi² (8.94 km²).

PERIOD OF RECORD.--August 1929 to June 1933, July 1953 to current year. Monthly discharge only May, June 1931, published in WSP 1319.

REVISED RECORDS.--WSP 1319: Drainage area. WSP 1719: 1954-55(P), 1956, 1957(P), 1958-59.

GAGE.--Water-stage recorder. Altitude of gage is 320 ft (98 m), from topographic map.

REMARKS.--Records fair. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--29 years (water years 1930-32, 1954-79), 4.86 ft³/s (0.138 m³/s), 3,520 acre-ft/yr (4.34 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,650 ft³/s (188 m³/s) Feb. 28, 1932, gage height, 13.36 ft (4.103 m), from rating curve extended above 420 ft³/s (11.9 m³/s); maximum gage height, 13.46 ft (4.103 m) May 14, 1963; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 453 ft³/s (12.8 m³/s) Jan. 11, gage height, 8.37 ft (2.551 m) from rating curve extended above 63 ft³/s (1.78 m³/s) on basis of slope-area measurements at gage heights 10.3 ft (3.14 m), 13.04 ft (3.975 m), and 13.46 ft (4.103 m), no peak above base of 570 ft³/s (16.1 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	43	.16	.09	.63	5.4	.12	.00	.98	.74	.00	.00
2	.03	31	.12	.07	.58	4.0	.10	.00	.21	.35	.00	.00
3	.02	21	.08	.06	9.9	3.1	.08	.00	.14	.23	.00	.00
4	.02	8.3	18	.04	49	2.6	.12	.00	.08	.11	.00	.00
5	.02	3.3	5.9	.03	17	2.2	2.7	.00	.06	.07	.00	.00
6	.02	2.0	33	.03	7.0	1.9	1.1	.00	.03	.05	.00	.00
7	.02	1.3	51	.02	7.4	1.7	.48	.00	.02	.54	.00	.00
8	.02	1.0	12	.02	6.4	4.7	.23	.00	.02	.39	.00	.00
9	.27	.68	5.9	.05	5.6	2.9	.13	.00	.02	.21	.00	.00
10	.18	.48	5.1	5.7	70	1.8	.10	.00	.02	.12	.00	.00
11	.13	4.9	3.8	123	41	1.5	.10	.00	.02	.07	.00	.00
12	.12	3.4	2.2	61	12	1.3	.09	.00	.02	.04	.00	.00
13	.09	38	6.6	134	5.5	1.2	.07	.00	.02	.03	.00	.00
14	.06	58	4.6	60	4.6	1.1	.07	.00	.01	.03	.00	.00
15	1.0	25	3.4	40	23	1.0	.04	.00	.00	.03	1.5	.00
16	.53	6.3	2.3	17	40	.94	.03	.00	.01	.02	6.8	.00
17	.20	3.0	1.6	7.4	26	.80	.02	.00	.01	.02	.54	.00
18	9.2	1.9	1.6	4.3	19	.74	.02	.00	.02	.02	.23	.00
19	1.2	1.4	4.3	3.1	38	.74	.02	.00	.01	.02	.13	.00
20	.43	5.7	4.0	3.0	47	.63	.02	.00	.01	.01	.07	.00
21	.18	5.6	2.3	3.6	94	.53	.02	.00	.00	.00	.04	.00
22	.41	2.5	1.6	4.9	26	.43	.02	.00	2.2	.00	.02	.00
23	.80	1.5	1.2	3.6	10	.35	.02	.00	.87	.00	.02	.00
24	.23	1.0	1.2	2.4	34	.32	.02	.00	.35	.00	.02	.00
25	.12	.74	.87	2.0	33	.30	.02	.00	.30	.00	.01	.00
26	.07	.63	.63	1.3	57	.27	.01	.00	6.1	.00	.01	.00
27	.04	.58	.39	1.2	15	1.3	.01	.00	1.4	.00	.01	.00
28	.03	.48	.25	1.0	8.4	.74	.01	.00	1.4	.00	.00	.00
29	.02	.48	.20	.87	---	.35	.00	.00	2.2	.00	.00	.00
30	122	.30	.15	.68	---	.23	.00	.00	1.9	.00	.00	.00
31	97	---	.12	.74	---	.15	---	.14	---	.00	.00	---
TOTAL	234.51	273.47	170.57	481.20	707.01	45.22	5.77	.14	18.43	3.10	9.80	.00
MEAN	7.56	9.12	5.50	15.5	25.3	1.46	.19	.005	.61	.10	.32	.000
MAX	122	58	51	134	94	5.4	2.7	.14	6.1	.74	6.8	.00
MIN	.02	.30	.08	.02	.58	.15	.00	.00	.00	.00	.00	.00
AC-FT	465	542	338	954	1400	90	11	.3	37	6.1	19	.00

CAL YR 1978 TOTAL 1464.35 MEAN 4.01 MAX 122 MIN .00 AC-FT 2900
WTR YR 1979 TOTAL 1949.22 MEAN 5.34 MAX 134 MIN .00 AC-FT 3870

16229000 KALIHI STREAM NEAR HONOLULU

LOCATION.--Lat 21°22'00", long 157°50'49", Hydrologic Unit 20060000, on right bank 1.9 mi (3.1 km) upstream from Kamanaiki Stream and 4.1 mi (6.6 km) north of Honolulu Post Office.

DRAINAGE AREA.--2.61 mi² (6.76 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1913 to April 1914, July 1914 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1569: Drainage area. WSP 1719: 1921-22(M), 1923-24, 1925-26(M), 1927-28, 1929-32(M), 1935, 1937, 1938-39(M), 1943(M), 1948-52(P), 1955-56, 1957-58(M), 1959.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 464.40 ft (141.549 m) above mean sea level. Prior to Oct. 12, 1923, at datum 2.00 ft (0.610 m) lower.

REMARKS.--Records fair. No diversion above station.

AVERAGE DISCHARGE.--65 years (water years 1915-79), 6.71 ft³/s (0.190 m³/s), 4,860 acre-ft/yr (5.99 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 12,400 ft³/s (351 m³/s) Nov. 18, 1930, gage height, 13.81 ft (4.209 m), from rating curve extended above 280 ft³/s (7.93 m³/s) on basis of indirect measurements at gage heights 8.9 ft (2.71 m), 10.96 ft (3.341 m), and 11.27 ft (3.435 m); minimum, 0.09 ft³/s (0.003 m³/s) Oct. 22, 1933, July 29, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 714 ft³/s (20.2 m³/s) Jan. 13, gage height, 7.36 ft (2.243 m), no other peak above base of 700 ft³/s (19.8 m³/s); minimum, 0.43 ft³/s (0.012 m³/s) several days in August and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	25	2.8	2.0	3.4	11	2.0	2.4	4.2	1.9	1.0	.43
2	1.8	28	2.8	2.0	3.6	9.1	2.0	1.5	2.2	1.6	1.8	.50
3	2.2	12	2.6	1.9	26	8.0	2.2	1.8	1.5	1.6	1.2	.50
4	3.4	8.0	15	1.9	19	7.4	2.4	1.4	1.3	1.8	.55	1.5
5	2.3	6.5	4.4	1.8	8.7	7.1	4.4	1.3	1.2	2.2	.80	.73
6	1.8	5.6	43	1.8	5.6	6.8	2.4	1.5	1.2	2.0	1.2	.91
7	1.6	5.4	45	1.6	9.1	6.5	2.2	1.3	1.1	5.3	.50	1.6
8	3.8	4.6	8.7	1.6	8.8	6.5	2.4	1.5	1.1	1.8	.80	1.3
9	2.2	4.0	8.9	3.7	7.7	5.6	2.0	1.4	1.0	1.4	.70	1.1
10	1.8	4.6	8.4	5.5	31	4.9	2.0	1.5	.91	1.3	.80	1.0
11	1.8	9.7	6.2	98	38	4.6	1.9	1.4	1.1	1.1	.85	.73
12	1.6	5.6	5.1	32	12	4.4	2.2	1.2	1.3	1.1	.80	.65
13	1.6	58	5.6	122	8.0	4.2	1.8	1.2	1.9	1.1	.70	.65
14	1.5	62	5.1	32	9.5	4.0	1.6	1.1	1.2	1.0	.80	.65
15	2.2	20	4.4	20	24	3.8	1.6	1.1	1.1	1.1	.70	.57
16	1.6	10	4.2	12	39	3.6	1.8	1.6	3.1	1.0	2.0	.50
17	1.6	7.7	3.8	8.7	24	3.6	1.8	1.4	1.9	.91	1.2	.50
18	12	6.8	4.4	7.4	22	3.4	2.8	1.2	2.6	1.1	.90	.50
19	2.4	6.2	4.6	7.4	34	3.6	1.6	1.1	4.3	.91	.75	.50
20	1.9	8.0	4.0	7.7	44	3.8	1.6	1.0	2.6	.82	.70	.57
21	2.0	7.3	3.4	6.5	54	3.0	1.5	.91	2.2	.73	.65	.50
22	2.3	5.1	3.2	24	17	2.8	1.5	.91	10	1.2	.60	.73
23	2.0	4.9	3.6	6.5	13	2.8	1.5	.82	3.2	1.0	.60	.57
24	1.5	4.4	3.0	5.4	77	2.6	1.5	.73	2.2	.91	1.0	1.4
25	1.3	4.2	2.8	5.1	34	2.4	1.8	.82	2.8	.91	.80	1.0
26	1.3	4.8	2.6	4.6	40	2.3	1.4	1.1	4.0	.82	.70	.73
27	1.3	3.5	2.4	4.6	20	4.2	1.3	1.9	2.2	1.1	.65	.65
28	1.3	3.4	2.3	4.9	14	2.4	1.2	6.0	2.2	1.3	.57	.82
29	1.6	3.2	2.3	4.2	---	2.3	1.2	2.0	2.2	1.1	.57	.57
30	115	3.0	2.3	3.8	---	2.2	1.6	1.2	2.6	.82	.50	.57
31	65	---	2.2	3.6	---	2.0	---	20	---	.82	.50	---
TOTAL	245.6	341.5	219.1	444.2	646.4	140.9	57.2	64.29	70.51	41.75	26.65	22.93
MEAN	7.92	11.4	7.07	14.3	23.1	4.55	1.91	2.07	2.35	1.35	.86	.76
MAX	115	62	45	122	77	11	4.4	20	10	5.3	2.0	1.6
MIN	1.3	3.0	2.2	1.6	3.4	2.0	1.2	.73	.91	.73	.50	.43
AC-FT	487	677	435	881	1280	279	113	128	140	83	53	45

CAL YR 1978 TOTAL 1881.10 MEAN 5.15 MAX 115 MIN .16 AC-FT 3730
WTR YR 1979 TOTAL 2321.07 MEAN 6.36 MAX 122 MIN .43 AC-FT 4600

16229000 KALIHI STREAM NEAR HONOLULU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972, 1974-79.

REMARKS.--Miscellaneous chemical analyses published for this station for 1969, 1973 water years.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT						MAR					
25...	1210	1.2	160	7.4	21.0	26...	1030	2.2	160	6.9	18.5
NOV						APR					
27...	1050	3.7	150	7.4	21.0	24...	1035	1.4	140	6.8	20.0
DEC						MAY					
26...	1050	2.5	150	7.1	19.5	24...	1000	.64	170	7.4	21.0
26...	1055	2.5	150	7.1	19.5	24...	1140	.68	170	7.4	21.5
JAN						JUN					
26...	1100	5.0	150	7.0	19.5	25...	1110	5.1	170	7.4	20.0
FEB						AUG					
23...	1130	13	160	7.3	19.0	27...	1140	.70	150	7.4	21.5

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)
DEC												
26...	1050	2.5	32	6	5.2	4.7	13	46	1.0	--	.8	26
JAN												
26...	1100	5.0	33	10	5.4	4.7	13	46	1.0	--	.7	23
MAY												
24...	1000	.64	44	14	7.5	6.1	14	40	.9	15	.8	30
AUG												
27...	1140	.70	47	18	9.1	5.8	13	54	.8	14	1.0	29

DATE	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
DEC											
26...	5.9	23	.0	12	81	.11	.55	.07	.01	190	10
JAN											
26...	3.9	24	.0	12	87	.12	1.17	1.1	.02	120	20
MAY											
24...	8.5	23	.1	12	91	.12	.16	.04	.02	390	10
AUG											
27...	8.5	22	.1	13	91	.12	.17	.07	.01	300	0

16229000 KALIHI STREAM NEAR HONOLULU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
OCT				
18...	0800	42	783	89
30...	0900	9.1	126	3.1
30...	0930	32	286	25
30...	1000	73	599	118
30...	1015	85	690	158
30...	1030	85	500	115
30...	1100	117	347	110
30...	1115	115	405	126
30...	1130	109	301	89
30...	1200	155	308	129
30...	1215	218	400	235
30...	1230	278	425	319
30...	1245	303	514	420
30...	1300	316	753	642
30...	1315	278	736	552
30...	1330	270	550	401
30...	1400	294	332	264
OCT				
30...	1430	278	259	194
30...	1500	286	269	208
30...	1530	200	212	114
30...	1600	180	172	84
NOV				
01...	0930	24	11	.71
01...	1000	24	9	.58
02...	1200	20	12	.65
02...	1400	19	11	.56
FEB				
21...	1150	321	168	146
21...	1215	218	946	557
21...	1245	111	830	249
21...	1315	73	607	120
21...	1340	60	386	63

NOTE.--Sediment samples collected by U.S. Forest Service.

16229300 KALIHI STREAM AT KALIHI
(National stream-quality accounting network station)

LOCATION.--Lat 21°20'29", long 157°52'36", Hydrologic Unit 20060000, on right bank at Kalihi, 0.4 mi (0.6 km) northwest of Bishop Museum, and 2.4 mi (3.9 km) northwest of Honolulu Post Office.

DRAINAGE AREA.--5.18 mi^2 (13.42 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Water year 1962 (annual maximum), July 1962 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 70 ft (21 m), from topographic map. Aug. 28, 1961, to June 30, 1962, crest-stage gage at site 600 ft (183 m) downstream at different datum.

REMARKS.--Records fair. No diversion above station. Recording rain gage located at station.

AVERAGE DISCHARGE.--17 years, 10.8 ft^3/s (0.306 m^3/s), 7,820 acre-ft/yr (9.65 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,110 ft^3/s (201 m^3/s) Apr. 19, 1974, gage height, 9.98 ft (3.042 m), from rating curve extended above 180 ft^3/s (5.10 m^3/s) on basis of slope-area measurement at gage height 9.98 ft (3.042 m); minimum, 0.16 ft^3/s (0.005 m^3/s) June 24, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 14, 1960, reached a stage of 8.0 ft (2.44 m) from floodmarks, present site and datum, discharge, 6,350 ft^3/s (180 m^3/s), from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 905 ft^3/s (25.6 m^3/s) Jan. 13, gage height, 3.87 ft (1.180 m), from rating curve extended as explained above, no peak above base of 1,600 ft^3/s (45.3 m^3/s); minimum, 0.63 ft^3/s (0.018 m^3/s) Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	57	3.5	2.6	4.4	16	2.8	3.9	5.0	2.9	2.1	.98
2	2.4	53	3.5	2.7	4.1	14	3.0	2.6	2.8	2.7	3.5	1.4
3	2.7	20	3.2	2.6	61	11	3.9	3.0	2.2	3.3	2.6	1.4
4	3.7	12	28	2.6	66	9.6	5.2	2.9	1.8	3.1	2.0	4.9
5	2.8	8.2	7.9	2.4	19	8.9	6.3	2.7	1.7	3.3	1.4	1.7
6	2.1	6.6	55	2.2	10	7.7	4.4	3.4	1.5	3.4	2.5	2.6
7	2.2	5.8	107	2.2	12	7.3	5.4	2.7	1.5	11	1.5	4.3
8	4.4	5.3	18	2.2	12	8.2	4.9	2.8	1.5	3.3	1.4	2.0
9	3.2	4.7	13	6.4	12	6.8	3.9	2.6	2.0	2.6	1.4	1.5
10	2.1	5.2	11	9.7	49	6.0	2.7	5.9	2.2	2.3	1.4	1.5
11	2.4	9.5	8.5	133	47	5.6	2.9	2.4	2.6	2.4	1.6	1.1
12	2.3	6.2	6.0	58	17	5.1	3.4	1.9	3.2	2.2	1.7	1.0
13	2.2	64	11	298	11	4.8	2.5	1.7	6.5	2.0	1.4	.80
14	2.2	72	7.5	73	15	4.7	2.4	1.8	2.6	2.0	1.5	.90
15	2.6	26	5.9	36	33	4.6	2.2	1.8	2.4	1.9	1.4	.90
16	2.2	12	5.4	20	49	4.4	2.8	2.9	6.7	2.3	4.2	.80
17	2.2	8.8	4.5	13	32	4.2	3.2	2.1	3.5	1.9	2.4	.71
18	17	7.2	6.6	11	25	4.5	3.6	2.0	4.5	1.7	1.6	.73
19	3.1	6.7	8.8	10	54	5.1	2.3	1.7	10	1.6	1.4	.82
20	2.4	12	6.3	14	100	5.3	2.3	1.6	4.6	1.4	1.2	1.1
21	2.3	8.9	5.0	10	126	3.8	2.2	1.4	3.2	1.4	1.1	.90
22	2.6	6.4	4.5	77	30	3.5	2.1	1.4	12	2.1	1.1	1.6
23	2.4	5.4	5.7	14	18	3.4	2.0	1.4	5.1	1.9	1.1	.85
24	1.9	4.9	5.0	9.1	131	3.4	2.0	1.4	3.6	1.7	1.6	5.3
25	1.7	4.6	4.7	7.4	57	3.4	2.6	1.4	6.7	1.9	1.8	2.1
26	1.7	5.3	4.4	6.1	54	3.0	1.9	2.3	5.4	1.6	1.8	2.2
27	1.7	4.5	4.1	6.1	39	8.1	2.0	3.6	3.5	1.9	2.4	1.5
28	1.7	4.6	3.5	6.9	22	3.4	1.9	10	3.6	2.5	1.4	1.5
29	3.3	4.2	3.2	5.9	---	3.3	2.0	3.5	4.3	1.8	1.2	.96
30	226	3.6	2.8	4.9	---	3.5	2.5	2.0	3.9	1.3	1.2	.82
31	150	---	2.6	6.1	---	3.4	---	35	---	1.4	1.0	---
TOTAL	461.8	454.6	366.1	855.1	1109.5	186.0	91.3	115.8	125.1	76.8	53.9	48.87
MEAN	14.9	15.2	11.8	27.6	39.6	6.00	3.04	3.74	4.17	2.48	1.74	1.63
MAX	226	72	107	298	131	16	6.3	35	12	11	4.2	5.3
MIN	1.7	3.6	2.6	2.2	4.1	3.0	1.9	1.4	1.5	1.3	1.0	.71
AC-FT	916	902	726	1700	2200	369	181	230	248	152	107	97

CAL YR 1978 TOTAL 2710.19 MEAN 7.43 MAX 226 MIN .49 AC-FT 5380
WTR YR 1979 TOTAL 3944.87 MEAN 10.8 MAX 298 MIN .71 AC-FT 7820

16229300 KALIHI STREAM AT KALIHI--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970-74, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT											
10...	1015	2.2	220	7.3	22.5	1.4	7.8	--	3700	--	57
30...	1310	472	140	7.2	22.5	32	--	--	--	--	39
NOV											
07...	1230	6.1	225	7.9	22.0	1.4	8.8	--	3000	4600	57
DEC											
05...	1230	6.9	220	7.3	21.5	6.9	8.8	--	12000	12000	55
JAN											
09...	1230	2.8	240	7.7	22.0	2.2	8.4	--	16000	34000	61
FEB											
05...	1300	19	250	7.6	20.0	23	8.9	--	13000	39000	62
MAR											
19...	1245	4.7	235	8.4	23.5	2.5	9.1	--	7000	6700	60
APR											
23...	1030	2.0	270	7.7	21.5	1.0	9.0	--	8400	13000	72
MAY											
21...	1230	1.5	280	8.4	24.5	14	9.8	--	4100	1800	76
JUN											
18...	1145	8.9	260	8.1	23.5	16	8.5	--	--	--	72
JUL											
17...	1000	3.2	285	7.5	23.5	1.3	7.6	--	3800	6100	73
AUG											
20...	1030	1.0	280	7.7	25.5	.60	8.7	--	2600	1700	75
SEP											
17...	1100	.60	300	8.5	24.5	1.0	7.7	--	2000	10000	85

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
OCT											
10...	5	11	7.1	18	40	1.0	--	1.2	52	8.5	23
30...	13	9.7	3.7	11	36	.8	--	3.1	26	13	13
NOV											
07...	16	11	7.2	19	41	1.1	--	1.0	41	12	30
DEC											
05...	5	11	6.8	18	41	1.1	--	1.6	50	10	26
27...	--	--	--	--	--	--	--	--	--	--	--
JAN											
09...	12	11	8.2	23	44	1.3	--	1.4	49	7.2	36
FEB											
05...	11	12	7.7	20	41	1.1	--	1.1	51	13	29
MAR											
19...	12	11	7.8	21	43	1.2	--	1.2	48	11	31
APR											
23...	15	13	9.7	28	45	1.4	--	1.2	57	11	40
MAY											
21...	9	14	10	28	44	1.4	30	1.6	67	14	38
JUN											
18...	--	16	7.8	21	38	1.1	23	1.9	62	17	24
JUL											
17...	7	13	9.9	27	44	1.4	28	1.3	66	12	35
AUG											
20...	3	14	9.7	28	44	1.4	29	1.4	72	16	38
SEP											
17...	5	18	9.8	30	43	1.4	32	1.7	80	14	38

16229300 KALIHI STREAM AT KALIHI--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
OCT											
10...	.0	15	118	115	.16	.70	.08	--	.00	--	.34
30...	.1	7.5	85	77	.12	108	1.7	--	.05	--	3.6
NOV											
07...	.1	16	133	121	.18	2.19	.29	--	.02	--	.10
DEC											
05...	.0	16	128	119	.17	2.38	.35	--	.02	--	.41
27...	--	--	--	--	--	--	--	--	--	--	--
JAN											
09...	.0	17	140	133	.19	1.06	.18	--	.01	--	.20
FEB											
05...	.1	14	130	128	.18	6.67	.49	--	.03	--	.40
MAR											
19...	.1	13	121	125	.16	1.54	.16	--	.03	--	.18
APR											
23...	.1	14	150	151	.20	.81	.15	--	.04	.05	1.2
MAY											
21...	.2	20	154	166	.21	.67	.13	--	.01	.01	.16
JUN											
18...	.1	--	137	--	.19	3.29	--	--	--	--	--
JUL											
17...	.1	20	149	158	.20	1.29	3.2	--	.01	.01	.79
AUG											
20...	.1	22	174	173	.24	.47	.10	--	.01	.01	.41
SEP											
17...	.1	21	185	182	.25	.30	.26	.31	.04	.05	.41

DATE	NITROGEN, DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS TOTAL (MG/L AS PO4)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHATE, TOTAL (MG/L AS PO4)	PHOSPHORUS, DISSOLVED (MG/L AS P)
OCT										
10...	--	.34	.12	.22	.42	1.9	--	.05	--	.04
30...	--	3.6	2.9	.70	5.3	23	--	.57	--	.12
NOV										
07...	--	.12	.00	--	.41	1.8	--	.04	--	.04
DEC										
05...	--	.43	.07	.36	.78	3.5	--	.08	--	.04
27...	--	--	--	--	--	--	--	--	--	--
JAN										
09...	--	.21	.05	.16	.39	1.7	--	.07	--	.07
FEB										
05...	--	.43	.25	.18	.92	4.1	--	.09	--	.04
MAR										
19...	--	.21	.03	.18	.37	1.6	--	.05	--	.04
APR										
23...	--	1.2	.35	.85	1.4	6.0	.12	.04	.12	.04
MAY										
21...	--	.17	.01	.16	.30	1.3	.25	.08	.25	.07
JUN										
18...	--	--	--	.56	--	--	.55	.18	--	.10
JUL										
17...	--	.80	.00	.80	4.0	18	4.6	1.5	--	1.4
AUG										
20...	--	.42	.29	.13	.52	2.3	.18	.06	--	.05
SEP										
17...	.65	.45	.11	.34	.71	3.1	.18	.06	--	.06

16229300 KALIHI STREAM AT KALIHI--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT 30...	1310	4	--	--	--	--	--	--	--	--
NOV 07...	1230	1	1	20	0	20	25	17	8	0
FEB 05...	1300	1	0	10	0	10	1	0	1	20
MAY 21...	1230	0	0	0	0	0	9	6	3	0
AUG 20...	1030	1	1	200	200	10	<1	0	<1	0

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)
OCT 30...	--	--	--	--	--	--	--	--	--	--
NOV 07...	0	0	1	0	1	6	0	6	340	280
FEB 05...	20	0	1	0	<3	17	0	17	1400	1300
MAY 21...	0	0	0	0	0	3	0	3	370	100
AUG 20...	0	0	2	0	<3	4	0	4	260	120

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT 30...	--	--	--	--	--	--	--	.1	--	--
NOV 07...	120	94	91	3	20	10	8	.0	.0	.0
FEB 05...	60	24	23	1	10	3	7	.0	.0	.0
MAY 21...	270	110	87	23	20	10	10	.0	.0	.0
AUG 20...	140	8	4	4	10	0	10	.0	.0	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT 30...	1	--	--	--	--	--	--	--	--
NOV 07...	1	0	1	0	0	0	20	10	8
FEB 05...	1	0	1	1	1	0	20	20	<3
MAY 21...	0	0	0	0	0	0	20	10	10
AUG 20...	0	0	0	4	0	4	50	50	<3

< Actual value is known to be less than the value shown.

16229300 KALIHI STREAM AT KALIHI--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
OCT				
10...	1015	3.2	--	--
NOV				
07...	1230	--	1.8	.3
DEC				
05...	1230	4.7	--	--
JAN				
09...	1230	2.5	--	--
FEB				
05...	1300	--	5.6	.1
MAR				
19...	1245	3.2	--	--
APR				
23...	1030	2.4	--	--
MAY				
21...	1230	--	4.4	.3
JUN				
18...	1145	7.3	--	--
JUL				
17...	1000	3.0	--	--
AUG				
20...	1030	--	--	.1

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
NOV											
07...	1230	ND	ND	ND	ND	ND	ND	ND	.02	ND	ND
MAR											
19...	1245	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY											
21...	1230	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)
NOV										
07...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAR										
19...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MAY										
21...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	LENGTH OF EXPO-SURE (DAYS)
OCT								
10...	1015	38	--	--	--	--	--	--
NOV								
07...	1230	290	2.28	1.65	5.27	1.48	--	--
DEC								
05...	1230	720	--	--	--	--	--	--
JAN								
09...	1230	110	--	--	--	--	--	--
FEB								
05...	1300	360	.550	.470	.220	.000	--	27
MAR								
19...	1245	4600	--	--	--	--	--	--
APR								
23...	1030	220	--	--	--	--	--	--
MAY								
21...	1230	13	.390	.080	25.1	8.86	12.4	25
JUN								
18...	1145	120	--	--	--	--	--	--
JUL								
17...	1000	1300	--	--	--	--	--	--
AUG								
20...	1030	100	.310	.160	12.6	2.73	11.9	14
SEP								
17...	1100	1100	--	--	--	--	--	--

ND Material specifically analyzed for but not detected.

16229300 KALIHI STREAM AT KALIHI--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM
OCT						
10...	1015	2.2	5	.03	100	--
30...	1310	472	427	544	94	100
NOV						
07...	1230	6.1	3	.05	100	--
DEC						
05...	1230	6.9	9	.17	100	--
JAN						
09...	1230	2.8	2	.02	100	--
FEB						
05...	1300	19	21	1.1	100	--
MAR						
19...	1245	4.7	4	.05	100	--
APR						
23...	1030	2.0	3	.02	100	--
MAY						
21...	1230	1.5	2	.01	100	--
JUN						
18...	1145	8.9	20	.48	100	--
JUL						
17...	1000	3.2	2	.02	100	--
AUG						
20...	1030	1.0	1	.00	100	--
SEP						
17...	1100	0.6	2	--	100	--

16229300 KALIHI STREAM AT KALIHI--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, APRIL 1978 TO SEPTEMBER 1978

DATE	APR 17,78	MAY 16,78	JUN 21,78	JUL 17,78	AUG 15,78	SEP 12,78
TIME	1015	1330	1100	1300	1230	1045
TOTAL CELLS/ML	18	170	2200	1600	400	55
DIVERSITY: DIVISION	0.0	0.0	1.0	1.3	0.9	0.0
.CLASS	0.0	0.0	1.0	1.3	0.9	0.0
..ORDER	0.0	0.0	1.2	1.3	0.9	0.8
...FAMILY	0.0	1.7	1.6	1.5	1.3	0.8
....GENUS	0.0	1.7	1.6	1.5	1.5	0.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...COELASTRACEAE												
....COELASTRUM	--	-	--	-	--	-	890#	56	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	46	2	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	93	4	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	23	1	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....CLOSTERIUM	--	-	--	-	23	1	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	23	1	--	-	--	-	41#	75
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	14	3	--	-
....COCCONEIS	--	-	--	-	23	1	--	-	14	3	--	-
....RHOICOSPHENIA	--	-	86#	50	160	7	22	1	41	10	--	-
...FRAGILARIACEAE												
....ASTERIONELLA	--	-	--	-	--	-	--	-	41	10	--	-
....SYNEDRA	--	-	43#	25	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	18#	100	14	8	46	2	67	4	--	-	--	-
...NAVICULACEAE												
....NAVICULA	--	-	29#	17	69	3	22	1	14	3	--	-
....PINNULARIA	--	-	--	-	23	1	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	--	-	23	1	44	3	--	-	14#	25
...SURIRELLACEAE												
....SURIRELLA	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..HORMOGONALES												
...OSCILLATORIACEAE												
....OSCILLATORIA	--	-	--	-	1700#	74	530#	34	280#	69	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	23	1	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-

- DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/24

NOTE: DATA FOR OCTOBER 1977 TO MARCH 1978 PUBLISHED IN 1978 REPORT.

16229300 KALIHI STREAM AT KALIHI--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	OCT 10,78	NOV 7,78	DEC 5,78	JAN 9,79	FEB 5,79	MAR 19,79
TIME	1015	1230	1230	1230	1300	1245
TOTAL CELLS/ML	38	290	720	110	360	4600
DIVERSITY: DIVISION	0.0	0.6	1.1	1.2	1.2	0.3
.CLASS	0.0	0.6	1.1	1.2	1.2	0.3
..ORDER	1.0	0.6	1.2	1.6	1.4	0.3
...FAMILY	1.0	0.8	1.5	1.6	2.0	1.3
....GENUS	1.0	0.8	1.5	1.6	2.1	1.3

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	14	2	15	14	10	3	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	58	1
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	35#	33	5	1	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....CLOSTERIUM	--	-	--	-	43	6	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	23#	60	--	-	--	-	--	-	15	4	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	22	8	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	5	1	--	-
....RHOICOSPHENIA	15#	40	--	-	100	14	5	5	45	13	72	2
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	14	2	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	29	4	--	-	10	3	29	1
...NAVICULACEAE												
....NAVICULA	--	-	22	8	14	2	--	-	45	13	*	0
...NITZSCHIACEAE												
....NITZSCHIA	--	-	--	-	--	-	--	-	20	6	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	240#	85	500#	70	50#	48	200#	56	2200#	48
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	29	1
...SCYTONEMATACEAE												
....PLECTONEMA	--	-	--	-	--	-	--	-	--	-	2200#	48
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	--	-	--	-	--	-
....EUTREPTIA	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

HAWAII, ISLAND OF OAHU

16229300 KALIHI STREAM AT KALIHI--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	APR 23,79		MAY 21,79		JUN 18,79		JUL 17,79		AUG 20,79		SEP 17,79	
TIME	1030		1230		1145		1000		1050		1100	
TOTAL CELLS/ML	220		13		120		1300		100		1100	
DIVERSITY: DIVISION	0.4		0.0		0.8		0.8		0.5		0.3	
.CLASS	0.4		0.0		0.8		0.8		0.5		0.3	
..ORDER	0.4		0.0		1.4		1.5		0.5		0.3	
...FAMILY	0.4		0.0		2.5		1.5		0.5		0.3	
....GENUS	0.4		0.0		2.5		1.5		0.5		0.3	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	10	1
....CHLORELLA	--	-	--	-	--	-	--	-	--	-	1100#	95
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	14	7	--	-	26#	22	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	26#	22	14	1	13	13	10	1
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	13	11	--	-	--	-	--	-
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	26#	22	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE												
....NAVICULA	--	-	--	-	13	11	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	13#	100	13	11	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	260#	20	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	770#	58	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
...SCYTONEMATACEAE												
....PLECTONEMA	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	200#	93	--	-	--	-	280#	21	90#	88	--	-
....EUTREPTIA	--	-	--	-	--	-	--	-	--	-	31	3

NOTE: # - DOMINANT ORGANISM: EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED: LESS THAN 1/2%

16232000 NUUANU STREAM BELOW RESERVOIR 2 WASTEWAY, NEAR HONOLULU

LOCATION.--Lat 21°20'57", long 157°49'40", Hydrologic Unit 20060000, on right bank beside Old Pali Road in upper Nuuanu Valley, 0.2 mi (0.3 km) downstream from reservoir 2 wasteway, and 3.5 mi (5.6 km) northeast of Honolulu Post Office.

DRAINAGE AREA.--3.35 mi² (8.68 km²).

PERIOD OF RECORD.--October 1913 to January 1921, September 1921 to current year.

REVISED RECORDS.--WSP 985: 1921-35(M). WSP 1319: 1931. WSP 1569: Drainage area. WSP 1639: 1931, 1935.

GAGE.--Water-stage recorder and sharp-crested weirs. Datum of gage is 631.71 ft (192.545 m) above mean sea level. Prior to Sept. 7, 1915, nonrecording gage at same site at datum 0.03 ft (0.009 m) lower and Sept. 7, 1915, to Mar. 31, 1918, at same datum.

REMARKS.--Records fair. Low-flow regulation by reservoirs 2, 3, and 4, capacities, 21 acre-ft (25,900 m³), 34 acre-ft (41,900 m³), and 1,630 acre-ft (2.01 hm³), respectively. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--63 years (water years 1915-16, 1918-20, 1922-79), 7.04 ft³/s (0.199 m³/s), 5,100 acre-ft/yr (6.29 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,990 ft³/s (198 m³/s) Jan. 16, 1921, gage height, 8.74 ft (2.664 m), from floodmarks, from rating curve extended above 420 ft³/s (11.9 m³/s) by test of model of station site; minimum, 0.09 ft³/s (0.003 m³/s) Sept. 10, 11, 1925.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 486 ft³/s (13.8 m³/s), Feb. 3, gage height, 4.48 ft (1.366 m), no other peak above base of 240 ft³/s (6.80 m³/s); minimum discharge, 0.61 ft³/s (0.017 m³/s) Sept. 16-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	15	6.5	4.3	6.2	11	4.4	4.3	2.9	2.2	1.7	.95
2	3.0	36	6.6	4.2	6.1	10	4.4	2.7	1.8	2.2	2.5	.98
3	3.1	52	6.3	4.2	20	9.6	4.4	2.7	1.6	2.1	2.0	.97
4	3.3	23	13	4.0	34	8.8	5.0	2.6	1.7	2.5	1.2	1.9
5	3.0	6.8	7.5	4.0	7.6	8.6	5.4	2.6	1.7	2.2	1.1	1.1
6	2.9	5.5	19	4.0	6.6	8.3	4.3	2.8	1.7	2.0	1.3	1.3
7	3.1	5.5	22	3.9	7.5	8.1	4.3	2.5	1.7	3.9	1.1	1.3
8	3.9	5.2	8.5	4.0	6.6	8.0	4.3	2.5	1.7	2.2	1.1	.98
9	3.3	4.9	8.2	5.1	6.4	7.3	4.2	2.5	1.8	1.7	1.1	.98
10	3.0	4.9	8.2	5.7	33	7.5	4.0	2.5	1.8	1.7	1.1	1.1
11	2.6	5.5	7.0	40	57	7.3	3.7	2.4	1.9	1.7	1.1	.90
12	2.7	5.3	6.8	19	26	7.2	3.8	2.3	2.0	1.7	1.2	.92
13	2.7	27	9.7	59	7.3	7.0	3.7	2.3	3.7	1.7	1.1	.90
14	2.7	34	7.5	22	7.5	6.5	3.7	2.3	1.9	1.6	1.2	.93
15	2.8	52	7.1	13	22	6.9	3.5	2.2	1.7	1.7	1.7	.87
16	2.5	28	6.9	11	35	6.9	3.9	2.9	4.2	1.6	2.4	.85
17	3.1	7.2	6.2	8.3	22	6.4	3.5	2.9	2.7	1.5	1.4	.62
18	6.0	6.6	6.6	8.2	12	6.4	3.4	2.3	4.7	1.6	1.1	.63
19	3.0	6.4	8.5	8.2	23	6.6	3.3	2.2	4.1	1.5	1.1	.73
20	2.8	7.6	6.1	7.9	46	6.1	3.2	2.1	2.4	1.5	1.1	.83
21	2.8	7.5	5.8	7.8	85	5.9	3.1	2.1	2.3	1.4	1.0	.76
22	2.8	6.7	5.8	11	65	5.4	3.0	2.1	5.6	1.5	1.0	.84
23	2.5	6.0	5.9	7.8	42	5.3	3.0	2.0	2.9	1.4	.95	.81
24	2.4	5.8	5.7	7.2	58	5.1	3.0	2.0	2.2	1.4	1.0	1.2
25	2.4	5.5	5.3	7.1	45	4.6	3.0	1.8	3.6	1.4	1.0	.79
26	2.3	6.2	4.6	6.8	49	4.6	2.8	2.1	5.2	1.2	.99	.90
27	2.3	5.4	4.8	6.5	39	6.7	2.8	2.3	2.7	1.2	1.0	.87
28	2.3	5.4	4.8	6.9	26	5.3	2.8	2.7	2.1	1.5	.98	.87
29	2.5	5.2	4.6	6.8	---	5.0	2.7	2.6	3.1	1.4	1.0	.81
30	41	6.1	4.5	6.3	---	4.7	3.0	2.2	2.7	1.3	.95	.76
31	27	---	4.4	6.2	---	4.5	---	5.6	---	1.2	.92	---
TOTAL	153.0	398.2	234.4	320.4	800.8	211.6	109.6	79.1	80.1	53.7	38.39	28.35
MEAN	4.94	13.3	7.56	10.3	28.6	6.83	3.65	2.55	2.67	1.73	1.24	.95
MAX	41	52	22	59	85	11	5.4	5.6	5.6	3.9	2.5	1.9
MIN	2.3	4.9	4.4	3.9	6.1	4.5	2.7	1.8	1.6	1.2	.92	.62
AC-FT	303	790	465	636	1590	420	217	157	159	107	76	56

CAL YR 1978 TOTAL 1735.97 MEAN 4.76 MAX 60 MIN .36 AC-FT 3440
WTR YR 1979 TOTAL 2507.64 MEAN 6.87 MAX 85 MIN .62 AC-FT 4970

16238500 WAIHI STREAM AT HONOLULU

LOCATION.--Lat 21°19'55", long 157°48'12", Hydrologic Unit 20060000, on left bank 100 ft (30 m) upstream from bridge on Waaloa Way, 700 ft (210 m) upstream from confluence with Waiakeakua Stream, and 4.2 mi (6.8 km) northeast of Honolulu Post Office.

DRAINAGE AREA.--1.14 mi^2 (2.95 km^2).

PERIOD OF RECORD.--May 1913 to January 1921, August 1925 to current year. Prior to July 1960, published as West Branch Manoa Stream near Honolulu.

REVISED RECORDS.--WSP 1319: 1930-32(M), 1939(M). WSP 1569: Drainage area.

GAGE.--Water-stage recorder and combination Parshall flume and V-notch weir. Datum of gage is 289.84 ft (88.343 m) above mean sea level (Honolulu Board of Water Supply bench mark). Prior to June 17, 1914, non-recording gage at same site at different datum. June 17, 1914, to Jan. 16, 1921, water-stage recorder at site 150 ft (46 m) upstream at different datum, Aug. 4, 1925, to Mar. 15, 1928, at present site at datum 2.35 ft (1.021 m) lower and Mar. 16, 1928 to Mar. 23, 1977 at datum 1.00 ft (0.305 m) higher.

REMARKS.--Records fair except for the period of no gage-height record, which are poor. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--61 years (water years, 1914-20, 1926-79), 3.59 ft^3/s (0.102 m^3/s), 2,600 acre-ft/yr (3.21 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,250 ft^3/s (92.0 m^3/s) Jan. 16, 1921, gage height, 10.4 ft (3.17 m), from floodmarks, site and datum then in use, from rating curve extended above 60 ft^3/s (1.70 m^3/s); minimum, 0.07 ft^3/s (0.002 m^3/s) Jan. 17, 18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 665 ft^3/s (18.8 m^3/s) Feb. 3, gage height, 5.20 ft (1.585 m), no other peak above base of 310 ft^3/s (8.78 m^3/s); minimum, 0.32 ft^3/s (0.009 m^3/s) several days in April and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	13	1.4	1.4	1.5	6.2	.78	1.5	2.0	2.0	1.6	.33
2	1.4	12	1.4	1.3	1.4	4.9	.78	.78	1.2	1.7	3.7	.36
3	1.8	6.3	1.3	1.2	25	4.6	.86	.70	.74	1.6	3.3	3.3
4	3.0	3.9	13	1.2	27	3.9	1.5	.46	.60	3.1	1.6	2.0
5	1.6	3.1	2.6	1.1	5.9	3.5	1.6	.54	.53	2.4	.99	1.0
6	1.3	2.7	19	1.1	3.3	3.1	1.1	.62	.46	2.1	1.3	1.4
7	1.2	2.4	20	1.1	4.9	2.8	1.0	.48	.44	11	.81	.62
8	5.5	2.2	4.5	1.1	3.6	2.7	.86	.54	.40	2.2	.70	.85
9	2.2	2.1	6.6	3.4	3.5	2.6	.86	.49	.46	1.7	.67	1.1
10	1.6	2.0	7.7	3.1	11	2.3	.78	.50	.42	1.5	.54	.60
11	1.5	3.2	3.8	27	17	2.1	.70	.48	.55	1.3	.51	.58
12	1.2	2.2	3.3	14	4.9	1.9	.70	.48	1.8	1.2	.49	.57
13	1.1	21	13	55	3.6	1.8	.62	.47	4.7	1.1	.56	.61
14	1.0	15	7.5	19	7.4	1.7	.54	.46	1.7	1.0	1.0	1.6
15	1.2	5.6	4.5	12	19	1.6	.54	.45	1.1	1.2	2.3	.60
16	.94	3.3	3.4	6.0	30	1.5	.78	2.8	1.4	1.0	5.0	.50
17	.94	2.7	2.8	4.4	17	1.3	.70	1.8	1.6	.95	1.6	.50
18	7.1	2.4	4.9	3.7	10	1.6	.54	1.1	3.9	1.6	.95	.52
19	1.8	2.5	12	3.3	17	2.1	.54	.84	5.6	.98	.81	.60
20	1.4	3.5	3.7	3.5	23	1.7	.46	.66	3.0	.90	.68	.67
21	1.4	3.7	2.9	3.1	26	1.2	.46	.55	4.1	.84	.60	.66
22	1.5	2.5	2.5	7.4	8.6	1.0	.46	.50	11	1.9	.59	.62
23	1.3	2.1	2.4	3.0	6.1	.94	.44	.46	5.1	.97	.54	.60
24	.94	1.9	2.2	2.8	45	.91	.46	.45	2.3	1.0	.69	1.7
25	.86	1.8	2.0	2.4	22	.85	.46	.44	7.2	1.0	.53	.60
26	.70	2.5	1.9	2.2	20	.81	.46	.70	7.2	.99	.46	.70
27	.62	1.6	1.7	2.2	14	2.8	.43	1.1	2.6	.76	.60	2.0
28	.62	2.0	1.6	2.0	8.0	1.1	.43	1.6	2.4	.93	.68	.86
29	.94	1.6	1.6	2.1	---	.94	.43	.70	6.3	.81	.98	.86
30	40	1.4	1.5	1.8	---	.86	1.6	.47	3.0	.63	.52	.46
31	31	---	1.5	1.6	---	.78	---	5.0	---	.58	.33	---
TOTAL	119.16	132.2	158.2	194.5	385.7	66.09	21.87	28.12	83.80	50.94	35.67	27.37
MEAN	3.84	4.41	5.10	6.27	13.8	2.13	.73	.91	2.79	1.64	1.15	.91
MAX	40	21	20	55	45	6.2	1.6	5.0	11	11	5.0	3.3
MIN	.62	1.4	1.3	1.1	1.4	.78	.43	.44	.40	.58	.33	.33
AC-FT	236	262	314	386	765	131	43	56	166	101	71	54

CAL YR 1978 TOTAL 1332.74 MEAN 3.65 MAX 57 MIN .13 AC-FT 2640
WTR YR 1979 TOTAL 1303.62 MEAN 3.57 MAX 55 MIN .33 AC-FT 2590

NOTE.--No gage-height record Apr. 2 to June 11.

16240500 WAIAKEAKUA STREAM AT HONOLULU

LOCATION.--Lat 21°19'53", long 157°48'12", Hydrologic Unit 20060000, on right bank 5 ft (2 m) downstream from bridge on Waaloa Way, 500 ft (152 m) upstream from confluence with Waihi Stream, and 4.2 mi (6.8 km) northeast of Honolulu Post Office.

DRAINAGE AREA.--1.06 mi² (2.75 km²).

PERIOD OF RECORD.--May 1913 to January 1921, August 1925 to current year. Prior to July 1960, published as East Branch Manoa Stream near Honolulu.

REVISED RECORDS.--WSP 1319: 1919(M), 1930-33(M). WSP 1569: Drainage area. WSP 1937: 1949(M), 1960(M).

GAGE.--Water-stage recorder and combination Parshall flume and concrete weir. Datum of gage is 294.50 ft (89.764 m) above mean sea level (Honolulu Board of Water Supply bench mark). Prior to May 20, 1914, nonrecording gage at site 200 ft (61 m) upstream at different datum. May 20, 1914, to Jan. 16, 1921, water-stage recorder at site 30 ft (9 m) upstream at different datum. Aug. 18, 1925, to Mar. 15, 1928, water-stage recorder at present site at datum 2.99 ft (0.911 m) lower, and Mar. 16, 1928, to Oct. 18, 1933, at datum 0.41 ft (0.125 m) higher than present datum.

REMARKS.--Records fair. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnel above station. Occasional small diversions for irrigation above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--61 years (water years, 1914-20, 1926-79), 5.05 ft³/s (0.143 m³/s), 3,660 acre-ft/yr (4.51 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,090 ft³/s (87.5 m³/s) Jan. 16, 1921, gage height, 10.4 ft (3.17 m), from floodmarks, site and datum then in use, from rating curve extended above 58 ft³/s (1.64 m³/s); minimum, 0.6 ft³/s (0.017 m³/s) June 7, 8, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 594 ft³/s (16.8 m³/s) Feb. 3, gage height, 3.94 ft (1.201 m), no other peak above base of 310 ft³/s (8.78 m³/s); minimum, 1.8 ft³/s (0.051 m³/s) Sept. 17-21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	15	3.6	3.5	3.8	7.5	4.0	4.2	4.2	3.4	3.5	2.1
2	2.6	15	3.6	3.5	3.7	7.0	4.2	3.7	3.4	3.2	4.8	2.0
3	2.9	7.0	3.5	3.4	48	6.7	4.3	3.7	3.2	3.1	5.9	2.2
4	3.5	5.7	14	3.3	12	6.2	4.5	3.4	2.9	3.6	3.3	6.8
5	2.8	4.5	5.2	3.2	8.7	5.9	4.9	3.5	2.8	3.4	2.8	3.0
6	2.7	4.2	21	3.2	5.5	5.8	4.2	3.6	2.8	3.3	3.1	3.6
7	2.7	4.1	25	3.1	7.8	5.6	4.1	3.3	2.8	10	2.5	2.5
8	6.6	3.9	6.4	3.1	6.4	5.9	3.9	3.5	2.8	3.6	2.5	2.5
9	3.4	3.7	8.8	5.5	6.5	5.5	3.8	3.4	2.9	3.1	2.5	2.8
10	3.0	3.7	7.6	5.3	13	5.3	3.7	3.5	2.8	2.9	2.3	2.3
11	3.0	5.6	5.3	31	18	5.2	3.8	3.3	2.9	2.8	2.4	2.1
12	2.7	5.0	4.8	17	6.7	5.0	3.9	3.2	3.3	2.8	2.3	2.0
13	2.6	28	11	48	5.6	4.9	3.7	3.2	5.2	2.7	2.3	2.1
14	2.6	31	8.1	15	7.9	4.9	3.7	3.1	3.6	2.7	2.5	2.8
15	3.0	16	5.7	9.5	11	4.8	3.6	3.1	3.0	2.8	4.9	2.0
16	2.7	6.6	5.1	7.2	18	4.8	3.9	4.6	3.3	2.7	5.8	1.9
17	2.7	5.3	4.5	5.9	12	4.6	3.7	4.0	3.1	2.7	3.1	1.9
18	9.5	4.6	5.3	5.4	9.8	4.8	3.6	3.4	3.5	3.1	2.6	1.9
19	3.5	4.8	9.4	5.1	20	5.7	3.4	3.2	4.4	2.7	2.5	1.8
20	2.9	5.6	5.2	5.7	29	5.1	3.4	3.1	3.8	2.6	2.4	2.1
21	2.8	5.4	4.6	5.0	22	4.6	3.2	3.0	4.6	2.6	2.3	2.0
22	2.9	5.0	4.3	7.5	9.2	4.5	3.4	3.0	9.8	3.9	2.3	2.0
23	2.9	4.4	4.3	4.8	8.1	4.3	3.4	3.0	4.6	2.8	2.3	1.9
24	2.6	4.2	4.1	4.6	36	4.3	3.7	3.0	3.3	2.7	2.3	3.0
25	2.5	4.0	3.9	4.3	19	4.2	3.7	3.0	6.7	2.6	2.2	2.4
26	2.4	4.5	3.8	4.2	15	4.2	3.3	3.3	7.3	2.9	2.1	2.4
27	2.4	3.9	3.7	4.2	15	5.9	3.2	3.7	4.0	2.6	2.3	2.9
28	2.5	4.1	3.7	4.2	8.6	4.4	3.2	3.9	3.9	2.7	2.2	3.3
29	2.8	3.9	3.7	3.9	---	4.2	3.3	3.2	7.1	2.5	2.7	2.8
30	44	3.6	3.6	4.0	---	4.2	4.2	3.0	4.2	2.4	2.2	2.1
31	28	---	3.6	3.9	---	4.0	---	6.1	---	2.3	2.0	---
TOTAL	164.0	222.3	206.4	237.5	386.3	160.0	112.9	108.2	122.2	97.2	88.9	75.2
MEAN	5.29	7.41	6.66	7.66	13.8	5.16	3.76	3.49	4.07	3.14	2.87	2.51
MAX	44	31	25	48	48	7.5	4.9	6.1	9.8	10	5.9	6.8
MIN	2.4	3.6	3.5	3.1	3.7	4.0	3.2	3.0	2.8	2.3	2.0	1.8
AC-FT	325	441	409	471	766	317	224	215	242	193	176	149

CAL YR 1978 TOTAL 1675.84 MEAN 4.59 MAX 62 MIN .92 AC-FT 3320
WTR YR 1979 TOTAL 1981.10 MEAN 5.43 MAX 48 MIN 1.8 AC-FT 3930

16244000 PUKELE STREAM NEAR HONOLULU

LOCATION.--Lat 21°18'36", long 157°47'27", Hydrologic Unit 20060000, on right bank 200 ft (60 m) upstream from bridge on Palolo Avenue, 0.6 mi (1.0 km) upstream from confluence with Waiomao Stream, and 4.8 mi (7.7 km) east of Honolulu Post Office.

DRAINAGE AREA.--1.18 mi² (3.06 km²).

PERIOD OF RECORD.--June 1926 to current year.

REVISED RECORDS.--WSP 835: 1930(M). WSP 1569: Drainage area. WSP 1639: 1927-29(M), 1931(M), 1932, 1933-34(M). WSP 1719: 1935(M), 1937-40(M), 1942(M), 1948-59(P).

GAGE.--Water-stage recorder and V-notch weir. Datum of gage is 344.78 ft (105.089 m) above mean sea level (Honolulu Board of Water Supply bench mark).

REMARKS.--Records poor. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--53 years, 1.93 ft³/s (0.055 m³/s), 1,400 acre-ft/yr (1.73 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,600 ft³/s (73.6 m³/s) Apr. 11, 1930, gage height, 7.75 ft (2.362 m), from rating curve extended above 71 ft³/s (2.01 m³/s) by test of model of station site; minimum, 0.08 ft³/s (0.002 m³/s) Oct. 31, 1929.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 140 ft³/s (3.96 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 13	a0600	184	5.21	3.59	1.094
Feb. 3	2200	*432	12.1	*4.64	1.414

Minimum discharge, 0.29 ft³/s (0.008 m³/s) Sept. 23, 25-30.

a About.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.68	11	1.1	1.0	1.5	3.8	.83	.50	.45	.54	.40	.32
2	.64	9.5	1.0	1.0	1.4	2.7	.83	.45	.45	.54	.40	.32
3	.64	4.9	1.0	1.0	26	2.5	.83	.60	.55	.54	.40	.32
4	.64	2.6	6.4	1.0	9.8	2.2	.83	.60	.55	.54	.40	.36
5	.60	1.6	2.8	1.0	4.7	2.2	.90	.55	.55	.50	.40	.40
6	.57	1.6	12	1.0	2.7	2.1	.77	.45	.50	.54	.40	.40
7	.55	1.6	17	1.0	2.9	2.1	.77	.50	.45	.68	.40	.36
8	.58	1.6	4.9	1.2	2.8	2.1	.71	.50	.45	.60	.40	.36
9	.57	1.6	4.4	1.5	3.5	2.0	.65	.50	.45	.58	.40	.36
10	.54	1.5	3.9	4.0	6.8	1.9	.65	.50	.45	.58	.40	.36
11	.52	2.0	2.9	18	9.6	1.8	.65	.50	.45	.52	.40	.36
12	.50	1.5	2.3	15	4.8	1.8	.71	.45	.40	.50	.40	.36
13	.50	13	4.4	21	3.0	1.7	.65	.40	.40	.50	.40	.36
14	.50	13	3.5	6.6	4.0	1.6	.60	.40	.40	.50	.40	.36
15	.50	6.6	2.8	4.0	4.8	1.5	.65	.45	.40	.50	.40	.36
16	.50	2.7	2.4	2.7	6.2	1.4	.65	.50	.40	.50	.40	.32
17	.53	1.7	2.2	2.1	7.0	1.3	.65	.50	.40	.50	.40	.32
18	3.0	1.6	2.3	2.0	4.5	1.4	.60	.55	.40	.50	.40	.32
19	.60	1.6	3.4	1.9	10	1.2	.60	.50	.40	.50	.40	.32
20	.50	1.7	2.0	2.6	17	1.1	.60	.50	.42	.50	.40	.32
21	.50	1.6	1.6	2.2	12	1.1	.60	.45	.43	.50	.36	.32
22	.50	1.5	1.5	3.0	5.6	1.0	.55	.45	.45	.65	.36	.32
23	.50	1.5	1.5	2.0	4.0	1.0	.55	.45	.45	.71	.36	.32
24	.50	1.5	1.4	1.9	13	.97	.65	.45	.45	.45	.36	.32
25	.50	1.4	1.3	1.8	9.1	.97	.55	.45	.45	.45	.32	.32
26	.50	1.4	1.3	1.8	7.7	.97	.77	.45	.45	.45	.32	.29
27	.50	1.3	1.2	1.7	8.3	1.1	.77	.45	.45	.45	.36	.29
28	.50	1.3	1.1	1.7	5.0	.90	.77	.45	.50	.40	.32	.29
29	.50	1.3	1.1	1.6	---	.90	.80	.45	.56	.40	.32	.29
30	18	1.2	1.0	1.6	---	.90	.60	.45	.54	.45	.32	.29
31	21	---	1.0	1.6	---	.83	---	.50	---	.45	.32	---
TOTAL	57.16	96.9	96.7	110.5	197.7	49.04	20.74	15.10	13.65	16.02	11.72	10.01
MEAN	1.84	3.23	3.12	3.56	7.06	1.58	.69	.49	.46	.52	.38	.33
MAX	21	13	17	21	26	3.8	.90	.65	.56	.71	.40	.40
MIN	.50	1.2	1.0	1.0	1.4	.83	.55	.40	.40	.40	.32	.29
AC-FT	113	192	192	219	392	97	41	30	27	32	23	20

CAL YR 1978 TOTAL 657.97 MEAN 1.80 MAX 51 MIN .20 AC-FT 1310
WTR YR 1979 TOTAL 695.24 MEAN 1.90 MAX 26 MIN .29 AC-FT 1380

NOTE.--No gage-height record Dec. 29 to Jan. 30, June 13 to July 19.

16247000 PALOLO STREAM NEAR HONOLULU

LOCATION.--Lat 21°17'35", long 157°48'25", Hydrologic Unit 20060000, on left bank 250 ft (76 m) downstream from bridge on Palolo Avenue and 3.9 mi (6.3 km) east of Honolulu Post Office.

DRAINAGE AREA.--3.63 mi² (9.40 km²).

PERIOD OF RECORD.--April 1952 to September 1979 (discontinued).

REVISED RECORDS.--WSP 1569: Drainage area. WSP 1937: 1953, 1955-60.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 95 ft (29 m), from topographic map.

REMARKS.--Records poor. Honolulu Board of Water Supply diverts ground water from tunnels in drainage area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--27 years, 5.64 ft³/s (0.160 m³/s), 4,090 acre-ft/yr (5.04 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,270 ft³/s (121 m³/s) Dec. 18, 1967, gage height, 5.98 ft (1.823 m), from rating curve extended above 140 ft³/s (3.96 m³/s) on basis of slope-conveyance study and slope-area measurements at gage heights 3.92 ft (1.195 m) and 4.13 ft (1.259 m); minimum, 0.02 ft³/s (0.001 m³/s) June 25, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1900	1240	35.1	3.70	1.128	Feb. 4	0015	*3570	101	*5.54	1.689
Jan. 13	0630	1120	31.7	3.58	1.091	Feb. 20	2145	866	24.5	3.28	1.000

Minimum discharge, 0.31 ft³/s (0.009 m³/s) Aug. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	53	1.2	1.3	2.0	9.3	1.9	1.1	1.6	1.0	.76	.45
2	.85	58	1.2	1.3	1.9	7.4	2.3	.77	1.2	.99	2.5	.48
3	1.0	25	1.2	1.3	61	6.8	2.7	.85	1.0	.86	2.2	.66
4	1.1	9.8	60	1.3	181	5.6	3.2	.77	.93	1.1	.95	4.5
5	1.0	4.3	23	1.3	25	4.3	2.9	.85	.93	1.2	.74	1.6
6	.85	2.5	88	1.3	9.8	5.0	2.7	1.1	.85	1.5	.96	1.5
7	.93	2.3	88	1.3	7.2	3.9	2.0	.85	.85	9.9	.70	1.1
8	1.2	2.1	17	1.3	7.2	6.8	1.9	.93	.93	1.9	.65	.85
9	1.1	1.9	15	7.5	16	5.6	1.9	1.2	1.9	1.2	1.1	.93
10	.77	2.2	13	8.8	32	2.9	2.7	1.1	1.6	.93	.79	.85
11	.77	5.2	7.7	118	39	2.7	2.5	1.0	1.3	.77	.68	.77
12	.85	3.3	4.4	101	16	2.5	3.6	.93	1.1	.85	.65	.70
13	.77	45	17	314	8.3	2.5	1.7	.93	4.0	.77	.58	.93
14	.77	49	10	66	14	2.3	1.6	.77	1.3	.73	.71	.77
15	.70	21	7.4	23	14	1.9	1.6	.85	1.4	.77	.97	.70
16	.77	7.6	6.2	15	20	1.9	4.3	2.3	3.1	.77	2.3	.58
17	3.3	4.8	3.6	6.1	27	2.0	1.7	2.3	1.2	.71	.91	.63
18	9.4	3.8	5.0	3.6	16	8.7	1.1	2.3	1.0	.77	.73	.58
19	1.6	3.5	8.0	3.4	57	4.3	1.1	1.9	1.6	.84	.66	.53
20	1.1	5.2	3.9	14	118	3.2	1.2	1.7	1.2	.64	.58	.58
21	.85	4.4	2.5	8.8	70	2.7	1.4	1.4	1.1	.60	.57	.53
22	.85	4.2	1.9	18	19	2.5	1.4	1.4	3.2	.76	.53	1.3
23	1.0	2.3	2.7	6.8	9.9	2.5	1.3	1.4	1.4	.77	.58	1.1
24	.77	1.7	2.3	4.3	53	2.9	1.0	1.3	1.0	.76	.54	2.0
25	.63	1.5	1.6	3.6	28	2.7	.93	1.3	2.0	.72	.51	.85
26	.63	1.6	1.4	3.2	24	2.9	.85	2.7	1.3	.71	.46	.85
27	.63	1.4	1.3	2.5	22	8.8	.85	5.6	.93	.62	.53	1.0
28	.65	1.4	1.2	2.7	12	1.9	.85	1.7	.88	.85	.48	.53
29	2.3	1.9	1.3	2.3	---	1.7	1.2	1.7	2.7	.65	.49	.48
30	177	1.2	1.3	2.0	---	1.7	.93	1.3	1.5	.60	.53	.40
31	158	---	1.3	2.0	---	1.7	---	6.4	---	.53	.49	---
TOTAL	373.24	331.1	399.6	747.0	910.3	121.6	55.31	50.70	45.00	35.81	25.83	28.73
MEAN	12.0	11.0	12.9	24.1	32.5	3.92	1.84	1.64	1.50	1.16	.83	.96
MAX	177	58	88	314	181	9.3	4.3	6.4	4.0	9.9	2.5	4.5
MIN	.63	1.2	1.2	1.3	1.9	1.7	.85	.77	.85	.53	.46	.40
AC-FT	740	657	793	1480	1810	241	110	101	89	71	51	57

CAL YR 1978 TOTAL 2404.79 MEAN 6.59 MAX 241 MIN .32 AC-FT 4770
WTR YR 1979 TOTAL 3124.22 MEAN 8.56 MAX 314 MIN .40 AC-FT 6200

16254000 MAKAWAO STREAM NEAR KAILUA

LOCATION.--Lat 21°21'49", long 157°46'02", Hydrologic Unit 20060000, on left bank 650 ft (198 m) upstream from mouth, 2.7 mi (4.3 km) southwest of Kailua, and 4.3 mi (6.9 km) southeast of Kaneohe Courthouse.

DRAINAGE AREA.--2.04 mi² (5.28 km²).

PERIOD OF RECORD.--November 1912 to June 1916, January 1958 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 80 ft (24 m), from topographic map. Prior to Jan. 1, 1958, nonrecording gage at sites about 200 ft (61 m) upstream at different datums.

REMARKS.--Records good. Maunawili ditch diverts 1.5 mi (2.4 km) above station for irrigation in vicinity of Waimanalo. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--23 years (water years, 1914-15, 1959-79), 4.94 ft³/s (0.140 m³/s), 3,580 acre-ft/yr (4.41 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,000 ft³/s (170 m³/s) Feb. 4, 1965, gage height, 12.41 ft (3.783 m), from rating curve extended above 470 ft³/s (13.3 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.43 ft³/s (0.012 m³/s) Sept. 8-12, 14, 16-20, 22, 23, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 390 ft³/s (11.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1800	445	12.6	5.14	1.567	Feb. 10	0600	527	14.9	5.44	1.658
Jan. 13	0430	470	13.3	5.24	1.597	Feb. 20	2200	820	23.3	6.30	1.920
Feb. 4	0030	*1470	41.6	*7.70	2.347						

Minimum discharge, 1.0 ft³/s (0.028 m³/s) Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	26	4.6	3.9	8.6	12	4.8	3.1	2.3	1.9	1.6	1.2
2	1.5	31	4.2	3.9	7.0	11	4.6	3.1	2.2	1.8	1.7	1.2
3	1.5	18	4.2	3.9	38	11	4.6	2.9	2.2	1.8	1.7	1.3
4	1.6	12	26	3.8	72	12	4.6	2.9	2.2	1.8	1.6	1.4
5	1.5	10	9.5	3.9	17	11	4.8	2.9	2.1	1.8	1.5	1.3
6	1.5	7.2	14	3.8	12	9.5	4.6	3.1	2.1	1.7	1.5	1.3
7	1.5	6.3	16	3.7	17	9.8	4.4	2.9	2.1	2.0	1.5	1.3
8	1.8	5.4	8.9	3.6	15	11	4.4	3.1	2.1	1.7	1.6	1.3
9	1.5	5.5	7.5	7.8	22	10	4.4	2.8	2.2	1.8	2.2	1.3
10	1.4	6.0	6.8	9.5	44	10	4.8	3.4	2.1	1.7	1.6	1.3
11	1.5	6.8	8.3	60	30	9.8	4.4	2.9	2.1	1.7	1.5	1.2
12	1.5	6.1	8.9	25	19	9.8	4.8	2.8	2.1	1.6	1.5	1.2
13	1.5	26	12	62	17	8.3	4.4	2.8	2.2	1.7	1.4	1.2
14	1.5	20	8.9	20	16	6.8	4.2	2.6	2.1	1.7	1.5	1.4
15	1.5	11	6.4	16	15	6.6	4.0	2.6	2.0	1.7	1.6	1.2
16	1.5	7.0	6.1	13	14	6.6	3.9	2.9	2.0	1.7	1.6	1.2
17	1.5	6.0	5.7	13	13	6.4	4.2	2.9	2.0	1.7	1.5	1.2
18	2.8	5.7	5.3	11	21	10	3.9	2.8	2.0	1.7	1.5	1.2
19	1.5	6.0	5.7	8.6	58	8.9	3.9	2.6	2.0	1.6	1.4	1.1
20	1.4	6.6	5.1	9.2	109	6.8	3.6	2.5	2.0	1.6	1.4	1.2
21	1.5	6.2	4.9	8.1	57	5.9	3.4	2.5	2.0	1.6	1.4	1.2
22	1.5	5.8	4.9	7.3	26	5.7	3.4	2.5	2.2	1.7	1.4	1.2
23	1.5	5.9	4.8	8.9	21	5.3	3.4	2.5	1.9	1.6	1.3	1.2
24	1.4	5.7	4.8	10	26	5.3	3.7	2.3	1.9	1.6	1.4	1.5
25	1.4	5.5	4.6	9.8	18	5.1	3.7	2.3	1.9	1.6	1.3	1.2
26	1.4	5.3	4.4	8.1	19	5.1	3.1	3.4	1.9	1.6	1.3	1.2
27	1.5	4.9	4.4	5.5	15	8.6	3.4	2.8	1.9	1.5	1.6	1.2
28	1.4	4.9	4.2	5.3	14	5.3	3.1	2.8	1.9	1.6	1.4	1.3
29	1.7	4.8	4.1	7.0	---	4.9	3.1	2.8	2.0	1.6	1.4	1.2
30	63	4.6	4.0	8.9	---	4.9	3.1	2.5	1.9	1.5	1.3	1.2
31	60	---	3.9	8.9	---	4.9	---	2.3	---	1.5	1.3	---
TOTAL	167.6	282.2	223.1	373.4	760.6	248.3	120.7	86.3	61.6	52.1	46.5	37.4
MEAN	5.41	9.41	7.20	12.0	27.2	8.01	4.02	2.78	2.05	1.68	1.50	1.25
MAX	63	31	26	62	109	12	4.8	3.4	2.3	2.0	2.2	1.5
MIN	1.4	4.6	3.9	3.6	7.0	4.9	3.1	2.3	1.9	1.5	1.3	1.1
AC-FT	333	560	443	741	1510	493	239	171	122	103	92	74

CAL YR 1978 TOTAL 1325.1 MEAN 3.63 MAX 63 MIN 1.0 AC-FT 2630
WTR YR 1979 TOTAL 2460.0 MEAN 6.74 MAX 109 MIN 1.1 AC-FT 4880

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE

LOCATION.--Lat 21°23'47", long 157°48'23", Hydrologic Unit 20060000, on left bank 300 ft (91 m) downstream from Luluku Stream, 1.0 mi (1.6 km) southwest of Castle High School and 1.9 mi (3.1 km) northwest of the intersection of State Highways 61 and 83.

DRAINAGE AREA.--3.81 mi^2 (9.87 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1976 to current year.

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

REMARKS.--Records good except those above 300 ft^3/s (8.50 m^3/s), which are poor. Flow regulated to some extent by the construction of a dam upstream. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 968 ft^3/s (27.4 m^3/s) May 12, 1977, gage height, 4.68 ft (1.426 m), minimum, 0.60 ft^3/s (0.017 m^3/s) Mar. 27, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 439 ft^3/s (12.4 m^3/s) Oct. 30, gage height, 3.33 ft (1.015 m), no peak above base of 700 ft^3/s (19.8 m^3/s); minimum, 1.7 ft^3/s (0.048 m^3/s) Oct. 15, 16, Dec. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	60	10	8.1	11	20	13	10	9.6	7.2	6.5	5.2
2	6.1	43	9.9	8.1	11	20	12	10	9.1	7.1	7.1	5.1
3	6.0	25	9.8	8.2	24	19	12	10	8.9	7.2	6.5	5.3
4	6.4	17	34	7.9	78	19	12	9.9	8.6	7.0	6.2	5.7
5	6.0	13	16	8.1	19	18	13	9.6	8.5	7.1	6.1	5.5
6	5.9	12	10	8.1	14	18	12	9.8	8.3	7.3	6.4	5.8
7	5.7	12	31	8.0	18	18	12	9.6	8.6	7.9	6.3	5.7
8	6.1	11	13	7.8	17	18	12	10	8.3	7.1	7.7	5.5
9	5.9	11	12	14	17	17	12	9.8	8.3	7.2	9.6	5.7
10	5.6	11	12	22	90	17	13	13	8.3	6.9	6.6	5.5
11	6.1	15	11	125	46	17	12	11	8.6	7.1	6.0	5.2
12	6.0	12	10	50	18	16	13	9.9	8.5	7.3	5.9	5.1
13	6.1	35	11	107	16	16	12	9.6	8.5	6.9	5.9	5.0
14	5.7	34	10	36	14	16	11	9.3	8.2	6.7	6.1	5.2
15	8.2	16	9.8	20	15	16	11	9.1	7.9	6.7	6.3	5.0
16	9.6	13	9.6	15	18	15	11	9.5	7.9	6.7	6.4	4.9
17	6.0	13	9.6	14	18	15	11	9.9	7.7	6.5	5.9	4.9
18	11	12	9.5	13	44	16	12	9.7	7.9	6.5	5.8	4.9
19	6.6	12	9.6	13	83	18	11	9.1	7.8	6.3	5.8	4.8
20	6.0	14	9.6	13	57	15	11	9.1	7.8	6.2	5.7	4.9
21	5.9	13	9.0	13	140	15	11	9.4	8.2	6.2	5.6	4.8
22	6.0	12	8.8	21	29	15	11	8.5	9.9	6.5	5.8	5.0
23	5.7	12	9.1	13	22	15	11	8.8	8.0	6.3	6.1	5.0
24	5.7	11	8.8	12	60	15	11	8.7	7.8	6.8	5.5	5.6
25	5.6	11	8.8	12	24	14	11	8.6	7.7	6.9	5.5	5.3
26	5.7	10	9.4	12	60	14	11	12	7.7	6.3	5.7	5.3
27	5.7	10	8.5	12	22	18	11	11	7.4	6.3	6.0	5.1
28	5.7	11	8.3	12	21	13	11	12	7.7	6.4	5.5	5.3
29	5.8	10	8.6	11	---	13	10	9.9	7.7	6.3	5.6	5.1
30	140	10	8.5	12	---	13	10	9.3	7.6	6.2	5.2	4.8
31	130	---	8.3	11	---	13	---	12	---	6.1	5.2	---
TOTAL	448.5	501	362.5	647.3	1006	502	346	308.1	247.0	209.2	150.5	156.2
MEAN	14.5	16.7	11.7	20.9	35.9	16.2	11.5	9.94	8.23	6.75	6.15	5.21
MAX	140	60	34	125	140	20	13	13	9.9	7.9	9.6	5.8
MIN	4.2	10	8.3	7.8	11	13	10	8.5	7.4	6.1	5.2	4.8
AC-FT	890	994	719	1280	2000	996	686	611	490	415	378	310

CAL YR 1978 TOTAL 2971.0 MEAN 8.14 MAX 140 MIN 2.1 AC-FT 5890
WTR YR 1979 TOTAL 4924.3 MEAN 13.5 MAX 140 MIN 4.2 AC-FT 9770

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1976 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: November 1976 to current year.

INSTRUMENTATION.--Automatic pumping sediment sampler since November 1976.

REMARKS.--In addition to the sediment sampler record, observations of specific conductance, pH, and water temperature were collected during the year.

EXTREMES FOR PERIOD OF RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 726 mg/L June 8, 1977; minimum daily mean, 3 mg/L Apr. 14-17, 1977.
SEDIMENT DISCHARGE: Maximum daily, 694 tons (630 tonnes) May 12, 1977; minimum daily, 0.05 ton (0.04 tonne) Apr. 14-17, 1977.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 392 mg/L Jan. 11; minimum daily mean, 20 mg/L for several days in June, July, and August.
SEDIMENT DISCHARGE: Maximum daily, 217 tons (197 tonnes) Oct. 30; minimum daily, 0.33 ton (0.30 tonne) July 31, Aug. 4, 5.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT					
02...	1400	6.4	220	7.6	25.0
20...	1120	27	200	7.5	23.0
31...	1030	64	180	6.9	21.5
JAN					
08...	0830	7.2	200	7.6	21.5
FEB					
07...	1620	20	170	6.9	21.5
MAR					
26...	1700	13	200	7.1	23.0
MAY					
17...	1010	10	200	7.6	23.0
JUN					
25...	1325	7.7	200	7.8	23.5
JUL					
31...	1420	5.8	200	7.8	28.0
SEP					
12...	1120	5.6	200	7.5	27.0

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	5.7	30	.46	60	110	18	10	40	1.1
2	6.1	50	.82	43	120	14	9.9	40	1.1
3	6.0	50	.81	25	94	6.5	9.8	40	1.1
4	6.4	40	.69	17	50	2.3	34	350	32
5	6.0	30	.49	13	40	1.4	16	160	6.9
6	5.9	30	.48	12	40	1.3	19	150	7.7
7	5.7	30	.46	12	40	1.3	31	150	13
8	6.1	30	.49	11	50	1.5	13	60	2.1
9	5.9	30	.48	11	50	1.5	12	50	1.6
10	5.6	30	.45	11	50	1.5	12	50	1.6
11	6.1	30	.49	15	50	2.0	11	50	1.5
12	6.0	40	.65	12	50	1.6	10	50	1.4
13	6.1	40	.66	35	120	11	11	50	1.5
14	5.7	40	.62	34	90	8.3	10	50	1.4
15	4.2	80	.91	16	70	3.0	9.8	40	1.1
16	9.6	100	2.6	13	50	1.8	9.6	40	1.0
17	6.0	60	.97	13	40	1.4	9.6	40	1.0
18	11	140	4.2	12	40	1.3	9.5	40	1.0
19	6.6	120	2.1	12	40	1.3	9.6	40	1.0
20	6.0	80	1.3	14	60	2.3	9.6	40	1.0
21	5.9	70	1.1	13	60	2.1	9.0	40	.97
22	6.0	70	1.1	12	50	1.6	8.8	40	.95
23	5.7	70	1.1	12	50	1.6	9.1	40	.98
24	5.7	70	1.1	11	40	1.2	8.8	40	.95
25	5.6	70	1.1	11	30	.89	8.8	40	.95
26	5.7	70	1.1	10	30	.81	9.4	60	1.5
27	5.7	70	1.1	10	30	.81	8.5	40	.92
28	5.7	70	1.1	11	30	.89	8.3	40	.90
29	5.8	70	1.1	10	40	1.1	8.6	40	.93
30	140	340	217	10	40	1.1	8.5	40	.92
31	130	286	136	---	---	---	8.3	30	.67
TOTAL	448.5	---	383.03	501	---	95.40	362.5	---	90.74
		JANUARY			FEBRUARY			MARCH	
1	8.1	30	.66	11	50	1.5	20	50	2.7
2	8.1	30	.66	11	40	1.2	20	50	2.7
3	8.2	30	.66	24	176	59	19	50	2.6
4	7.9	30	.64	78	305	104	19	50	2.6
5	8.1	30	.66	19	110	5.6	18	50	2.4
6	8.1	40	.87	14	90	3.4	18	50	2.4
7	8.0	40	.86	18	120	5.8	18	50	2.4
8	7.8	40	.84	17	200	9.2	18	50	2.4
9	14	176	13	17	150	6.9	17	50	2.3
10	22	189	15	90	376	135	17	50	2.3
11	125	392	201	46	228	40	17	50	2.3
12	50	118	18	18	90	4.4	16	50	2.2
13	107	209	70	16	60	2.6	16	50	2.2
14	36	203	28	14	60	2.3	16	50	2.2
15	20	120	6.5	15	50	2.0	16	50	2.2
16	15	70	2.8	18	80	3.9	15	50	2.0
17	14	60	2.3	18	80	3.9	15	50	2.0
18	13	60	2.1	44	171	23	16	110	4.8
19	13	50	1.8	83	259	73	18	50	2.4
20	13	40	1.4	57	215	52	15	30	1.2
21	13	40	1.4	140	327	137	15	30	1.2
22	21	120	7.8	29	90	7.0	15	25	1.0
23	13	90	3.2	22	70	4.2	15	25	1.0
24	12	70	2.3	60	211	43	15	25	1.0
25	12	60	1.9	24	70	4.5	14	25	.95
26	12	50	1.6	60	200	49	14	30	1.1
27	12	50	1.6	22	70	4.2	18	110	5.3
28	12	50	1.6	21	40	2.3	13	50	1.8
29	11	50	1.5	---	---	---	13	30	1.1
30	12	50	1.6	---	---	---	13	30	1.1
31	11	50	1.5	---	---	---	13	30	1.1
TOTAL	647.3	---	393.75	1006	---	789.9	502	---	64.95

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	13	30	1.1	10	30	.81	9.6	50	1.3
2	12	30	.97	10	30	.81	9.1	50	1.2
3	12	30	.97	10	50	1.4	8.9	40	.96
4	12	30	.97	9.9	50	1.3	8.6	40	.93
5	13	30	1.1	9.6	30	.78	8.5	40	.92
6	12	30	.97	9.8	30	.79	8.3	40	.90
7	12	30	.97	9.6	40	1.0	8.6	40	.93
8	12	30	.97	10	40	1.1	8.3	40	.90
9	12	30	.97	9.8	40	1.1	8.3	40	.90
10	13	200	7.0	13	40	1.4	8.3	40	.90
11	12	200	6.5	11	40	1.2	8.6	40	.93
12	13	200	7.0	9.9	40	1.1	8.5	40	.92
13	12	200	6.5	9.6	40	1.0	8.5	30	.69
14	11	200	5.9	9.3	40	1.0	8.2	30	.66
15	11	200	5.9	9.1	40	.98	7.9	30	.64
16	11	200	5.9	9.5	40	1.0	7.9	30	.64
17	11	200	5.9	9.9	40	1.1	7.7	30	.62
18	12	200	6.5	9.7	40	1.0	7.9	30	.64
19	11	200	5.9	9.1	30	.74	7.8	30	.63
20	11	200	5.9	9.1	30	.74	7.8	30	.63
21	11	60	1.8	9.4	30	.76	8.2	30	.66
22	11	50	1.5	8.5	30	.69	9.9	50	1.3
23	11	100	3.0	8.8	30	.71	8.0	20	.43
24	11	90	2.7	8.7	30	.70	7.8	20	.42
25	11	80	2.4	8.6	30	.70	7.7	20	.42
26	11	50	1.5	12	70	2.3	7.7	20	.42
27	11	80	2.4	11	70	2.1	7.4	20	.40
28	11	40	1.2	12	70	2.3	7.7	20	.42
29	10	30	.81	9.9	40	1.1	7.7	20	.42
30	10	30	.81	9.3	40	1.0	7.6	20	.41
31	---	---	---	12	50	1.6	---	---	---
TOTAL	396	---	96.01	308.1	---	34.31	247.0	---	22.14
		JULY			AUGUST			SEPTEMBER	
1	7.2	20	.39	6.5	20	.35	5.2	30	.42
2	7.1	20	.38	7.1	20	.38	5.1	30	.41
3	7.2	20	.39	6.5	20	.35	5.3	30	.43
4	7.0	20	.38	6.2	20	.33	5.7	30	.46
5	7.1	20	.38	6.1	20	.33	5.5	30	.45
6	7.3	20	.39	6.4	30	.52	5.8	30	.47
7	7.9	20	.43	6.3	30	.51	5.7	30	.46
8	7.1	20	.38	7.7	30	.62	5.5	30	.45
9	7.2	20	.39	9.6	303	11	5.7	30	.46
10	6.9	30	.56	6.6	90	1.6	5.5	30	.45
11	7.1	30	.58	6.0	50	.81	5.2	30	.42
12	7.3	30	.59	5.9	40	.64	5.1	30	.41
13	6.9	30	.56	5.9	40	.64	5.0	30	.41
14	6.7	30	.54	6.1	30	.49	5.2	30	.42
15	6.7	30	.54	6.3	30	.51	5.0	30	.41
16	6.7	30	.54	6.4	30	.52	4.9	30	.40
17	6.5	30	.53	5.9	30	.48	4.9	30	.40
18	6.5	30	.53	5.8	30	.47	4.9	30	.40
19	6.3	30	.51	5.8	30	.47	4.8	30	.39
20	6.2	30	.50	5.7	30	.46	4.9	30	.40
21	6.2	30	.50	5.6	30	.45	4.8	30	.39
22	6.5	30	.53	5.8	30	.47	5.0	30	.41
23	6.3	30	.51	6.1	30	.49	5.0	30	.41
24	6.8	30	.55	5.5	30	.45	5.6	30	.45
25	6.9	30	.56	5.5	30	.45	5.3	30	.43
26	6.3	30	.51	5.7	30	.46	5.3	30	.43
27	6.3	30	.51	6.0	30	.49	5.1	30	.41
28	6.4	30	.52	5.5	30	.45	5.3	30	.43
29	6.3	30	.51	5.6	30	.45	5.1	30	.41
30	6.2	30	.50	5.2	30	.42	4.8	30	.39
31	6.1	20	.33	5.2	30	.42	---	---	---
TOTAL	209.2	---	15.02	190.5	---	26.48	156.2	---	12.68
YEAR	4924.3		2024.41						

16273900 KAMOOALII STREAM AT KANEOHE

LOCATION.--Lat 21°24'51", long 157°48'13", Hydrologic Unit 20060000, on right bank 500 ft (150 m) upstream from Highway 83 and 0.2 mi (0.3 km) south of Parker School in Kaneohe.

DRAINAGE AREA.--4.38 mi² (11.34 km²).

PERIOD OF RECORD.--January 1959 to October 1963, November 1965 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 38.75 ft (11.811 m) above mean sea level (levels by city and county of Honolulu). Prior to Oct. 5, 1963, at site 50 ft (15 m) downstream at datum 0.93 ft (0.283 m) lower.

REMARKS.--Records fair. Flow regulated to some extent by the construction of a dam upstream. Recording rain gage located at station. Observations of specific conductance, pH, water temperature and suspended sediment discharge made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--17 years (water years 1960-63, 1967-79), 14.0 ft³/s (0.396 m³/s), 10,140 acre-ft/yr (12.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) Feb. 1, 1969, gage height, 10.16 ft (3.097 m), from rating curve extended above 380 ft³/s (10.8 m³/s) on basis of slope-area measurements at gage heights 5.26 ft (1.603 m), 7.14 ft (2.176 m), 7.47 ft (2.277 m), and 10.16 ft (3.097 m); minimum, 1.0 ft³/s (0.028 m³/s) Mar. 27, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 23, 1958, reached a stage of 8.3 ft (2.53 m), from floodmarks, former site and datum, discharge, 6,610 ft³/s (187 m³/s), from rating curve extended above 120 ft³/s (3.40 m³/s) on basis of slope-area measurement at gage height 5.69 ft (1.734 m). Discharge for peaks of Feb. 4 and May 2, 1965, 6,190 ft³/s (175 m³/s) and 5,400 ft³/s (153 m³/s), respectively; results of slope-area measurements of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 450 ft³/s (12.7 m³/s) Oct. 30, gage height, 2.90 ft (0.884 m), no peak above base of 950 ft³/s (26.9 m³/s); minimum, 2.9 ft³/s (0.082 m³/s) Oct. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	65	10	9.7	12	22	14	12	12	8.0	6.6	6.0
2	6.3	46	10	9.7	12	21	14	12	11	8.0	7.5	6.0
3	6.0	28	10	9.7	26	21	14	12	10	8.0	6.9	6.0
4	6.9	19	35	9.7	80	21	14	12	9.8	8.0	6.3	6.6
5	6.3	16	17	9.3	23	20	15	11	9.6	8.0	6.6	6.0
6	6.3	14	19	9.3	16	19	14	12	9.2	8.2	7.2	6.0
7	6.0	14	32	9.3	22	19	14	11	9.2	9.0	6.6	6.0
8	6.9	13	15	8.9	21	19	13	12	9.5	8.5	7.8	6.3
9	6.3	12	14	18	21	19	13	11	9.5	8.0	14	7.4
10	6.0	14	14	25	98	18	15	15	9.2	7.8	7.8	6.3
11	6.9	17	13	127	52	18	14	11	9.5	7.8	7.2	6.0
12	6.6	14	12	55	21	18	16	11	9.5	8.0	6.9	6.0
13	6.6	36	14	113	19	17	13	11	9.5	7.8	6.6	6.0
14	6.6	35	13	43	18	16	12	10	9.2	7.6	7.2	6.0
15	7.6	18	12	25	18	16	12	10	9.0	7.4	7.5	6.0
16	10	16	11	19	21	16	13	10	9.0	7.2	7.5	6.0
17	6.6	14	11	17	21	16	13	11	9.0	7.2	6.6	5.8
18	15	14	12	16	51	18	14	11	8.8	7.2	6.3	5.8
19	8.1	13	11	16	91	19	13	10	8.8	7.2	6.3	5.8
20	7.2	14	12	16	60	16	13	9.7	8.8	7.2	6.3	5.8
21	7.2	14	11	16	145	16	13	9.7	9.4	7.2	6.0	5.8
22	7.2	12	11	24	32	16	12	9.7	11	7.8	6.3	5.8
23	7.2	12	11	16	25	15	12	9.7	10	7.5	6.6	5.8
24	6.9	12	11	14	61	15	13	9.7	9.5	7.2	6.3	6.1
25	6.9	11	11	14	26	15	13	10	9.3	7.5	6.0	5.8
26	6.9	11	11	14	62	15	12	15	8.9	7.2	7.1	6.0
27	6.9	11	10	14	25	20	12	12	8.1	7.0	6.9	6.0
28	6.9	12	10	14	23	15	12	13	8.9	6.8	6.3	6.3
29	7.2	11	11	13	---	14	12	12	8.9	6.8	7.4	5.8
30	154	11	10	13	---	14	12	11	8.1	6.6	6.3	5.5
31	138	---	9.7	13	---	14	---	13	---	6.4	6.0	---
TOTAL	499.3	549	413.7	730.6	1102	538	396	349.5	282.2	234.1	216.9	180.7
MEAN	16.1	18.3	13.3	23.6	39.4	17.4	13.2	11.3	9.41	7.55	7.00	6.02
MAX	154	65	35	127	145	22	16	15	12	9.0	14	7.4
MIN	5.8	11	9.7	8.9	12	14	12	9.7	8.1	6.4	6.0	5.5
AC-FT	990	1090	821	1450	2190	1070	785	693	560	464	430	358

CAL YR 1978 TOTAL 3463.6 MEAN 9.49 MAX 154 MIN 2.9 AC-FT 6870
WTR YR 1979 TOTAL 5492.0 MEAN 15.0 MAX 154 MIN 5.5 AC-FT 10890

16283600 SOUTH FORK WAIHEE STREAM NEAR HEEIA

LOCATION.--Lat 21°26'47", long 157°52'12", Hydrologic Unit 20060000, on left bank 0.2 mi (0.3 km) upstream from confluence with North Fork, 3.0 mi (4.8 km) southwest of Waiahole School, and 4.0 mi (6.4 km) northwest of Heeia.

DRAINAGE AREA.--0.03 mi^2 (0.08 km^2).

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 615.74 ft (187.678 m) above mean sea level (levels by Honolulu Board of Water Supply).

REMARKS.--Records good. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--17 years, 1.77 ft^3/s (0.050 m^3/s), 1,280 acre-ft/yr (1.58 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 279 ft^3/s (7.90 m^3/s) May 2, 1965, gage height, 3.96 ft (1.207 m), from rating curve extended above 3.9 ft^3/s (0.11 m^3/s); no flow July 7, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 47 ft^3/s (1.33 m^3/s) and maximum (*), from rating curve extended above 3.9 ft^3/s (0.11 m^3/s):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 14	1630	*97	2.75	*2.75	0.838
Feb. 10	0430	92	2.61	2.70	0.823

Minimum discharge, 0.63 ft^3/s (0.018 m^3/s) many days in October.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	1.2	.77	.72	.77	1.1	1.0	1.1	1.1	1.0	.94	1.0
2	.63	1.2	.77	.72	.77	1.1	1.0	1.1	1.1	1.0	.94	1.0
3	.63	1.1	.77	.72	1.3	1.1	1.1	1.1	1.1	1.0	.94	1.0
4	.67	1.0	1.6	.70	1.3	1.1	1.1	1.1	1.1	1.0	.94	1.1
5	.63	.94	.88	.67	.94	1.1	1.1	1.1	1.1	1.0	.94	1.0
6	.63	.94	1.0	.67	.82	1.1	1.1	1.1	1.1	1.0	.94	1.0
7	.63	.94	.94	.67	1.2	1.1	1.1	1.1	1.1	1.0	.94	1.0
8	.63	.88	.77	.67	.86	1.0	1.1	1.2	1.1	1.0	1.1	1.0
9	.63	.88	.77	.65	.96	1.0	1.1	1.1	1.1	1.0	1.2	1.3
10	.63	.88	.77	.88	3.8	1.0	1.1	1.3	1.1	1.0	1.1	1.0
11	.63	1.2	.77	4.4	1.8	1.0	1.1	1.2	1.0	1.0	1.1	1.0
12	.63	1.1	.77	1.3	1.0	1.0	1.1	1.2	1.0	.94	1.1	.94
13	.63	1.6	.88	2.0	1.0	1.0	1.1	1.2	1.0	.94	1.1	.94
14	.63	3.9	.82	1.1	1.0	1.0	1.1	1.2	1.0	.94	1.1	.94
15	.63	1.0	.82	1.0	1.1	1.0	1.1	1.2	1.0	.94	1.2	.94
16	.63	.94	.77	.94	1.3	1.0	1.1	1.2	1.1	.94	2.9	.94
17	.63	.88	.77	.88	1.2	1.0	1.3	1.2	1.0	.94	1.1	.94
18	.81	.88	.77	.82	1.6	1.0	1.1	1.2	1.0	.94	1.1	.94
19	.72	.94	.72	.82	2.0	1.0	1.1	1.2	1.0	.94	1.1	1.0
20	.67	1.1	.72	.82	1.6	1.0	1.1	1.2	1.0	.94	1.1	1.0
21	.67	.82	.72	.82	1.9	1.0	1.1	1.2	1.0	.94	1.1	1.0
22	.67	.82	.72	.77	1.1	1.0	1.1	1.2	1.1	.94	1.0	1.0
23	.67	.88	.77	.77	1.0	1.0	1.1	1.2	1.0	.94	1.0	1.0
24	.67	.82	.77	.77	1.2	1.0	1.1	1.2	1.0	.94	1.0	1.0
25	.67	.82	.77	.77	1.2	1.0	1.1	1.2	1.0	.94	1.1	1.0
26	.67	.88	.77	.77	2.7	1.0	1.1	1.2	1.0	.94	1.1	.94
27	.72	.82	.77	.77	1.1	1.0	1.1	1.1	1.0	.94	1.1	.94
28	.72	.82	.77	.77	1.1	1.0	1.1	1.1	1.1	.94	1.1	.94
29	.72	.82	.72	.77	---	1.0	1.1	1.1	1.0	.94	1.1	.94
30	4.9	.77	.72	.77	---	1.0	1.1	1.1	1.0	.94	1.1	.94
31	3.0	---	.72	.77	---	1.0	---	1.1	---	.94	1.1	---
TOTAL	27.03	31.77	25.07	29.87	37.62	31.7	33.0	36.0	31.3	29.80	34.68	29.68
MEAN	.87	1.06	.81	.96	1.34	1.02	1.10	1.16	1.04	.96	1.12	.99
MAX	4.9	3.9	1.6	4.4	3.8	1.1	1.3	1.3	1.1	1.0	2.9	1.3
MIN	.63	.77	.72	.67	.77	1.0	1.0	1.1	1.0	.94	.94	.94
AC-FT	54	63	50	59	75	63	65	71	62	59	69	59

CAL YR 1978 TOTAL 263.18 MEAN .72 MAX 4.9 MIN .47 AC-FT 522
WTR YR 1979 TOTAL 377.52 MEAN 1.03 MAX 4.9 MIN .63 AC-FT 749

16283700 NORTH FORK WAIHEE STREAM NEAR HEEIA

LOCATION.--Lat 21°26'48", long 157°52'18", Hydrologic Unit 20060000, on left bank 0.3 mi (0.5 km) upstream from confluence with South Fork, 2.8 mi (4.5 km) southwest of Waiahole School, and 4.3 mi (6.9 km) northwest of Heeia.

DRAINAGE AREA.--0.03 mi² (0.08 km²).

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 639.00 ft (194.767 m) above mean sea level (levels by Honolulu Board of Water Supply).

REMARKS.--Records good. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--17 years, 1.81 ft³/s (0.051 m³/s), 1,310 acre-ft/yr (1.62 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 376 ft³/s (10.6 m³/s) Feb. 4, 1965, gage height, 3.38 ft (1.030 m), from rating curve extended above 19 ft³/s (0.54 m³/s); no flow July 7, 8, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 45 ft³/s (1.27 m³/s) and maximum (*), from rating curve extended above 19 ft³/s (0.54 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 14	1530	64	1.81	1.94	0.591
Feb. 10	0415	*75	2.12	*2.04	.622

Minimum discharge, 0.93 ft³/s (0.026 m³/s) for many days in October.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.93	1.2	1.2	1.2	1.4	1.6	1.4	1.6	1.6	1.4	1.3	1.6
2	.93	1.4	1.2	1.2	1.4	1.6	1.4	1.6	1.6	1.4	1.4	1.6
3	.93	1.2	1.2	1.2	1.7	1.6	1.4	1.6	1.6	1.4	1.3	1.6
4	.93	1.2	1.9	1.2	1.8	1.6	1.4	1.6	1.6	1.4	1.3	1.7
5	.93	1.1	1.4	1.2	1.6	1.6	1.6	1.6	1.6	1.4	1.3	1.6
6	.93	1.1	1.6	1.2	1.4	1.6	1.5	1.6	1.6	1.4	1.3	1.7
7	.93	1.1	1.4	1.3	1.8	1.6	1.5	1.6	1.6	1.4	1.4	1.6
8	.93	1.1	1.3	1.3	1.4	1.6	1.5	1.6	1.6	1.4	1.4	1.6
9	.93	1.1	1.3	1.6	1.5	1.6	1.5	1.6	1.6	1.4	1.6	1.9
10	.93	1.1	1.3	1.5	3.9	1.6	1.6	1.7	1.6	1.4	1.6	1.6
11	.93	1.3	1.3	5.2	2.5	1.5	1.5	1.6	1.6	1.4	1.5	1.6
12	.93	1.1	1.3	2.1	1.5	1.5	1.5	1.6	1.6	1.4	1.5	1.6
13	.93	1.8	1.3	2.9	1.5	1.5	1.5	1.6	1.6	1.4	1.5	1.6
14	.93	3.3	1.3	1.6	1.5	1.4	1.5	1.6	1.5	1.4	1.5	1.6
15	.93	1.2	1.2	1.6	1.5	1.4	1.5	1.6	1.5	1.4	1.7	1.6
16	.93	1.2	1.2	1.5	1.6	1.4	1.6	1.6	1.5	1.4	3.1	1.5
17	.93	1.2	1.2	1.4	1.6	1.4	1.8	1.6	1.5	1.4	1.7	1.5
18	1.2	1.2	1.2	1.4	1.8	1.4	1.6	1.7	1.4	1.4	1.6	1.5
19	1.0	1.2	1.2	1.4	2.3	1.4	1.6	1.6	1.4	1.4	1.6	1.5
20	1.0	1.4	1.2	1.4	1.9	1.4	1.6	1.6	1.4	1.4	1.6	1.5
21	1.0	1.2	1.2	1.4	2.0	1.4	1.6	1.6	1.4	1.4	1.6	1.5
22	1.0	1.2	1.2	1.4	1.5	1.4	1.6	1.6	1.5	1.4	1.6	1.5
23	1.0	1.2	1.2	1.4	1.5	1.4	1.6	1.6	1.4	1.4	1.6	1.5
24	1.0	1.2	1.2	1.4	1.6	1.4	1.6	1.6	1.4	1.4	1.6	1.5
25	1.0	1.2	1.2	1.4	1.6	1.5	1.6	1.6	1.4	1.4	1.6	1.5
26	1.0	1.2	1.2	1.4	3.1	1.5	1.6	1.7	1.4	1.4	1.6	1.5
27	1.0	1.2	1.2	1.4	1.6	1.4	1.6	1.6	1.4	1.4	1.6	1.5
28	1.0	1.2	1.2	1.4	1.6	1.4	1.6	1.6	1.6	1.4	1.6	1.5
29	1.0	1.2	1.2	1.4	---	1.4	1.6	1.6	1.5	1.3	1.6	1.5
30	4.5	1.2	1.2	1.4	---	1.4	1.6	1.6	1.4	1.3	1.6	1.5
31	2.8	---	1.2	1.4	---	1.4	---	1.7	---	1.3	1.6	---
TOTAL	35.31	38.5	39.4	48.8	50.1	45.9	46.5	50.0	45.4	43.1	48.8	47.0
MEAN	1.14	1.28	1.27	1.57	1.79	1.48	1.55	1.61	1.51	1.39	1.57	1.57
MAX	4.5	3.3	1.9	5.2	3.9	1.6	1.8	1.7	1.6	1.4	3.1	1.9
MIN	.93	1.1	1.2	1.2	1.4	1.4	1.4	1.6	1.4	1.3	1.3	1.5
AC-FT	70	76	78	97	99	91	92	99	90	85	97	93

CAL YR 1978 TOTAL 359.72 MEAN .99 MAX 4.5 MIN .78 AC-FT 714
WTR YR 1979 TOTAL 538.81 MEAN 1.48 MAX 5.2 MIN .93 AC-FT 1070

HAWAII, ISLAND OF OAHU

16284000 WAIHEE STREAM NEAR HEEIA

LOCATION.--Lat 21°27'01", long 157°51'38", Hydrologic Unit 20060000, on left bank 120 ft (37 m) downstream from forest-reserve boundary, 3.5 mi (5.6 km) northwest of Heeia, and 4.0 mi (6.4 km) northwest of Kaneohe Post Office.

DRAINAGE AREA.--0.93 mi^2 (2.41 km^2).

PERIOD OF RECORD.--December 1935 to current year.

REVISED RECORDS.--WSP 1569: Drainage area. WSP 1719: 1956-57. WSP 1937: 1940-43(M), 1947(M), 1948(P), 1949-50(M), 1953(M), 1955(M), 1958(M), 1959(P). WRD Hawaii 1972: 1971(P).

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 193.44 ft (58.961 m) above mean sea level (levels by Honolulu Board of Water Supply).

REMARKS.--Records fair except for the peak flow, which is poor. Honolulu Board of Water Supply diverts water from tunnel and wells in drainage area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--43 years (water years 1937-79), 7.98 ft^3/s (0.226 m^3/s), 5,780 acre-ft/yr (7.13 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,110 ft^3/s (145 m^3/s) Feb. 4, 1965, gage height, 8.72 ft (2.658 m), from floodmarks, from rating curve extended above 77 ft^3/s (2.18 m^3/s) on basis of slope-area measurements at gage heights 6.06 ft (1.847 m) and 8.72 ft (2.658 m); no flow July 8, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 140 ft^3/s (3.96 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 14	1530	a330	9.35	Unknown		Feb. 10	0400	a*520	14.7	Unknown	
Jan. 11	0700	a210	5.95	Unknown		Feb. 26	0500	a170	4.81	Unknown	

Miniminum discharge, 1.6 ft^3/s (0.045 m^3/s) several days in October.

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DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	9.0	2.2	2.1	2.5	3.5	3.1	3.1	3.3	2.8	2.6	2.5
2	1.6	6.4	2.2	2.1	2.5	3.3	3.1	3.1	3.2	2.8	2.7	2.5
3	1.6	4.2	2.2	2.1	5.4	3.3	3.1	3.1	3.2	2.8	2.5	2.5
4	1.7	3.4	9.0	2.1	7.7	3.2	3.1	3.1	3.2	2.9	2.4	3.0
5	1.7	2.8	3.0	2.1	3.8	3.1	3.4	3.1	3.2	2.8	2.4	2.6
6	1.6	2.5	3.8	2.1	3.1	3.2	3.1	3.1	3.2	2.8	2.4	2.6
7	1.6	2.3	3.4	2.1	5.3	3.1	3.1	3.2	3.2	2.9	2.4	2.6
8	1.7	2.2	2.7	2.1	3.3	3.1	3.1	3.3	3.1	2.8	2.6	2.5
9	1.6	1.9	2.5	4.3	5.5	3.1	3.1	3.2	3.0	2.7	3.2	4.6
10	1.6	1.9	2.4	3.2	44	3.0	3.4	3.8	2.9	2.7	2.8	2.8
11	1.6	2.8	2.4	43	18	3.0	3.2	3.4	2.9	2.7	2.6	2.6
12	1.6	2.3	2.3	12	4.8	3.0	3.2	3.3	2.8	2.7	2.6	2.6
13	1.6	4.6	2.6	20	3.9	3.0	3.2	3.2	2.9	2.7	2.6	2.5
14	1.7	21	2.4	6.5	3.5	3.0	3.2	3.2	2.8	2.7	2.6	2.5
15	1.7	6.6	2.3	5.1	3.7	3.0	3.2	3.2	2.9	2.7	3.0	2.5
16	1.6	3.6	2.3	4.2	4.9	3.0	3.4	3.2	3.1	2.7	10	2.5
17	1.6	2.9	2.2	3.5	4.5	3.0	4.4	3.4	2.8	2.7	3.1	2.5
18	2.4	2.7	2.2	3.2	11	3.0	3.3	3.5	2.9	2.7	2.8	2.5
19	1.8	2.6	2.2	3.0	20	3.1	3.3	3.3	2.9	2.7	2.7	2.6
20	1.7	3.6	2.2	2.8	13	3.1	3.3	3.3	2.8	2.7	2.6	2.6
21	1.8	2.7	2.2	2.8	22	3.1	3.2	3.2	2.9	2.7	2.6	2.6
22	1.7	2.5	2.2	2.7	5.9	3.1	3.2	3.2	3.0	2.7	2.6	2.5
23	1.7	2.5	2.3	2.6	4.5	3.0	3.2	3.2	2.8	2.7	2.6	2.5
24	1.7	2.5	2.2	2.6	5.4	3.1	3.2	3.2	2.8	2.7	2.5	2.6
25	1.7	2.3	2.1	2.6	4.7	3.1	3.2	3.1	2.9	2.7	2.5	2.5
26	1.7	2.3	2.1	2.5	21	3.1	3.2	3.4	2.9	2.7	2.6	2.5
27	1.8	2.2	2.1	2.5	4.3	3.1	3.3	3.2	2.9	2.7	2.8	2.5
28	1.7	2.2	2.1	2.5	3.9	3.1	3.1	3.2	3.2	2.7	2.7	2.5
29	1.8	2.2	2.1	2.5	---	3.1	3.2	3.2	3.0	2.7	2.7	2.5
30	41	2.2	2.1	2.5	---	3.1	3.1	3.2	2.9	2.6	2.6	2.5
31	24	---	2.1	2.5	---	3.1	---	3.3	---	2.6	2.5	---
TOTAL	114.2	112.9	80.1	155.9	242.1	96.1	97.2	100.5	89.6	84.5	89.3	79.0
MEAN	3.68	3.76	2.58	5.03	8.65	3.10	3.24	3.24	2.99	2.73	2.88	2.63
MAX	41	21	9.0	43	44	3.5	4.4	3.8	3.3	2.9	10	4.6
MIN	1.6	1.9	2.1	2.1	2.5	3.0	3.1	3.1	2.8	2.6	2.4	2.5
AC-FT	227	224	159	309	480	191	193	199	178	168	177	157

CAL YR 1978 TOTAL 772.8 MEAN 2.12 MAX 41 MIN 1.0 AC-FT 1530
WTR YR 1979 TOTAL 1341.4 MEAN 3.68 MAX 44 MIN 1.6 AC-FT 2660

16284200 WAIHEE STREAM NEAR KAHALUU

LOCATION.--Lat 21°27'04", long 157°51'36", Hydrologic Unit 20060000, on right bank 0.2 mi (0.3 km) downstream from forest-reserve boundary, 1.0 mi (1.6 km) south of Kahaluu School, and 1.6 mi (2.6 km) west of Ahuimanu sewage treatment plant.

DRAINAGE AREA.--0.97 mi^2 (2.51 km^2).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 170 ft (52 m), from topographic map.

REMARKS.--Records good. Honolulu Board of Water Supply diverts water from tunnel and wells in drainage area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--5 years, 4.75 ft^3/s (0.135 m^3/s), 3,440 acre-ft/yr (4.24 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 555 ft^3/s (15.7 m^3/s) Feb. 10, 1979, gage height, 6.00 ft (1.829 m) from rating curve extended above 10 ft^3/s (0.28 m^3/s); minimum, 1.1 ft^3/s (0.031 m^3/s) Apr. 7, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft^3/s (4.25 m^3/s) and maximum (*), from rating curve extended above 10 ft^3/s (0.28 m^3/s):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 31	1900	178	5.04	4.50	1.372	Jan. 11	0730	238	6.74	4.81	1.466
Nov. 14	1530	357	10.1	5.31	1.618	Feb. 10	0400	*555	15.7	*6.00	1.829
Dec. 4	1400	194	5.49	4.59	1.399	Feb. 26	0500	196	5.55	4.60	1.402

Minimum discharge, 4.0 ft^3/s (0.113 m^3/s) Sept. 15-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	15	5.9	5.4	6.3	7.9	7.1	7.1	7.1	6.3	6.1	4.2
2	4.4	12	5.9	5.4	6.3	7.6	7.1	7.1	7.1	6.3	5.9	4.2
3	4.4	9.3	5.9	5.4	10	7.6	7.1	7.1	7.1	6.3	4.7	4.2
4	4.6	7.9	14	5.4	13	7.6	7.1	7.1	7.1	6.6	4.4	4.7
5	4.4	7.1	7.1	5.4	8.2	7.6	7.3	7.1	7.1	6.3	4.4	4.2
6	4.4	6.6	8.2	5.4	7.3	7.9	7.1	6.8	7.1	6.3	4.4	4.4
7	4.6	6.3	7.9	5.4	9.8	7.6	7.1	6.8	7.1	6.6	4.2	4.2
8	4.7	6.1	6.6	5.6	7.1	7.6	7.1	7.1	6.8	6.3	4.6	4.2
9	4.6	6.1	6.6	8.4	8.6	7.6	7.1	7.0	6.6	6.3	5.1	6.5
10	4.6	5.9	6.3	7.1	45	7.6	7.3	7.6	6.6	6.3	4.7	4.6
11	4.6	6.9	6.3	55	23	7.6	7.1	7.1	6.6	6.3	4.4	4.2
12	4.6	6.3	6.1	18	10	7.6	7.1	7.1	6.6	6.3	4.4	4.2
13	4.6	9.6	6.6	28	8.6	7.6	7.1	7.1	6.3	6.3	4.4	4.1
14	4.7	32	6.3	11	7.6	7.3	7.1	6.8	6.3	6.3	4.4	4.1
15	4.7	11	6.1	9.9	7.9	7.3	7.1	6.8	6.3	6.3	4.9	4.0
16	4.6	7.6	6.1	8.6	9.6	7.3	7.4	7.1	6.8	6.3	12	4.0
17	4.7	6.8	5.9	7.6	8.6	7.3	8.3	7.3	6.3	6.3	5.0	4.0
18	5.7	6.3	5.9	7.1	16	7.6	7.3	7.6	6.3	6.3	4.6	4.4
19	4.9	6.3	5.9	6.8	27	7.6	7.1	7.1	6.3	6.3	4.6	5.2
20	4.9	7.6	5.9	6.6	18	7.3	7.1	7.1	6.3	6.3	4.4	5.2
21	4.9	6.6	5.9	6.6	27	7.1	7.1	7.1	6.3	6.3	4.2	5.2
22	4.9	6.3	5.9	6.6	11	7.1	7.1	7.3	6.6	6.3	4.2	5.2
23	4.9	6.3	5.9	6.6	9.3	7.1	7.1	7.1	6.3	6.1	4.2	5.2
24	4.9	6.3	5.9	6.6	11	7.1	7.1	7.1	6.3	6.1	4.2	5.2
25	4.9	6.1	5.9	6.6	10	7.1	7.1	7.1	6.3	6.1	4.2	5.2
26	4.9	6.1	5.6	6.3	25	7.1	7.3	7.3	6.3	6.1	4.2	5.2
27	4.9	6.1	5.6	6.6	9.3	7.1	7.3	7.1	6.3	6.1	5.2	5.2
28	4.9	6.1	5.4	6.6	8.6	7.1	7.3	7.1	6.8	6.3	5.0	5.2
29	4.7	6.1	5.6	6.3	---	7.1	7.3	7.1	6.6	6.1	4.6	5.2
30	50	5.9	5.4	6.3	---	7.1	7.1	7.1	6.6	6.1	4.4	5.2
31	38	---	5.4	6.3	---	7.1	---	7.1	---	6.1	4.2	---
TOTAL	225.0	244.6	198.0	288.9	369.1	229.2	215.9	220.4	198.2	194.3	150.2	140.8
MEAN	7.26	8.15	6.39	9.32	13.2	7.39	7.20	7.11	6.61	6.27	4.85	4.69
MAX	50	32	14	55	45	7.9	8.3	7.6	7.1	6.6	12	6.5
MIN	4.4	5.9	5.4	5.4	6.3	7.1	7.1	6.8	6.3	6.1	4.2	4.0
AC-FT	446	485	393	573	732	455	428	437	393	385	298	279

CAL YR 1978 TOTAL 1874.2 MEAN 5.13 MAX 50 MIN 3.6 AC-FT 3720
WTR YR 1979 TOTAL 2679.6 MEAN 7.33 MAX 55 MIN 4.0 AC-FT 5310

16294900 WAIKANE STREAM AT ALTITUDE 75 FT (23 M), AT WAIKANE

LOCATION.--Lat 21°30'00", long 157°51'54", Hydrologic Unit 20060000, on right bank 0.3 mi (0.5 km) downstream from Waikeekee Stream, 0.7 mi (1.1 km) west of Waikane, and 1.2 mi (1.9 km) northwest of Waiahole School.

DRAINAGE AREA.--2.22 mi² (5.75 km²).

PERIOD OF RECORD.--December 1959 to current year.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 75 ft (23 m), from topographic map.

REMARKS.--Records fair. Waiahole tunnel diverts from two tributaries above station for irrigation in vicinity of Waipahu. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--19 years (water years 1961-79), 8.37 ft³/s (0.237 m³/s), 6,060 acre-ft/yr (7.47 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft³/s (249 m³/s) Feb. 4, 1965, gage height, 10.76 ft (3.280 m), from rating curve extended above 120 ft³/s (3.40 m³/s) on basis of slope-area measurements at gage heights 4.88 ft (1.487 m), 9.46 ft (2.883 m), and 10.76 ft (3.280 m); minimum, 0.76 ft³/s (0.022 m³/s) Oct. 27, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1830	3660	104	8.73	2.661	Nov. 23	1930	1230	34.8	5.88	1.792
Nov. 14	1830	840	23.8	5.16	1.573	Feb. 10	0430	*4240	120	*9.22	2.810

Minimum discharge, 1.4 ft³/s (0.040 m³/s) Sept. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	54	6.4	4.0	4.7	11	3.3	2.5	3.2	2.7	2.0	1.8
2	2.8	36	8.2	3.9	4.9	11	3.3	2.6	2.4	2.4	1.8	1.8
3	2.8	53	7.4	3.7	5.6	8.6	3.3	2.5	2.3	2.3	2.8	1.8
4	4.2	29	29	3.5	34	7.4	3.3	2.4	2.2	2.3	2.4	2.0
5	3.0	19	11	3.5	12	7.9	3.2	2.4	2.1	2.5	1.8	1.8
6	2.6	15	20	3.5	8.1	7.9	3.0	2.6	2.1	3.6	2.0	2.0
7	2.5	12	17	3.4	14	6.9	3.0	2.3	2.1	3.1	1.8	1.9
8	5.0	10	13	3.3	17	8.0	3.0	4.6	2.1	2.5	2.0	2.3
9	3.9	9.0	9.4	11	13	6.8	3.0	3.2	2.4	2.4	2.2	2.1
10	2.7	8.3	7.9	10	330	6.8	3.5	4.0	2.1	2.3	2.1	1.8
11	2.5	11	7.9	130	53	6.4	3.1	4.1	2.2	2.3	1.8	1.7
12	2.5	8.8	6.8	50	27	4.8	2.9	3.6	2.1	2.3	1.8	1.7
13	2.5	27	8.7	70	18	4.6	2.9	3.1	4.0	2.3	1.8	1.7
14	2.5	137	8.4	50	17	5.0	2.9	2.9	2.3	2.2	1.9	1.8
15	5.2	38	6.5	29	14	4.7	2.9	2.7	2.2	2.2	7.6	1.7
16	3.1	19	6.2	21	19	4.8	2.8	2.6	2.1	2.2	9.0	1.7
17	2.7	14	5.8	16	17	5.0	2.9	2.5	2.1	2.3	3.8	1.6
18	3.3	12	5.7	13	75	5.9	2.8	2.5	2.3	2.4	2.4	1.7
19	2.9	10	5.5	11	105	5.0	2.7	2.4	2.9	2.3	2.1	1.6
20	2.6	9.9	5.5	10	62	4.9	2.7	2.3	3.0	2.2	2.0	1.7
21	2.6	8.4	5.5	9.8	48	4.8	2.7	2.3	2.4	2.1	1.8	1.7
22	2.9	7.8	5.5	10	27	4.1	2.6	2.3	7.3	2.7	1.8	1.7
23	2.8	90	5.0	8.4	21	3.9	2.6	2.2	3.6	2.3	1.8	1.7
24	2.5	22	4.9	7.6	25	3.6	2.7	2.2	2.5	2.2	2.8	1.5
25	2.5	11	4.7	6.9	18	3.7	3.1	2.2	2.5	2.1	1.8	1.7
26	2.5	9.1	4.7	6.5	32	3.8	2.6	3.1	3.0	2.2	1.8	1.8
27	2.5	7.6	4.4	6.2	14	4.0	2.6	2.7	2.6	2.1	2.3	1.7
28	2.5	7.6	4.2	6.1	13	3.5	2.5	2.5	4.8	2.2	2.1	1.8
29	2.5	7.5	4.3	5.5	---	3.4	2.5	2.4	5.0	2.2	2.2	1.8
30	160	6.5	4.3	5.3	---	3.4	2.5	2.3	3.3	2.0	2.0	1.7
31	140	---	3.7	4.5	---	3.5	---	3.2	---	1.9	1.8	---
TOTAL	385.4	709.5	247.5	526.6	1048.3	175.1	86.9	85.2	85.2	72.8	77.3	53.3
MEAN	12.4	23.7	7.98	17.0	37.4	5.65	2.90	2.75	2.84	2.35	2.49	1.78
MAX	160	137	29	130	330	11	3.5	4.6	7.3	3.6	9.0	2.3
MIN	2.5	6.5	3.7	3.3	4.7	3.4	2.5	2.2	2.1	1.9	1.8	1.5
AC-FT	764	1410	491	1040	2080	347	172	169	169	144	153	106

CAL YR 1978 TOTAL 3183.0 MEAN 8.72 MAX 210 MIN 1.3 AC-FT 6310
WTR YR 1979 TOTAL 3553.1 MEAN 9.73 MAX 330 MIN 1.5 AC-FT 7050

16296500 KAHANA STREAM AT ALTITUDE 30 FT (9.1 M), NEAR KAHANA

LOCATION.--Lat 21°32'37", long 157°53'07", Hydrologic Unit 20060000, on right bank 600 ft (183 m) upstream from Kawa Stream, 1.1 mi (1.8 km) southwest of Kahana, and 2.2 mi (3.5 km) southwest of Swanzy Beach Park in Kaaawa.

DRAINAGE AREA.--3.74 mi² (9.69 km²).

PERIOD OF RECORD.--December 1958 to current year.

REVISED RECORDS.--WSP 1937: 1959-60.

GAGE.--Water-stage recorder and concrete-masonry control. Altitude of gage is 30 ft (9.1 m), from topographic map.

REMARKS.--Records fair. Approximately 9 ft³/s (0.25 m³/s) is diverted by Waiahole Water Co. at 800-ft (244-m) elevation, 2.3 mi (3.7 km) above station. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--20 years (water years 1960-79), 35.3 ft³/s (1.00 m³/s), 25,570 acre-ft/yr (31.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,430 ft³/s (154 m³/s) Apr. 15, 1963, gage height, 8.10 ft (2.469 m), from rating curve extended above 530 ft³/s (15.0 m³/s) on basis of computation of peak flow over submerged weir; minimum, 10 ft³/s (0.28 m³/s) Sept. 17, 18, 20, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s (45.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1830	2820	79.9	6.07	1.850
Feb. 4	0330	1660	47.0	4.86	1.481
Feb. 10	0430	*3000	85.0	*6.24	1.902

Minimum discharge, 14 ft³/s (0.40 m³/s) for several days in September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	90	29	21	23	45	22	26	24	27	17	17
2	21	88	29	21	23	41	22	20	21	25	17	16
3	21	121	27	21	26	40	22	25	21	24	24	16
4	42	54	62	21	135	36	25	21	20	25	19	22
5	26	41	33	21	36	34	23	20	20	38	17	19
6	22	36	45	20	28	33	22	20	20	32	17	18
7	22	33	43	20	46	32	22	19	20	26	16	18
8	36	30	34	21	53	33	22	61	20	24	18	17
9	26	29	39	43	48	30	22	25	21	23	52	17
10	22	27	36	35	835	29	28	27	20	22	27	17
11	22	33	33	294	131	29	23	26	20	22	19	16
12	22	30	29	109	53	28	25	21	19	21	18	16
13	21	100	45	220	42	27	23	20	31	21	18	16
14	21	208	30	187	45	27	22	20	21	20	21	15
15	29	60	29	81	153	26	21	20	21	20	75	15
16	22	42	27	49	446	26	21	24	21	20	134	15
17	21	34	26	40	225	26	21	58	24	20	35	15
18	28	31	29	36	411	26	22	33	30	20	25	15
19	24	31	30	33	370	28	21	24	37	20	22	15
20	22	35	26	31	168	30	21	23	27	20	20	15
21	22	99	25	30	107	27	21	22	27	19	20	15
22	21	38	24	34	65	26	20	21	66	21	20	14
23	20	157	24	29	54	25	20	21	42	20	19	14
24	20	54	24	27	132	25	20	29	25	19	20	15
25	20	35	24	26	156	24	21	21	24	19	19	14
26	20	39	23	25	203	23	20	50	49	21	19	15
27	23	31	22	25	68	24	20	25	30	19	181	15
28	25	32	22	27	52	23	20	30	53	21	18	16
29	20	30	22	27	---	22	19	25	56	20	20	15
30	374	29	22	24	---	22	20	23	32	18	18	14
31	330	---	22	23	---	23	---	22	---	17	17	---
TOTAL	1386	1706	935	1621	3734	890	651	822	862	684	819	477
MEAN	44.7	56.9	30.2	52.3	133	28.7	21.7	26.5	28.7	22.1	26.4	15.9
MAX	374	208	62	294	446	45	28	61	66	38	134	22
MIN	20	27	22	20	23	22	19	19	19	17	16	14
AC-FT	2750	3380	1850	3220	7410	1770	1290	1630	1710	1360	1620	946

CAL YR 1978 TOTAL 13590 MEAN 37.2 MAX 523 MIN 12 AC-FT 26960
WTR YR 1979 TOTAL 14587 MEAN 40.0 MAX 446 MIN 14 AC-FT 28930

16302000 PUNALUU DITCH NEAR PUNALUU

LOCATION.--Lat 21°33'41", long 157°54'10", Hydrologic Unit 20060000, on right bank 800 ft (244 m) downstream from intake, 1.5 mi (2.4 km) west of Kahana, and 1.7 mi (2.7 km) southwest of Punaluu.

PERIOD OF RECORD.--May 1953 to current year.

REVISED RECORDS.--WSP 1719: 1954-55.

GAGE.--Water-stage recorder. Altitude of gage is 200 ft (61 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record, which are poor. Ditch diverts from Punaluu Stream for irrigation in Punaluu Valley. Periodic determinations of water temperature for the current year are published elsewhere in this report.

AVERAGE DISCHARGE.--26 years, 8.28 ft^3/s (0.234 m^3/s), 6,000 acre-ft/yr (7.40 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 54 ft^3/s (1.53 m^3/s) Oct. 31, 1964; no flow for several days in 1963, 1966, 1969, 1972, 1974, 1977, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 8.7 ft^3/s (0.25 m^3/s) Feb. 18; minimum daily, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	.65	.12	.05	.15	.25	.01	.00	.01	.01	.00	5.5
2	4.0	.82	.09	.05	.15	.20	.01	.00	.01	.01	.00	5.6
3	4.1	.65	.09	.04	1.0	.14	.01	.05	.00	.01	.00	5.9
4	6.8	.53	2.1	.04	3.0	.10	.01	.01	.00	.03	.00	6.2
5	5.0	.57	.50	.04	1.5	.08	.01	.01	.00	.06	.00	5.9
6	4.7	.53	.90	.04	1.2	.07	.01	.01	.00	.03	.00	6.0
7	4.7	.40	.90	.04	1.8	.06	.01	.01	.00	.01	.00	5.9
8	5.9	.19	.40	.10	1.9	.05	.01	.21	.00	.01	.00	5.9
9	4.7	.14	.60	.56	2.0	.04	.01	.02	.00	.00	.08	6.6
10	4.5	.10	.50	.19	7.5	.03	.21	.10	.01	.00	.04	6.3
11	4.4	.21	.20	7.4	3.5	.03	.02	.05	.03	.00	.00	5.8
12	4.2	.12	.10	2.1	1.2	.03	.02	.02	.03	.00	.00	5.8
13	4.2	.19	.25	2.3	.40	.03	.01	.01	.03	.00	.00	5.8
14	4.2	.19	.20	2.9	.09	.03	.01	.00	.01	.00	.51	6.0
15	4.8	.15	.10	1.1	2.3	.03	.01	.00	.01	.00	.62	5.8
16	4.2	.19	.08	.61	4.7	.02	.01	.01	.01	.00	3.6	5.6
17	3.8	.10	.08	.40	1.3	.02	.01	.04	.03	.00	4.2	5.8
18	5.5	.03	.10	.33	8.7	.02	.01	.00	.03	.00	4.0	5.9
19	4.2	.01	.08	.26	4.4	.02	.01	.00	.04	.00	4.1	5.6
20	3.7	.29	.08	.23	1.5	.02	.01	.00	.00	.00	4.1	5.6
21	3.7	.54	.08	.23	.73	.02	.02	.00	.00	.00	4.4	5.6
22	3.6	.09	.08	.28	.33	.02	.01	.01	.05	.00	4.5	5.6
23	3.6	.41	.08	.23	.21	.02	.00	.03	.04	.00	4.6	5.8
24	3.4	.10	.08	.23	.91	.02	.00	.04	.00	.00	4.7	5.9
25	3.3	.03	.06	.21	.68	.02	.00	.05	.00	.00	4.8	5.6
26	3.2	.23	.06	.19	2.9	.01	.00	.23	.20	.00	5.1	5.6
27	3.4	.07	.06	.19	.60	.01	.00	.00	.00	.00	5.5	5.6
28	3.4	.17	.06	.31	.40	.01	.00	.04	.01	.00	5.5	6.2
29	3.3	.14	.06	.26	---	.01	.00	.02	.04	.00	5.8	5.6
30	2.4	.12	.05	.20	---	.01	.00	.01	.01	.00	5.3	5.3
31	.57	---	.05	.20	---	.01	---	.01	---	.00	5.5	---
TOTAL	125.47	7.92	8.19	21.31	55.05	1.43	.45	.99	.60	.17	76.95	173.3
MEAN	4.05	.26	.26	.69	1.97	.046	.015	.032	.020	.005	2.48	5.81
MAX	6.8	.82	2.1	7.4	8.7	.25	.21	.23	.20	.06	5.8	6.6
MIN	.57	.01	.05	.04	.09	.01	.00	.00	.00	.00	.00	5.3
AC-FT	249	16	16	42	109	2.8	.9	2.0	1.2	.3	153	346

CAL YR 1978 TOTAL 1241.60 MEAN 3.40 MAX 18 MIN .01 AC-FT 2460
WTR YR 1979 TOTAL 472.83 MEAN 1.30 MAX 8.7 MIN .00 AC-FT 938

NOTE.--No gage-height record Feb. 27 to May 15.

HAWAII, ISLAND OF OAHU

16303000 PUNALUU STREAM NEAR PUNALUU

LOCATION.--Lat 21°33'33", long 157°54'06", Hydrologic Unit 20060000, on left bank at Punaluu ditch diversion dam, 1.4 mi (2.2 km) west of Kahana, and 1.8 mi (2.9 km) southwest of Punaluu.

DRAINAGE AREA.--2.78 mi² (7.20 km²).

PERIOD OF RECORD.--May 1953 to current year.

REVISED RECORDS.--WSP 1569: Drainage area. WRD Hawaii 1974: 1971-72(P), 1973(M). WDR HI-78-1: 1954(M), 1955-70(P).

GAGE.--Water-stage recorder and masonry control. Altitude of gage is 212 ft (65 m), from topographic map.

REMARKS.--Records fair. Records do not include flow of Punaluu ditch (see sta 16302000). Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--26 years, 16.8 ft³/s (0.476 m³/s), 12,170 acre-ft/yr (15.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,700 ft³/s (161 m³/s) July 17, 1974, gage height, 7.60 ft (2.316 m), from rating curve extended above 170 ft³/s (4.81 m³/s) on basis of slope-area measurements at gage heights 5.77 ft (1.759 m) and 7.60 ft (2.316 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 930 ft³/s (26.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1830	*1460	41.3	*4.25	1.295
Feb. 10	0400	1400	39.6	4.16	1.268

Minimum discharge, 7.2 ft³/s (0.20 m³/s) Sept. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	46	19	17	16	32	19	16	16	19	14	10
2	11	41	18	17	16	30	19	16	16	18	15	9.1
3	12	67	17	16	28	29	19	19	15	17	16	9.1
4	38	33	39	16	56	28	19	16	15	19	15	12
5	16	27	23	16	26	27	19	16	15	25	14	9.6
6	13	23	29	16	20	26	19	16	15	20	14	9.1
7	13	21	29	16	33	25	18	16	15	19	13	8.2
8	25	20	23	18	34	26	18	26	15	18	13	8.6
9	14	19	27	31	36	24	18	17	15	18	24	10
10	12	19	23	20	163	24	26	20	15	17	16	10
11	12	49	21	137	73	23	18	18	15	17	14	7.7
12	11	19	20	56	34	23	18	17	15	17	14	7.7
13	11	70	23	59	30	23	17	16	15	16	13	8.2
14	12	61	20	68	28	22	17	16	14	16	13	9.1
15	18	31	20	41	79	22	17	16	14	16	17	8.6
16	11	26	19	31	134	21	17	19	14	16	45	8.2
17	10	23	19	26	70	21	17	22	16	16	18	8.2
18	39	22	20	24	193	21	17	18	15	16	13	8.2
19	16	22	19	22	123	21	17	16	17	16	12	7.7
20	12	26	19	21	72	22	17	16	15	16	11	7.7
21	12	32	19	21	53	21	17	16	15	15	11	7.2
22	12	23	19	21	40	20	17	16	19	17	10	7.7
23	11	29	19	19	34	20	17	16	18	16	11	8.2
24	11	23	19	19	53	20	17	16	16	15	12	9.1
25	11	20	18	19	52	20	16	16	16	15	10	8.2
26	10	24	18	18	92	20	16	27	27	16	10	8.2
27	14	19	18	17	42	20	16	16	17	15	10	8.2
28	12	21	18	20	35	19	16	18	26	17	9.6	10
29	10	19	18	19	---	19	16	16	27	16	11	8.6
30	190	18	18	17	---	19	16	16	20	15	10	8.2
31	136	---	17	17	---	19	---	16	---	14	9.6	---
TOTAL	746	893	648	875	1665	707	530	541	503	523	438.2	260.6
MEAN	24.1	29.8	20.9	28.2	59.5	22.8	17.7	17.5	16.8	16.9	14.1	8.69
MAX	190	70	39	137	193	32	26	27	27	25	45	12
MIN	10	18	17	16	16	19	16	16	14	14	9.6	7.2
AC-FT	1480	1770	1290	1740	3300	1400	1050	1070	998	1040	869	517

CAL YR 1978 TOTAL 7579.8 MEAN 20.8 MAX 193 MIN 6.0 AC-FT 15030
WTR YR 1979 TOTAL 8329.8 MEAN 22.8 MAX 193 MIN 7.2 AC-FT 16520

NOTE.--No gage-height record June 28 to Aug. 1.

16304200 KALUANUI STREAM NEAR PUNALUU

LOCATION.--Lat 21°35'22", long 157°54'38", Hydrologic Unit 20060000, on right bank 0.8 mi (1.3 km) downstream from Sacred Falls, 1.6 mi (2.6 km) west of Punaluu Beach Park, and 1.7 mi (2.7 km) south of cemetery in Hauula.

DRAINAGE AREA.--1.11 mi² (2.87 km²).

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 110 ft (34 m), from topographic map.

REMARKS.--Records good except those above 50 ft³/s, which are fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--12 years, 3.80 ft³/s (0.108 m³/s), 2,750 acre-ft/yr (3.39 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,010 ft³/s (56.9 m³/s) Feb. 1, 1969, gage height, 10.0 ft (3.05 m), from rating curve extended above 14 ft³/s (0.40 m³/s) on basis of slope-area measurements at gage heights 8.85 ft (2.697 m) and 10.0 ft (3.05 m); maximum gage height, 10.84 ft (3.304 m) July 17, 1974; no flow for several days in July and August 1971, Sept. 14, 27, 1975, many days in January and February 1977, and Feb. 12-17, 27, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1830	*970	27.5	*9.60	2.926
Feb. 3	2030	660	18.7	8.90	2.713
Feb. 18	0345	569	16.1	8.64	2.633

Minimum discharge, 0.01 ft³/s (<0.001 m³/s) Apr. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.61	9.5	.84	.37	.52	2.6	.17	2.0	.28	1.4	.42	.30
2	.52	12	.88	.31	3.0	2.1	.15	.90	.25	1.0	3.1	.26
3	.51	54	.84	.28	24	1.8	.46	5.6	.25	.85	5.0	.23
4	18	5.8	21	.27	20	1.5	3.2	.71	.28	.98	1.4	2.7
5	1.9	2.5	4.1	.23	9.2	1.3	1.8	.31	.20	4.2	.64	.71
6	.87	1.8	13	.22	2.1	1.2	.83	1.3	.16	7.2	1.3	2.9
7	.63	1.5	12	.20	24	1.0	.79	1.2	.12	3.2	.64	.94
8	3.9	1.4	3.5	.74	7.7	7.8	.51	23	.12	1.2	.69	2.3
9	1.7	1.3	4.2	17	12	1.4	.75	1.9	.12	.91	3.4	6.7
10	.63	3.9	5.2	4.9	66	.88	12	6.4	.10	.69	3.6	.65
11	.58	22	2.4	108	25	.73	.97	1.3	.10	.64	.59	.40
12	.50	9.0	1.3	20	3.9	.64	.55	.71	.64	.54	.41	.27
13	.42	59	2.4	16	2.6	.56	.43	.70	2.4	.45	.34	.22
14	.38	35	2.7	24	6.1	.48	.32	.46	1.2	.41	.49	.20
15	3.3	6.5	1.8	13	22	.42	.26	.34	1.1	.54	16	.21
16	1.1	3.2	1.0	4.8	39	.39	.21	3.9	.41	.45	21	.17
17	.56	2.3	.81	2.3	16	.38	.54	4.1	.69	.49	2.7	.12
18	10	1.8	2.1	1.7	92	.43	.27	.92	1.8	.98	1.2	.12
19	4.7	1.6	3.6	1.4	47	1.0	.15	.67	5.0	.69	.54	.09
20	1.0	4.2	1.4	1.3	17	3.5	.13	.62	3.4	.45	.75	.16
21	1.3	4.0	.76	1.5	19	1.7	.11	.42	2.0	.41	.61	.25
22	1.6	2.3	.68	3.1	4.6	.84	.17	.31	7.7	3.7	.52	.11
23	2.3	3.9	.59	1.1	3.3	.41	.14	.27	8.7	1.0	.52	.07
24	.65	2.7	.84	.90	27	.30	.14	.79	1.2	.54	.58	.35
25	.52	1.3	.79	.74	16	.25	.29	.34	2.6	1.0	.46	.58
26	.42	2.0	.56	.63	34	.22	.21	13	13	1.4	.35	1.0
27	3.7	1.0	.45	.57	6.5	.45	.09	.91	1.4	.59	.36	.57
28	2.2	4.0	.39	2.1	3.4	.45	.06	1.5	3.5	.49	.29	1.7
29	.64	1.9	.67	2.5	---	.26	.10	1.2	7.2	1.1	1.9	.66
30	75	.95	3.1	1.2	---	.19	.28	.49	2.9	.54	.58	.25
31	62	---	.54	.71	---	.17	---	.34	---	.31	.38	---
TOTAL	202.14	262.35	94.44	232.07	552.92	35.35	26.08	76.61	68.82	38.35	71.16	25.19
MEAN	6.52	8.75	3.05	7.49	19.7	1.14	.87	2.47	2.29	1.24	2.30	.84
MAX	75	59	21	108	92	7.8	12	23	13	7.2	21	6.7
MIN	.38	.95	.39	.20	.52	.17	.06	.27	.10	.31	.29	.07
AC-FT	401	520	187	460	1100	70	52	152	137	76	141	50

CAL YR 1978 TOTAL 1648.36 MEAN 4.52 MAX 80 MIN .00 AC-FT 3270
WTR YR 1979 TOTAL 1685.48 MEAN 4.62 MAX 108 MIN .06 AC-FT 3340

16325000 KAMANANUI STREAM AT PUPUKEA MILITARY ROAD, NEAR MAUNAWAI

LOCATION.--Lat 21°37'25", long 158°01'04", Hydrologic Unit 20060000, on right bank 75 ft (23 m) upstream from Pupukea Military Road and 3.5 mi (5.6 km) southeast of Maunawai.

DRAINAGE AREA.--3.13 mi² (8.11 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1961, 1963, June 1963 to current year.

GAGE.--Water-stage recorder and combination pipe culverts and paved road control. Altitude of gage is 590 ft (180 m), from topographic map.

REMARKS.--Records fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--16 years, 10.5 ft³/s (0.297 m³/s), 7,610 acre-ft/yr (9.38 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,390 ft³/s (96.0 m³/s) Jan. 30, 1975, gage height, 10.06 ft (3.066 m), from rating curve extended above 42 ft³/s (1.19 m³/s) on basis of slope-area measurement at gage height 10.06 ft (3.066 m); no flow Aug. 26 to Sept. 1, Sept. 23, Oct. 15-25, 1971, many days in September 1975, Feb. 10-20, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 955 ft³/s (27.0 m³/s) Feb. 10, gage height, 7.29 ft (2.222 m), from rating curve extended as explained above, no other peak above base of 950 ft³/s (26.9 m³/s); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 18-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	30	3.8	1.9	3.1	10	1.9	2.0	.34	2.1	.37	.37
2	2.3	43	3.7	1.8	4.7	9.0	2.0	2.2	.28	1.3	.66	.34
3	2.3	55	3.2	1.7	4.1	7.8	2.1	2.6	.26	1.1	2.9	.34
4	2.7	25	16	1.7	28	6.7	5.4	3.6	.26	.91	2.9	.66
5	8.4	11	15	1.7	15	6.3	4.4	1.4	.28	.86	1.3	1.6
6	2.9	12	12	1.8	8.2	5.9	2.9	1.0	.20	7.1	1.1	.96
7	2.6	12	20	1.8	7.9	5.4	2.2	2.0	.18	10	1.6	1.0
8	3.2	5.8	13	1.9	19	23	2.6	21	.16	4.9	.81	.86
9	5.2	5.0	5.9	2.8	11	8.3	2.1	15	.14	1.9	.58	11
10	2.8	6.6	9.4	13	157	5.9	8.1	2.0	.20	.91	2.0	4.9
11	2.2	16	7.6	122	46	5.2	3.6	2.7	.26	.66	1.6	.86
12	2.0	21	4.5	50	18	4.7	2.4	1.1	.26	.55	.66	.47
13	1.9	59	7.0	44	10	4.4	5.5	.76	3.2	.47	.37	.31
14	1.7	74	6.1	51	11	4.2	2.1	.58	2.2	.44	.40	.28
15	3.3	28	4.9	34	33	4.1	1.6	.51	.71	.40	5.5	.22
16	2.9	18	4.2	20	51	3.8	1.4	.99	.37	.40	44	.18
17	1.8	11	3.5	10	43	3.5	1.2	9.2	.31	.44	7.8	.16
18	11	8.8	5.3	7.4	23	3.2	1.1	2.8	7.0	.51	2.7	.12
19	5.8	8.1	5.9	5.9	57	3.7	1.0	.96	15	.58	1.1	.10
20	2.6	14	5.4	5.4	38	7.3	.96	.62	9.8	.71	.71	.12
21	1.8	12	3.2	8.3	35	4.2	.91	.47	3.7	.66	.51	.18
22	1.5	7.6	2.8	5.9	13	3.4	.86	.37	16	3.8	.44	.40
23	2.7	6.1	2.7	4.7	9.7	2.8	.81	.37	18	3.4	.37	.47
24	2.4	6.7	2.8	3.9	49	2.6	.91	.34	5.4	2.1	.34	.55
25	1.5	5.2	2.6	3.7	46	2.3	3.8	.34	8.0	7.2	.40	5.6
26	1.2	4.9	2.3	3.2	51	2.2	1.9	8.2	22	8.1	.40	1.2
27	1.3	4.5	2.3	3.1	19	2.9	.91	3.0	5.4	2.7	.31	.71
28	10	4.2	2.0	4.8	13	2.8	.71	1.0	3.0	1.8	.28	.86
29	2.4	7.0	1.9	7.0	---	2.2	.62	1.2	5.5	1.2	.28	2.2
30	116	6.0	2.3	7.0	---	2.0	.66	1.2	4.9	.62	.40	.76
31	96	---	2.4	3.2	---	2.0	---	.51	---	.40	.51	---
TOTAL	306.8	527.5	183.7	434.6	823.7	161.8	66.65	90.02	133.27	64.22	83.70	37.78
MEAN	9.90	17.6	5.93	14.0	29.4	5.22	2.22	2.90	4.44	2.07	2.70	1.26
MAX	116	74	20	122	157	23	8.1	21	22	10	44	11
MIN	1.2	4.2	1.9	1.7	3.1	2.0	.62	.34	.14	.40	.28	.10
AC-FT	609	1050	364	862	1630	321	132	179	264	127	166	75

CAL YR 1978 TOTAL 3156.42 MEAN 8.65 MAX 197 MIN .00 AC-FT 6260
WTR YR 1979 TOTAL 2913.74 MEAN 7.98 MAX 157 MIN .10 AC-FT 5780

16330000 KAMANANUI STREAM AT MAUNAWAI

LOCATION.--Lat 21°38'20", long 158°03'27", Hydrologic Unit 20060000, on right bank at Maunawai, 25 ft (7.6 m) upstream from Blehaha Stream, 4.9 mi (7.9 km) northeast of Waialua School, and 7.3 mi (11.7 km) southwest of Kahuku School.

DRAINAGE AREA.--9.79 mi² (25.4 km²).

PERIOD OF RECORD.--February 1958 to current year.

REVISED RECORDS.--WSP 1937: 1958-60. WRD Hawaii 1974: 1971(P), 1972-73(M).

GAGE.--Water-stage recorder. Altitude of gage is 20 ft (6.1 m), from topographic map. Prior to May 13, 1965, at datum 2.00 ft (0.610 m) higher and May 13, 1965, to May 17, 1966, at datum 1.00 ft (0.305 m) higher.

REMARKS.--Records fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--21 years, 16.1 ft³/s (0.456 m³/s), 11,660 acre-ft/yr (14.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,610 ft³/s (159 m³/s) Apr. 19, 1974, gage height, 10.43 ft (3.179 m), from rating curve extended above 150 ft³/s (4.25 m³/s) on basis of slope-area measurements at gage heights 6.25 ft (1.905 m), 8.13 ft (2.478 m), 10.14 ft (3.091 m), and 10.43 ft (3.179 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s (36.8 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	2100	2160	61.2	7.13	2.173
Jan. 11	1500	1640	46.4	6.40	1.951
Feb. 10	0430	*3060	86.7	*8.20	2.499

Minimum discharge, 0.02 ft³/s (0.001 m³/s) for several days in September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	207	5.5	2.5	4.5	20	2.7	.74	.62	3.7	.50	.03
2	2.3	238	4.6	2.2	5.6	17	2.6	2.4	.39	2.2	.34	.03
3	2.1	252	4.3	2.0	7.0	16	2.5	1.6	.26	1.4	.40	.03
4	2.1	159	39	1.8	77	14	4.8	3.6	.18	.96	3.0	.03
5	7.4	35	43	1.7	28	13	5.4	1.9	.14	.71	1.8	.02
6	4.0	18	15	1.9	17	12	4.3	1.3	.11	2.5	1.1	.98
7	2.8	26	44	1.6	12	10	3.0	1.1	.09	8.8	.88	.46
8	2.9	12	27	1.5	33	77	2.9	29	.08	6.2	.88	.48
9	4.2	9.3	10	2.5	16	19	2.6	12	.07	3.1	.58	10
10	3.4	13	11	16	678	12	5.7	3.8	.06	1.6	.34	8.0
11	2.2	25	9.6	476	170	9.3	6.2	4.4	.04	.92	2.1	2.3
12	1.9	49	6.2	256	51	8.3	3.3	2.6	.06	.42	1.1	.90
13	1.7	187	7.4	234	20	7.7	5.6	1.5	.04	.44	.44	.43
14	1.5	318	10	249	17	7.1	3.8	.95	3.1	.34	.21	.21
15	1.4	113	7.1	136	64	6.0	2.5	.67	1.1	.24	.35	.12
16	4.0	51	5.2	74	117	5.6	1.9	.56	.51	.19	51	.05
17	2.0	18	4.5	22	113	5.2	1.6	5.7	.26	.14	14	.03
18	11	14	4.5	15	34	4.9	1.4	4.9	1.2	.12	4.4	.02
19	10	12	8.6	12	241	5.1	1.2	2.1	18	.11	2.1	.03
20	4.3	19	7.7	10	174	7.1	1.0	1.1	12	.11	1.1	.02
21	2.5	17	4.9	14	146	7.2	.96	.67	6.0	.23	.61	.02
22	1.8	13	4.0	13	49	5.3	.88	.48	15	.39	.35	.02
23	1.8	9.2	3.6	8.3	24	4.6	.84	.32	21	1.3	.20	.02
24	3.2	8.6	3.7	6.3	207	4.1	.82	.23	10	1.6	.13	.02
25	1.9	7.7	3.6	5.6	203	3.8	2.2	.19	5.9	4.1	.10	1.8
26	1.3	6.2	3.3	4.9	131	3.6	3.7	3.3	25	5.6	.07	1.7
27	1.0	5.9	3.2	4.5	46	4.1	1.7	6.1	9.0	4.3	.05	.85
28	9.1	5.3	2.9	4.8	29	4.2	.99	2.3	4.0	2.6	.03	.52
29	4.1	6.0	2.6	9.3	---	3.4	.76	1.4	4.0	2.7	.03	1.1
30	512	14	2.6	8.3	---	3.0	.60	1.6	8.0	1.6	.03	1.1
31	551	---	3.4	5.0	---	2.9	---	1.1	---	.78	.03	---
TOTAL	1163.5	1868.2	312.0	1601.7	2714.1	322.5	78.45	99.61	146.21	61.60	66.25	31.32
MEAN	37.5	62.3	10.1	51.7	96.9	10.4	2.62	3.21	4.87	1.99	2.85	1.04
MAX	551	318	44	476	678	77	6.2	29	25	8.8	51	10
MIN	1.0	5.3	2.6	1.5	4.5	2.9	.60	.19	.04	.11	.03	.02
AC-FT	2310	3710	619	3180	5380	640	156	198	290	122	175	62

CAL YR 1978 TOTAL 8133.72 MEAN 22.3 MAX 593 MIN .01 AC-FT 16130
WTR YR 1979 TOTAL 8487.44 MEAN 23.3 MAX 678 MIN .02 AC-FT 16830

16343000 HELEMANO STREAM AT HALEIWA

LOCATION.--Lat 21°34'40", long 158°06'12", Hydrologic Unit 20060000, on left bank at upstream side of private road bridge, 0.3 mi (0.5 km) east of Weed Circle, and 1.1 mi (1.8 km) southeast of Waialua School at Haleiwa.

DRAINAGE AREA.--14.2 mi^2 (36.8 km^2).

PERIOD OF RECORD.--November 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1.57 ft (0.479 m) above mean sea level.

REMARKS.--Records poor. Minor regulation by reservoir on upstream tributary. Diversions into basin for irrigation of sugarcane; low flow affected by irrigation return flow and releases. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--11 years (1968-79), 10.8 ft^3/s (0.306 m^3/s), 7,820 acre-ft/yr (9.65 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,200 ft^3/s (515 m^3/s) Apr. 19, 1974, gage height, 22.5 ft (6.86 m), from floodmark, from rating curve extended above 300 ft^3/s (8.50 m^3/s) on basis of slope-area measurements at gage heights 10.54 ft (3.213 m), 14.2 ft (4.328 m), 15.34 ft (4.676 m), 17.63 ft (5.374 m), and 22.5 ft (6.86 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,610 ft^3/s (73.9 m^3/s) Feb. 10, gage height, 11.05 ft (3.368 m), from rating curve extended as explained above, no other peak above base of 1,200 ft^3/s (34.0 m^3/s); minimum, 0.01 ft^3/s (<0.001 m^3/s) for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	81	.16	.20	2.5	6.7	.09	.05	.03	.02	.03	.02
2	.17	13	.12	.18	2.3	4.3	.07	.03	.03	.02	.03	.02
3	.18	11	.10	.14	2.8	3.2	.06	.02	.02	.02	.03	.03
4	.06	8.5	.42	.14	134	2.5	.07	.02	.02	.02	.03	.03
5	.14	5.2	4.0	.14	17	1.8	.07	.02	.02	.02	.03	.02
6	.35	3.1	1.8	.31	12	1.4	.08	.03	.02	.02	.02	.01
7	.09	.64	44	.29	6.7	1.0	.09	.03	.01	.03	.02	.02
8	.05	.29	13	.22	5.3	1.2	.09	.03	.01	.02	.02	.02
9	.05	.20	4.0	.23	4.9	5.6	.08	.03	.01	.03	.02	.03
10	.05	.26	1.8	.37	349	3.3	.07	.03	.01	.03	.02	.01
11	.05	.29	1.3	31	56	1.6	.07	.04	.01	.03	.02	.01
12	.07	.29	.54	74	50	.86	.06	.03	.01	.03	.02	.01
13	.16	16	.23	152	14	.64	.06	.03	.01	.02	.02	.02
14	.05	23	.29	104	9.4	.59	.06	.03	.01	.02	.02	.01
15	.03	6.0	.33	28	11	.54	.05	.04	.01	.03	.02	.01
16	.28	3.8	.23	20	123	.46	.05	.05	.01	.03	.02	.01
17	.10	1.5	.26	11	63	.41	.05	.04	.03	.02	.02	.01
18	.17	.41	.26	6.9	19	.38	.04	.04	.02	.02	.02	.01
19	.04	.29	.26	4.6	67	.41	.03	.05	.03	.03	.02	.01
20	.03	.70	.26	3.6	47	.41	.03	.05	.03	.03	.02	.01
21	.04	.98	.26	3.9	48	.41	.03	.04	.03	.04	.02	.01
22	.03	.77	.23	6.7	23	.35	.03	.04	.02	.05	.02	.01
23	.67	.32	.23	10	12	.29	.03	.03	.03	.04	.02	.01
24	.05	.32	.20	6.0	10	.26	.04	.03	.01	.03	.02	.03
25	.04	.26	.18	4.1	39	.20	.03	.02	.01	.03	.02	.01
26	.39	.23	.16	2.8	61	.18	.04	.01	.01	.03	.02	.01
27	.03	.17	.16	2.2	24	.26	.05	.01	.02	.03	.02	.01
28	.24	.14	.16	2.3	9.6	.20	.03	.01	.01	.03	.02	.01
29	.06	.14	.14	3.0	---	.18	.03	.01	.01	.03	.02	.01
30	56	.16	.18	2.3	---	.14	.03	.02	.01	.03	.01	.01
31	97	---	.23	2.9	---	.12	---	.03	---	.03	.01	---
TOTAL	156.75	178.56	75.49	483.42	1222.5	39.89	1.61	.94	.51	.86	.65	.44
MEAN	5.06	5.95	2.44	15.6	43.7	1.29	.054	.030	.017	.028	.021	.015
MAX	97	81	44	152	349	6.7	.09	.05	.03	.05	.03	.03
MIN	.03	.14	.10	.14	2.3	.12	.03	.01	.01	.02	.01	.01
AC-FT	311	354	150	959	2420	79	3.2	1.9	1.0	1.7	1.3	.9

CAL YR 1978 TOTAL 1058.42 MEAN 2.90 MAX 223 MIN .00 AC-FT 2100
WTR YR 1979 TOTAL 2161.62 MEAN 5.92 MAX 349 MIN .01 AC-FT 4290

16345000 OPAEULA STREAM NEAR WAHIAWA

LOCATION.--Lat 21°33'55", long 158°00'10", Hydrologic Unit 20060000, on left bank 4.3 mi (6.9 km) northeast of Leilehua High School in Wahiawa and 8.1 mi (13.0 km) east of Waialua School.

DRAINAGE AREA.--2.98 mi² (7.72 km²).

PERIOD OF RECORD.--August 1959 to current year.

REVISED RECORDS.--WSP 1937: 1960.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,120 ft (341 m), from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--20 years, 13.3 ft³/s (0.377 m³/s), 9,640 acre-ft/yr (11.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,540 ft³/s (157 m³/s) July 17, 1974, gage height, 11.94 ft (3.639 m), from rating curve extended above 110 ft³/s (3.12 m³/s) on basis of slope-area measurements at gage heights 6.74 ft (2.054 m) and 10.12 ft (3.085 m); minimum, no flow Jan. 24, 25, 1977, Feb. 18, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,180 ft³/s (33.4 m³/s) Feb. 3, gage height, 6.33 ft (1.929 m), from rating curve extended as explained above, no peak above base of 1,200 ft³/s (34.0 m³/s); minimum, 0.14 ft³/s (0.004 m³/s) for several days in September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	34	3.0	2.5	3.5	9.4	1.5	2.9	.85	5.2	1.1	.82
2	2.2	35	2.7	2.0	24	8.1	1.4	4.2	.62	3.1	.52	.56
3	2.1	43	2.8	1.8	63	7.1	1.4	7.9	.55	2.3	10	.43
4	14	22	30	1.6	82	6.4	6.4	6.1	.47	2.0	6.1	.38
5	17	6.8	19	1.5	21	5.7	4.6	2.3	.42	8.3	3.3	3.6
6	3.9	5.1	57	1.5	9.7	5.2	5.1	1.4	.38	21	2.4	4.0
7	2.7	4.3	64	1.4	19	4.8	3.4	2.7	.38	16	4.1	4.7
8	6.5	3.9	26	1.3	20	24	2.7	15	.32	6.4	1.9	3.5
9	11	5.0	7.8	20	17	13	2.2	7.9	.23	3.5	1.3	9.2
10	3.8	3.6	16	31	198	5.7	24	3.4	.19	2.4	10	4.6
11	2.3	19	17	170	99	4.4	6.2	4.4	.21	1.9	3.4	1.9
12	2.0	32	5.7	68	22	4.0	3.0	2.4	.29	1.6	1.7	1.0
13	1.9	136	5.2	115	9.7	3.7	2.1	1.5	3.3	1.5	1.0	.71
14	1.7	88	11	101	14	3.4	1.7	1.0	5.2	1.3	.87	.53
15	1.5	24	8.9	36	46	3.2	1.4	.83	2.9	1.1	.83	.37
16	5.3	9.0	5.9	28	148	3.0	1.2	3.2	2.1	1.1	50	.29
17	2.5	6.3	4.2	10	56	2.7	1.1	17	2.0	1.1	13	.22
18	13	5.1	6.0	7.3	55	2.6	.97	5.7	4.2	1.1	4.0	.18
19	11	4.8	15	5.9	103	2.6	.89	2.3	15	1.8	2.3	.15
20	5.0	18	12	5.6	27	11	.79	1.4	11	2.1	1.6	.18
21	2.5	14	8.9	6.2	52	6.1	.72	1.2	4.9	1.3	1.3	.18
22	2.2	8.2	3.8	17	16	5.4	.68	.91	25	4.4	1.1	.15
23	11	7.6	3.7	7.2	11	3.2	.77	.76	18	6.4	.52	.15
24	4.6	6.6	4.3	4.6	54	2.4	1.2	.66	7.1	2.7	1.0	.16
25	2.2	4.4	5.1	4.0	62	2.1	1.4	.75	6.3	2.8	.82	.17
26	1.6	4.9	3.7	3.5	76	1.9	2.1	15	34	3.5	1.1	.73
27	1.3	5.2	2.9	3.3	20	1.9	1.4	6.0	7.1	3.4	.64	2.8
28	6.4	3.4	2.5	4.3	14	2.8	.85	2.5	7.1	2.1	.66	1.7
29	3.7	7.5	2.3	12	---	2.2	.63	1.8	11	1.3	.56	4.8
30	168	4.0	3.8	7.0	---	1.8	.52	2.6	8.7	2.1	1.2	2.1
31	142	---	4.6	4.7	---	1.6	---	1.3	---	1.8	1.5	---
TOTAL	457.3	570.7	356.8	685.2	1341.9	161.4	82.32	127.01	179.81	116.6	130.82	50.26
MEAN	14.8	19.0	11.5	22.1	47.9	5.21	2.74	4.10	5.99	3.76	4.22	1.68
MAX	168	136	64	170	198	24	24	17	34	21	50	9.2
MIN	1.3	3.4	2.3	1.3	3.5	1.6	.52	.66	.19	1.1	.56	.15
AC-FT	907	1130	708	1360	2660	320	163	252	357	231	259	100

CAL YR 1978 TOTAL 4360.05 MEAN 11.9 MAX 275 MIN .00 AC-FT 8650
WTR YR 1979 TOTAL 4260.12 MEAN 11.7 MAX 198 MIN .15 AC-FT 8450

16400000 HALAWA STREAM NEAR HALAWA
(National stream-quality accounting network station)

LOCATION.--Lat 21°09'31", long 156°45'53", Hydrologic Unit 20050000, on right bank 600 ft (183 m) downstream from Hipuapua Stream and 1.5 mi (2.4 km) west of Halawa.

DRAINAGE AREA.--4.62 mi² (11.97 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1917 to July 1932, November 1937 to current year.

REVISED RECORDS.--WSP 1319: 1928, 1929(M), 1930-31, 1938-50(M), drainage area. WSP 1719: 1954.

GAGE.--Water-stage recorder. Altitude of gage is 210 ft (64 m), from topographic map. Prior to June 25, 1923, at site 350 ft (107 m) upstream at different datum. June 25, 1923, to July 18, 1932, and Nov. 17, 1937, to Feb. 3, 1965, at present site at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records fair. No diversion above station.

AVERAGE DISCHARGE.--55 years (water years, 1918-31, 1939-79), 29.0 ft³/s (0.821 m³/s), 21,010 acre-ft/yr (25.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,900 ft³/s (762 m³/s) Feb. 4, 1965, gage height, 19.91 ft (6.069 m), from floodmarks, from rating curve extended above 86 ft³/s (2.44 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.76 ft³/s (0.022 m³/s) about Nov. 23, 1962.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft³/s (53.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	2330	2200	62.3	8.65	2.637
Jan. 11	1630	*2430	68.8	*8.98	2.737
Feb. 21	1500	1900	53.8	8.22	2.505

Minimum discharge, 3.3 ft³/s (0.093 m³/s) on Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	200	8.0	6.5	7.0	15	6.4	51	6.4	7.6	6.2	4.9
2	19	53	11	6.0	6.3	36	27	7.5	5.5	6.7	24	11
3	27	175	27	5.8	5.8	19	6.6	29	6.6	6.1	45	44
4	162	67	13	5.6	103	11	12	7.5	4.8	15	28	21
5	32	23	116	5.5	204	9.4	11	7.0	4.1	26	14	7.8
6	37	16	403	5.3	63	8.5	9.7	15	3.8	18	18	18
7	33	13	96	5.2	28	7.9	16	5.9	3.6	55	32	7.7
8	37	11	29	5.1	13	36	6.8	6.1	4.0	19	7.7	7.8
9	25	10	47	6.6	138	24	5.7	5.8	12	13	5.9	47
10	21	150	29	71	176	20	18	29	7.4	7.5	5.2	19
11	22	102	25	437	192	8.2	8.9	60	11	7.5	4.9	6.8
12	25	179	19	273	34	8.0	8.2	13	9.6	6.0	4.6	6.2
13	20	259	13	237	16	7.4	25	23	35	5.2	4.3	6.0
14	26	272	15	178	28	6.5	52	17	17	11	6.2	8.9
15	196	56	15	110	44	6.6	13	9.2	8.5	19	176	5.8
16	25	27	11	110	163	6.8	66	46	5.7	7.7	66	5.0
17	33	18	9.6	23	82	5.8	18	19	16	9.4	12	4.9
18	72	19	13	14	140	42	61	8.9	88	23	7.3	6.6
19	28	17	14	10	234	35	13	8.6	28	7.6	6.2	4.6
20	12	42	11	12	125	26	7.2	8.3	8.2	14	5.6	4.4
21	18	19	8.7	277	286	16	6.1	5.8	13	7.4	5.1	4.1
22	70	20	8.0	160	48	7.7	11	5.3	60	49	5.0	4.0
23	88	16	8.6	35	27	6.2	7.5	5.0	93	9.3	4.8	3.9
24	14	16	9.1	15	128	5.7	14	4.8	9.7	6.3	6.3	17
25	12	9.5	10	11	75	5.4	27	4.5	44	6.8	5.7	7.1
26	11	18	8.2	8.9	66	5.2	6.8	23	41	5.6	5.7	6.7
27	20	8.8	7.0	47	37	6.3	6.6	14	13	5.0	4.5	5.8
28	102	45	6.5	19	22	5.9	5.3	13	18	46	4.0	7.6
29	78	16	8.5	11	---	4.9	4.8	5.5	46	8.7	8.1	5.8
30	138	8.9	23	7.9	---	4.6	9.5	4.9	11	5.6	4.3	4.7
31	216	---	7.8	7.1	---	4.5	---	5.2	---	5.0	3.6	---
TOTAL	1638	1886.2	1030.0	2125.5	2491.1	411.5	490.1	468.2	633.9	429.0	536.2	314.1
MEAN	52.8	62.9	33.2	68.6	89.0	13.3	16.3	15.1	21.1	14.2	17.3	10.5
MAX	216	272	403	437	286	42	66	60	93	55	176	47
MIN	11	8.8	6.5	5.1	5.8	4.5	4.8	4.5	3.6	5.0	3.6	3.9
AC-FT	3250	3740	2040	4220	4940	816	972	929	1260	871	1060	623

CAL YR 1978 TOTAL 11192.8 MEAN 30.7 MAX 455 MIN 1.5 AC-FT 22200
WTR YR 1979 TOTAL 12463.8 MEAN 34.1 MAX 437 MIN 3.6 AC-FT 24720

16400000 HALAWA STREAM NEAR HALAWA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-74, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
OCT											
16...	1400	15	46	7.2	21.0	16	10.3	--	870	910	6
NOV											
13...	1100	745	28	6.1	21.0	24	9.9	--	K7600	7900	13
DEC											
11...	1430	20	53	7.3	19.5	4.8	9.8	--	45	380	14
JAN											
03...	1230	5.9	70	6.6	17.5	.70	--	--	14	390	15
FEB											
07...	1130	30	49	6.7	20.0	7.8	10.3	--	290	470	6
MAR											
06...	1245	11	61	6.7	20.0	2.0	10.0	--	12	430	21
APR											
02...	1530	42	53	6.6	21.0	32	9.6	--	3500	2000	5
30...	1245	9.6	60	7.2	19.5	5.4	9.7	--	54	1700	9
MAY											
29...	1445	5.3	51	7.2	22.5	13	9.3	--	230	590	6
JUL											
09...	1330	22	49	7.0	21.5	6.8	9.5	--	75	460	6
AUG											
06...	1245	11	51	7.4	22.0	13	8.6	--	240	660	16
SEP											
04...	1330	211	40	7.1	23.5	14	9.4	--	980	2200	5

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
OCT										
16...	1	.8	1.0	5.7	64	1.0	--	.6	5	7.4
NOV										
13...	11	4.3	.6	3.6	36	.4	--	.5	2	3.8
DEC										
11...	11	3.8	1.0	6.3	49	.7	--	.6	3	5.3
JAN										
03...	13	3.4	1.6	8.8	55	1.0	--	.6	2	8.6
FEB										
07...	4	.8	.9	6.1	68	1.1	--	.5	2	3.0
MAR										
06...	15	6.4	1.3	7.7	43	.7	--	.5	6	3.8
APR										
02...	3	.7	.9	6.5	69	1.2	--	.6	2	2.5
30...	3	1.3	1.4	8.2	64	1.2	--	.7	6	6.2
MAY										
29...	4	1.3	.7	6.8	67	1.2	--	.8	2	4.3
JUL										
09...	5	.9	1.0	6.0	65	1.0	6.6	.6	1	9.8
AUG										
06...	14	5.1	.9	6.5	43	.7	8.4	1.9	2	13
SEP										
04...	1	.9	.7	5.2	78	1.0	6.0	.8	4	--

K Results based on colony count outside the acceptable range (non-ideal colony count).

16400000 HALAWA STREAM NEAR HALAWA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	SOLIDS, DISSOLVED (TONS PER DAY)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4)
OCT										
16...	8.9	.1	5.6	43	34	.06	1.74	.04	.02	--
NOV										
13...	7.6	.1	2.9	29	23	.04	58.3	.03	.03	--
DEC										
11...	15	.0	6.6	36	40	.05	1.94	.05	.01	--
JAN										
03...	14	.0	8.8	43	47	.06	.68	.02	.00	--
FEB										
07...	10	.0	5.9	35	29	.05	2.83	.08	.03	--
MAR										
06...	19	.1	8.8	38	51	.05	1.13	.06	.01	--
APR										
02...	13	.0	7.5	37	33	.05	4.20	.05	.02	--
30...	11	.1	8.8	47	41	.06	1.22	.01	.01	.01
MAY										
29...	11	.1	5.9	41	32	.06	.46	.02	.01	.01
JUL										
09...	10	.1	5.4	27	38	.04	1.60	.02	.01	.01
AUG										
06...	9.8	.1	5.5	38	44	.05	1.13	.02	.01	.01
SEP										
04...	8.1	.0	4.3	--	--	--	--	.04	.03	.04

DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS TOTAL (MG/L AS PO4)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHATE, TOTAL (MG/L AS PO4)	PHOSPHORUS, DISSOLVED (MG/L AS P)
OCT										
16...	.55	.57	.14	.43	.61	2.7	--	.06	--	.03
NOV										
13...	2.3	2.3	.00	2.3	2.3	10	--	.40	--	.03
DEC										
11...	.47	.48	.00	--	.53	2.3	--	.04	--	.05
JAN										
03...	.18	.18	.05	.13	.20	.89	--	.04	--	.04
FEB										
07...	.11	.14	.00	.15	.22	.97	--	.02	--	.01
MAR										
06...	.12	.13	.06	.07	.19	.84	--	.04	--	.03
APR										
02...	.54	.56	.14	.42	.61	2.7	--	.05	--	.03
30...	.15	.16	.09	.07	.17	.75	.09	.03	.09	.01
MAY										
29...	.24	.25	.05	.20	.27	1.2	.12	.04	.12	.01
JUL										
09...	.14	.15	.10	.05	.17	.75	.09	.03	.09	.01
AUG										
06...	.59	.60	.55	.05	.62	2.7	.15	.05	--	.02
SEP										
04...	.66	.69	.15	.54	.73	3.2	.12	.04	--	.02

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT										
16...	1400	1	0	5	0	5	6	0	6	0
FEB										
07...	1130	0	0	6	0	6	2	0	2	0
APR										
02...	1530	0	0	7	0	7	<1	0	<1	10
JUL										
09...	1330	0	0	9	0	9	2	0	2	10

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)
OCT										
16...	0	0	3	0	3	3	3	0	900	540
FEB										
07...	0	0	<3	0	<3	4	3	1	370	230
APR										
02...	10	0	<3	0	<3	5	5	0	1600	1500
JUL										
09...	0	10	<3	0	<3	5	4	1	530	390

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT										
16...	360	73	0	73	10	6	4	.0	.0	.0
FEB										
07...	140	7	4	3	20	20	<1	.0	.0	.0
APR										
02...	110	25	21	4	20	20	3	.0	.0	.0
JUL										
09...	140	10	4	6	10	7	3	.0	.0	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT									
16...	0	0	0	0	0	0	10	7	3
FEB									
07...	0	0	0	2	2	0	<3	0	<3
APR									
02...	0	0	0	0	0	0	20	<17	<3
JUL									
09...	0	0	0	0	0	0	10	4	6

< Actual value is known to be less than the value shown.

16400000 HALAWA STREAM NEAR HALAWA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
OCT				
16...	1400	--	6.5	.0
NOV				
13...	1100	35	--	--
DEC				
11...	1430	3.4	--	--
JAN				
03...	1230	2.2	--	--
FEB				
07...	1130	5.3	--	.1
MAR				
06...	1245	2.0	--	--
APR				
02...	1530	--	7.2	.2
30...	1245	2.6	--	--
MAY				
29...	1445	5.5	--	--
JUL				
09...	1330	--	5.3	.0
AUG				
06...	1245	8.6	--	--

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	LENGTH OF EXPO-SURE (DAYS)
OCT								
16...	1400	450	.200	.000	1.48	.000	--	81
NOV								
13...	1100	3500	--	--	--	--	--	--
DEC								
11...	1430	0	--	--	--	--	--	--
JAN								
03...	1230	140	--	--	--	--	--	--
FEB								
07...	1130	170	.320	.240	2.13	.000	37.6	35
MAR								
06...	1245	14	--	--	--	--	--	--
APR								
02...	1530	1300	.320	.080	3.25	.000	--	27
30...	1245	1100	--	--	--	--	--	--
MAY								
29...	1445	0	--	--	--	--	--	--
JUL								
09...	1330	450	11.5	8.74	93.2	11.5	63.9	81
AUG								
06...	1245	150	--	--	--	--	--	--
SEP								
04...	1330	650	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT					
16...	1400	15	17	.69	100
NOV					
13...	1100	745	275	553	95
DEC					
11...	1430	20	11	.59	100
JAN					
03...	1230	5.9	1	.02	100
FEB					
07...	1130	30	7	.57	100
MAR					
06...	1245	11	3	.09	100
APR					
02...	1530	82	39	8.8	100
30...	1245	9.6	6	.16	100
MAY					
29...	1445	5.3	8	.11	100
JUL					
09...	1330	22	7	.42	100
AUG					
06...	1245	11	10	.30	100
SEP					
04...	1330	21	15	.85	100

16400000 HALAWA STREAM NEAR HALAWA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, APRIL 1978 TO SEPTEMBER 1978

DATE	APR 3,78	MAY 1,78	MAY 30,78	JUL 10,78	AUG 8,78	SEP 5,78
TIME	1415	1305	1530	1400	1230	1335
TOTAL CELLS/ML	240	780	200	390	750	1200
DIVERSITY: DIVISION	1.3	0.8	0.5	1.1	0.3	0.9
.CLASS	1.3	0.8	0.5	1.1	0.3	0.9
..ORDER	1.5	0.9	0.5	1.1	0.3	1.2
...FAMILY	1.5	1.7	0.5	1.1	0.9	1.8
....GENUS	1.5	1.7	0.5	1.1	0.9	2.1

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHARACIACEAE												
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	14	1
....SELENASTRUM	--	-	15	2	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-	7	1
....TREUBARIA	--	-	23	3	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....CRUCIGENIA	57#	24	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	93#	24	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	14	6	30	4	--	-	--	-	--	-	7	1
..ZYGNEMATALES												
...DESMIDIACEAE												
....COSMARIUM	--	-	--	-	--	-	--	-	--	-	7	1
CHRYSOPHYTA												
....BIDDULPHIA	--	-	--	-	--	-	--	-	--	-	--	-
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-	96	9
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	71	6
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	29	12	--	-	22	11	--	-	5	1	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-	*	0
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
....ROPALODIA	--	-	8	1	--	-	--	-	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	--	-	--	-	--	-
...EUNOTIACEAE												
....EUNOTIA	--	-	--	-	--	-	23	6	--	-	*	0
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	8	1	--	-	--	-	11	1	32	3
...NAVICULACEAE												
....CYROSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	23	3	--	-	--	-	27	4	64	5
....STAURONEIS	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	--	-	--	-	--	-	5	1	14	1
CYANOPHYTA (BLUE-GREEN ALGAE)												
....ENTOPHYSALIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	81	11	160	13
....CYLINDROSPERMUM	--	-	180#	23	--	-	--	-	--	-	--	-
....NODULARIA	--	-	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	480#	62	--	-	--	-	--	-	36	3
....OSCILLATORIA	140#	59	--	-	180#	89	280#	71	620#	83	750#	61
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
....TRACHELOMONAS	--	-	8	1	--	-	--	-	--	-	7	1

- DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

NOTE: DATA FOR OCTOBER 1977 TO MARCH 1978 PUBLISHED IN 1978 REPORT.

16400000 HALAWA STREAM NEAR HALAWA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO SEPTEMBER 1979

DATE	OCT 16,78		NOV 13,78		DEC 11,78		JAN 3,79		FEB 7,79		MAR 6,79	
TIME	1400		1100		1430		1230		1130		1245	
TOTAL CELLS/ML	450		3500		0		140		170		19	
DIVERSITY: DIVISION	0.8		0.6		0.0		0.7		1.5		0.0	
.CLASS	0.8		0.6		0.0		0.7		1.5		0.0	
..ORDER	0.9		0.6		0.0		0.7		1.8		0.0	
...FAMILY	1.1		0.7		0.0		0.9		2.9		0.0	
....GENUS	1.1		0.8		0.0		0.9		2.8		0.0	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHARACIACEAE												
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	11	2	56	2	--	-	--	-	5	3	--	-
....CLOSTERIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....CRUCIGENIA	19	3	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
..OEDOGONIALES												
...OEDOGONIACEAE												
....OEDOGONIUM	--	-	--	-	--	-	--	-	5	3	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....COSMARIUM	--	-	*	0	--	-	--	-	--	-	--	-
....TETMEMORUS	--	-	--	-	--	-	--	-	--	-	--	-
...MESOTAENIACEAE												
....NETRIUM	4	1	--	-	--	-	--	-	--	-	--	-
...ZYGNEMATACEAE												
....MOUGEOTIA	--	-	28	1	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...BIDDULPHIACEAE												
....BIDDULPHIA	--	-	--	-	--	-	--	-	--	-	--	-
...COSCINODISCACEAE												
....CYCLOTELLA	4	1	--	-	--	-	--	-	10	6	--	-
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	14	#100
....COCCONEIS	4	1	--	-	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	5	3	--	-
...CYMBELLACEAE												
....AMPHORA	--	-	--	-	--	-	--	-	--	-	--	-
....CYMBELLA	4	1	*	0	--	-	8	6	--	-	--	-
....RHOPALODIA	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	--	-	--	-	--	-
...EUNOTIACEAE												
....EUNOTIA	--	-	28	1	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	7	2	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	4	1	*	0	--	-	8	6	5	3	--	-
...NAVICULACEAE												
....FRUSTULIA	--	-	28	1	--	-	--	-	--	-	--	-
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULA	21	5	69	2	--	-	--	-	66	#39	--	-
....PINNULARIA	--	-	56	2	--	-	--	-	--	-	--	-
....STAURONEIS	--	-	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	4	1	28	1	--	-	8	6	10	6	--	-
...TABELLARIACEAE												
....TABELLARIA	--	-	--	-	--	-	--	-	--	-	--	-
.CHRYSOPHYCEAE												
..CHRYSOMONADALES												
...MALLOMONADACEAE												
....MALLOMONAS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

HAWAII, ISLAND OF MOLOKAI

16400000 HALAWA STREAM NEAR HALAWA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO SEPTEMBER 1979

DATE	OCT 16,78		NOV 13,78		DEC 11,78		JAN 3,79		FEB 7,79		MAR 6,79	
TIME	1400		1100		1430		1230		1130		1245	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	--	-	10	6	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHAMAESIPHONALES												
...CHAMAESIPHONACEAE												
....ENTOPHYSALIS	--	-	--	-	--	-	--	-	--	-	--	-
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	25#	15	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	10	6	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	15	9	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	--	-	--	-
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	--	-	--	-
....NODULARIA	--	-	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	3200#	90	--	-	--	-	--	-	--	-
....OSCILLATORIA	370#	83	--	-	--	-	120#	83	--	-	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....TRACHELOMONAS	--	-	28	1	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/24

16400000 HALAWA STREAM NEAR HALAWA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	APR 2,79	APR 30,79	MAY 29,79	AUG 6,79	SEP 4,79
TIME	1530	1245	1445	1245	1330
TOTAL CELLS/ML	1300	1100	0	150	650
DIVERSITY: DIVISION	0.3	0.6	0.0	0.4	1.1
.CLASS	0.3	0.6	0.0	0.4	1.2
..ORDER	0.3	1.5	0.0	0.4	1.2
...FAMILY	1.5	2.0	0.0	1.8	2.4
....GENUS	1.5	2.0	0.0	1.8	2.4

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	15	1	--	-	--	-	--	-	5	1
....CLOSTERIOPSIS	15	1	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
..OEDOGONIALES										
...OEDOGONIACEAE										
....OEDOGONIUM	--	-	--	-	--	-	14	9	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIUM	15	1	--	-	--	-	--	-	--	-
....TETMEMORUS	--	-	--	-	--	-	--	-	5	1
...MESOTAENIACEAE										
....NEIRIUM	--	-	--	-	--	-	--	-	--	-
...ZYGNEMATACEAE										
....MOUGEOTIA	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	42	4	--	-	--	-	5	1
....COCCONEIS	--	-	--	-	--	-	--	-	10	2
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	15	1	--	-	--	-	--	-	--	-
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	--	-	--	-	25	4
...FRAGILARIACEAE										
....FRAGILARIA	920#	72	--	-	--	-	--	-	10	2
....SYNEDRA	--	-	56	5	--	-	28#	18	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	140	11	56	5	--	-	42#	27	150#	23
...NAVICULACEAE										
....FRUSTULIA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	61	5	14	1	--	-	70#	45	120#	19
....PINNULARIA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	91	7	--	-	--	-	--	-	--	-
...TABELLARIACEAE										
....TABELLARIA	--	-	--	-	--	-	--	-	5	1
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...MALLOMONADACEAE										
....MALLOMONAS	--	-	--	-	--	-	--	-	5	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

HAWAII, ISLAND OF MOLOKAI

16400000 HALAWA STREAM NEAR HALAWA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO SEPTEMBER 1979

DATE	APR 2,79		APR 30,79		MAY 29,79		AUG 6,79		SEP 4,79	
TIME	1530		1245		1445		1245		1330	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHAMAESIPHONALES										
...CHAMAESIPHONACEAE										
....ENTOPHYSALIS	--	-	--	-	--	-	--	-	--	-
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	450#	40	--	-	--	-	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	61	9
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	--	-
....NODULARIA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	430#	38	--	-	--	-	250#	38
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	84	7	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	15	1	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

HAWAII, ISLAND OF MOLOKAI

16403900 KAWAINUI STREAM NEAR PELEKUNU

LOCATION.--Lat 21°07'59", long 156°52'38", Hydrologic Unit 20050000, on right bank 900 ft (274 m) upstream from confluence with Kapuhi Stream, 2.1 mi (3.4 km) south of former village of Pelekunu, and 5.7 mi (9.2 km) north of Kamalo.

DRAINAGE AREA.--1.17 mi² (3.03 km²).

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 770 ft (235 m), from topographic map.

REMARKS.--Records fair except those above 90 ft³/s (2.55 m³/s), which are poor. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--11 years, 8.26 ft³/s (0.234 m³/s), 5,980 acre-ft/yr (7.37 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,630 ft³/s (46.2 m³/s) Jan. 8, 1969, gage height, 7.36 ft (2.243 m), from rating curve extended above 67 ft³/s (1.90 m³/s); minimum, 0.70 ft³/s (0.020 m³/s) Sept. 22, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft³/s (8.50 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 13	1530	421	11.9	4.57	1.393	Feb. 10	0830	*1340	37.9	*6.77	2.063
Jan. 11	1800	635	18.0	5.20	1.585	Feb. 20	2400	361	10.2	4.37	1.332

Minimum discharge, 1.10 ft³/s (0.031 m³/s) Sept. 22, 23, 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	50	4.7	4.2	6.7	12	3.5	5.9	1.9	4.8	2.8	2.4
2	3.6	21	5.4	3.9	5.9	11	3.6	3.8	2.0	4.3	4.6	2.1
3	4.2	18	4.1	3.7	5.6	9.8	4.4	4.7	1.9	3.9	7.0	3.3
4	7.7	15	7.3	3.5	33	8.7	8.3	3.6	1.8	4.2	6.4	2.4
5	4.3	11	18	3.3	114	7.8	6.7	3.5	1.7	3.8	6.6	1.8
6	4.5	9.1	68	3.2	45	7.1	8.8	3.6	1.7	7.2	6.5	1.9
7	5.0	7.9	60	3.1	20	6.6	8.7	3.1	1.6	10	4.8	2.0
8	4.7	7.1	20	3.0	13	26	7.2	2.9	1.6	6.9	4.0	1.8
9	4.0	6.9	16	9.0	41	20	5.9	2.8	1.8	5.3	3.5	1.7
10	3.5	8.1	13	26	158	14	6.6	3.3	2.7	4.4	3.2	1.6
11	3.7	9.3	13	59	144	10	4.8	2.7	3.0	4.0	2.9	1.5
12	3.2	37	11	58	45	9.0	12	2.6	5.6	3.7	2.7	1.5
13	2.9	72	10	98	20	8.0	15	3.1	8.2	3.4	2.5	1.5
14	4.4	76	11	69	19	7.3	19	4.3	5.6	3.5	2.9	1.5
15	6.7	38	11	47	22	7.5	14	6.0	4.6	3.5	6.8	1.4
16	4.6	18	8.7	42	21	6.4	25	9.9	4.1	3.0	9.1	1.3
17	3.9	13	7.6	22	21	5.6	15	5.7	3.9	2.8	5.0	1.3
18	5.7	11	11	14	21	6.5	11	4.1	15	4.4	3.8	1.3
19	4.4	9.4	10	9.4	36	11	8.9	3.8	12	2.9	3.4	1.2
20	3.8	14	9.0	15	54	13	7.7	3.4	7.5	2.8	3.1	1.2
21	3.7	11	7.2	64	107	7.7	6.7	3.0	7.2	2.8	2.8	1.2
22	6.7	9.8	6.9	80	35	5.4	6.0	2.8	8.5	8.2	2.8	1.2
23	20	7.8	7.3	41	19	4.7	5.5	2.6	10	4.1	2.6	1.2
24	9.3	6.9	5.7	20	20	4.3	5.5	2.5	7.0	3.2	2.5	1.9
25	7.2	6.3	5.7	14	21	4.0	8.1	2.4	7.6	3.3	2.3	1.5
26	5.9	7.1	5.0	12	20	3.8	5.0	2.8	5.8	3.4	2.2	1.3
27	5.3	5.3	4.5	10	19	5.1	4.5	2.4	5.0	2.9	2.2	1.3
28	24	6.7	4.2	11	15	5.9	4.1	2.2	5.3	5.6	2.0	1.3
29	11	5.4	4.8	11	---	3.8	3.8	2.1	8.8	4.0	2.3	1.2
30	22	4.5	7.5	8.8	---	3.6	4.1	2.0	6.1	3.1	1.9	1.2
31	36	---	5.0	7.8	---	3.4	---	2.0	---	2.7	1.7	---
TOTAL	239.7	522.6	382.6	775.9	1101.2	259.0	249.4	109.6	159.5	132.1	116.9	48.0
MEAN	7.73	17.4	12.3	25.0	39.3	8.35	8.31	3.54	5.32	4.26	3.77	1.60
MAX	36	76	68	98	158	26	25	9.9	15	10	9.1	3.3
MIN	2.9	4.5	4.1	3.0	5.6	3.4	3.5	2.0	1.6	2.7	1.7	1.2
AC-FT	475	1040	759	1540	2180	514	495	217	316	262	232	95

CAL YR 1978 TOTAL 3076.3 MEAN 8.43 MAX 78 MIN 1.1 AC-FT 6100
WTR YR 1979 TOTAL 4096.5 MEAN 11.2 MAX 158 MIN 1.2 AC-FT 8130

16404000 PELEKUNU STREAM NEAR PELEKUNU

LOCATION.--Lat 21°08'11", long 156°52'43", Hydrologic Unit 20050000, on left bank 0.4 mi (0.6 km) upstream from Pilipililau Stream, 1.9 mi (3.1 km) south of former village of Pelekunu, and 5.8 mi (9.3 km) north of Kamalo.

DRAINAGE AREA.--2.59 mi² (6.71 km²).

PERIOD OF RECORD.--December 1919 to January 1929, September 1937 to November 1947, June 1948 to August 1957, August 1971 to current year. Occasional low-flow measurements and annual maximum, water years 1968-71.

REVISED RECORDS.--WSP 1569: 1940(M).

GAGE.--Water-stage recorder. Altitude of gage is 552 ft (168.250 m) above mean sea level (levels by Bureau of Reclamation). Prior to Aug. 25, 1957, at site 300 ft (91 m) downstream at different datum.

REMARKS.--Records fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--34 years (water years, 1921-28, 1938-47, 1949-56, 1972-79), 16.4 ft³/s (0.464 m³/s), 11,880 acre-ft/yr (14.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,120 ft³/s (117 m³/s) Nov. 20, 1940, gage height, 6.81 ft (2.076 m), from rating curve extended above 39 ft³/s (1.10 m³/s) by test on model of station site; minimum, 2.2 ft³/s (0.062 m³/s) Sept. 29, Oct. 3, 4, 6, 12-18, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of undetermined magnitude destroyed station on Jan. 26, 1948.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 460 ft³/s (13.0 m³/s) and maximum (*), from rating curve extended above 100 ft³/s (2.83 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 13	1530	728	20.6	4.47	1.363	Jan. 11	1830	784	22.2	4.61	1.405
Dec. 7	0500	542	15.3	3.94	1.201	Feb. 10	0830	*1320	37.4	*5.79	1.765

Minimum discharge, 2.7 ft³/s (0.076 m³/s) Sept. 16-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	97	8.3	8.3	14	18	7.5	10	4.6	7.1	5.2	4.3
2	6.1	47	9.1	7.9	13	15	7.5	7.5	4.6	6.8	7.1	4.0
3	6.8	39	7.5	7.5	12	14	8.9	8.3	4.6	6.4	10	5.8
4	13	29	12	7.5	82	13	19	6.8	4.6	6.4	9.1	4.6
5	7.1	20	31	7.1	192	12	12	6.8	4.3	5.8	12	3.8
6	7.5	16	111	6.8	95	11	15	6.8	4.3	11	9.1	3.8
7	7.5	14	120	6.8	42	10	15	6.1	4.0	18	7.1	4.0
8	7.9	12	39	6.8	28	44	12	5.8	4.0	10	6.4	3.8
9	6.8	11	31	14	90	30	9.6	5.8	4.3	7.9	5.8	3.8
10	6.1	17	24	67	230	19	10	6.4	5.5	6.8	5.2	3.5
11	6.4	22	24	135	160	14	8.3	5.8	5.8	6.4	4.9	3.3
12	5.8	98	19	133	63	13	28	5.5	9.1	6.1	4.6	3.3
13	5.5	163	17	231	32	12	34	6.1	16	6.1	4.6	3.3
14	11	134	23	135	32	10	41	7.5	8.7	6.1	4.9	3.3
15	14	77	20	82	40	11	26	11	7.5	5.8	13	3.1
16	8.7	32	14	80	33	9.6	51	18	6.8	5.5	13	2.9
17	7.1	21	13	40	30	9.6	27	9.5	6.4	4.9	6.8	2.9
18	12	17	21	25	30	11	19	7.5	34	6.4	5.8	2.9
19	7.5	15	19	19	59	14	15	6.8	19	5.2	5.5	2.9
20	6.8	25	15	27	70	18	13	6.4	11	4.9	4.5	2.9
21	6.4	15	13	115	118	9.6	11	6.1	11	5.2	4.6	2.7
22	14	14	13	174	56	9.0	10	5.8	14	13	4.5	2.7
23	55	12	13	74	31	8.7	10	5.5	17	6.1	4.6	2.7
24	17	12	10	38	34	8.3	10	5.5	10	5.5	4.6	4.0
25	12	11	11	26	36	7.9	16	5.2	11	5.8	4.3	3.3
26	9.1	11	9.1	21	32	7.9	8.7	6.1	8.3	5.8	4.3	3.1
27	8.7	9.1	8.3	22	28	12	7.9	5.2	7.9	5.2	4.3	3.1
28	36	11	7.9	22	21	13	7.9	4.9	7.9	9.6	4.0	3.1
29	14	9.1	8.7	19	---	7.9	7.5	4.9	15	6.4	3.8	2.9
30	45	8.3	16	15	---	7.5	7.5	4.9	8.7	5.2	3.5	2.9
31	67	---	9.6	15	---	7.5	---	4.6	---	4.9	3.5	---
TOTAL	444.2	1018.5	697.5	1587.7	1703	407.5	475.3	213.1	279.9	216.3	151.4	102.7
MEAN	14.3	34.0	22.5	51.2	60.8	13.1	15.8	6.87	9.33	6.98	6.17	3.42
MAX	67	163	120	231	230	44	51	18	34	18	13	5.8
MIN	5.5	8.3	7.5	6.8	12	7.5	7.5	4.6	4.0	4.9	3.5	2.7
AC-FT	881	2020	1380	3150	3380	808	943	423	555	429	380	204

CAL YR 1978 TOTAL 5842.6 MEAN 16.0 MAX 163 MIN 3.3 AC-FT 11590
WTR YR 1979 TOTAL 7337.1 MEAN 20.1 MAX 231 MIN 2.7 AC-FT 14550

16404200 PILIPILILAU STREAM NEAR PELEKUNU

LOCATION.--Lat 21°08'08", long 156°53'09", Hydrologic Unit 20050000, on right bank 500 ft (152 m) downstream from left-bank tributary, 1.9 mi (3.1 km) south of former village of Pelekunu, and 5.8 mi (9.3 km) north of Kamalo.

DRAINAGE AREA.--0.49 mi² (1.27 km²).

PERIOD OF RECORD.--August 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,000 ft (305 m), from topographic map.

REMARKS.--Records fair except those above 8 ft³/s (0.23 m³/s), which are poor. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--11 years, 1.37 ft³/s (0.039 m³/s), 993 acre-ft/yr (1.22 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 328 ft³/s (9.29 m³/s) Feb. 10, 1979, gage height, 3.96 ft (1.207 m), from rating curve extended above 6.2 ft³/s (0.18 m³/s); minimum, 0.50 ft³/s (0.014 m³/s) Sept. 2-8, 21-29, 1975, Nov. 26 to Dec. 3, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 80 ft³/s (2.27 m³/s) and maximum (*), from rating curve extended above 6.2 ft³/s (0.18 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 13	1430	313	8.86	3.91	1.192	Feb. 10	0830	*328	9.29	*3.96	1.207
Jan. 11	1700	313	8.86	3.91	1.192	Feb. 21	0300	90	2.55	3.00	.914
Jan. 13	1900	98	2.78	3.05	.930						

Minimum discharge, 0.55 ft³/s (0.016 m³/s) Oct. 1-3, 6, 9-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.55	6.0	1.5	1.3	2.3	2.7	1.5	1.2	.94	.78	.70	.67
2	.55	3.4	1.5	1.3	2.2	2.6	1.5	1.2	.94	.78	.74	.64
3	.58	3.4	1.5	1.2	2.3	2.5	1.6	1.2	.94	.78	.74	.74
4	.64	3.3	1.6	1.2	6.5	2.4	1.6	1.2	.94	.78	.70	.61
5	.58	2.6	1.9	1.2	11	2.4	1.5	1.2	.94	.78	.78	.61
6	.55	2.3	12	1.2	5.8	2.3	1.5	1.2	.94	.90	.70	.58
7	.58	2.2	10	1.2	3.4	2.2	1.5	1.2	.94	1.1	.70	.58
8	.58	2.0	3.1	1.2	3.1	4.1	1.4	1.1	.94	.82	.67	.58
9	.55	2.1	2.6	2.5	6.2	2.9	1.4	1.1	.94	.82	.67	.61
10	.55	2.8	2.3	5.5	18	2.4	1.3	1.1	.98	.78	.64	.58
11	.55	5.5	2.2	29	23	2.2	1.3	1.1	.98	.78	.64	.58
12	.55	27	1.9	7.9	5.4	2.2	2.4	1.1	1.0	.74	.64	.58
13	.55	34	1.9	20	4.4	2.1	2.2	1.1	1.0	.74	.64	.58
14	1.2	20	2.0	8.6	4.2	2.0	2.8	1.1	1.0	.74	.69	.58
15	1.5	3.6	1.9	7.2	4.2	2.0	1.9	1.2	.98	.74	.78	.58
16	.70	2.4	1.7	6.4	3.7	1.9	2.8	1.2	.94	.74	.70	.58
17	.64	1.9	1.6	4.4	3.4	1.9	1.9	1.1	.90	.74	.64	.58
18	1.4	1.9	1.9	3.7	3.6	1.9	1.6	1.0	1.2	.78	.61	.58
19	.64	1.8	1.8	3.2	5.4	1.9	1.5	1.1	1.0	.74	.61	.58
20	.58	1.9	1.9	3.3	6.6	1.9	1.5	1.0	.90	.74	.61	.58
21	.58	1.6	1.6	11	7.3	1.8	1.4	1.0	.90	.74	.61	.58
22	.80	1.6	1.6	11	4.2	1.7	1.4	1.0	.90	.78	.61	.58
23	3.1	1.6	1.5	5.2	3.4	1.7	1.5	1.0	1.1	.70	.61	.58
24	.74	1.6	1.5	4.1	3.6	1.6	1.6	1.0	.86	.70	.61	.61
25	.64	1.6	1.6	3.6	3.6	1.6	2.0	1.0	.90	.70	.61	.58
26	.61	1.5	1.4	3.2	3.1	1.6	1.3	1.0	.82	.70	.61	.58
27	.61	1.5	1.3	3.1	2.9	2.0	1.3	.98	.82	.70	.61	.58
28	.98	1.5	1.3	3.1	2.8	1.8	1.3	.98	.82	.78	.61	.58
29	.64	1.5	1.4	2.6	---	1.6	1.2	.98	.86	.70	.61	.58
30	2.9	1.5	2.2	2.4	---	1.5	1.2	.94	.82	.70	.61	.58
31	3.9	---	1.4	2.4	---	1.5	---	.94	---	.67	.61	---
TOTAL	29.52	145.6	73.6	163.2	155.6	64.9	48.9	33.52	28.24	23.67	20.26	17.83
MEAN	.95	4.85	2.37	5.26	5.56	2.09	1.63	1.08	.94	.76	.65	.59
MAX	3.9	34	12	29	23	4.1	2.8	1.2	1.3	1.1	.78	.74
MIN	.55	1.5	1.3	1.2	2.2	1.5	1.2	.94	.82	.67	.61	.58
AC-FT	59	289	146	324	309	129	97	66	56	47	40	35

CAL YR 1978 TOTAL 464.06 MEAN 1.27 MAX 34 MIN .53 AC-FT 920
WTR YR 1979 TOTAL 804.84 MEAN 2.21 MAX 34 MIN .55 AC-FT 1600

HAWAII, ISLAND OF MOLOKAI

16405100 MOLOKAI TUNNEL AT EAST PORTAL

LOCATION.--Lat 21°08'38", long 156°55'16", Hydrologic Unit 20050000, on left bank 100 ft (30 m) downstream from the east portal, 5.3 mi (8.5 km) southeast of Kalaupapa, and 7.5 mi (12.1 km) northeast of Kaunakakai.

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 989 ft (301.4 m), from tunnel plans.

REMARKS.--Records fair. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells and from the stream at elevation 728 ft (221.9 m) in Waikolu Valley near the east portal. Periodic determinations of water temperature for the current year are published elsewhere in this report.

AVERAGE DISCHARGE.--13 years, 2.99 ft^3/s (0.085 m^3/s), 2,170 acre-ft/yr (2.68 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 29 ft^3/s (0.82 m^3/s) Jan. 27, May 18, 1973; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 23 ft^3/s (0.65 m^3/s) Nov. 12, Dec. 6; minimum daily, 0.04 ft^3/s (0.001 m^3/s) Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	18	1.9	2.6	.19	3.6	2.6	2.6	2.0	1.4	1.8	1.7
2	4.1	7.0	1.9	3.4	.14	3.1	2.6	2.4	2.0	.99	1.9	1.8
3	3.4	6.9	1.9	2.8	.14	2.9	2.7	2.6	2.0	.90	2.5	1.9
4	4.6	7.9	2.1	1.9	2.3	2.7	6.0	2.4	2.0	.90	2.8	2.0
5	4.6	2.6	10	1.7	5.8	2.7	4.8	2.3	1.9	.90	2.5	1.7
6	3.8	2.1	23	1.6	3.0	2.6	4.0	2.3	1.9	2.4	2.7	1.6
7	3.8	1.7	15	1.6	.53	2.6	4.8	2.3	1.9	7.7	1.7	1.6
8	4.6	1.5	4.6	2.9	.33	5.9	4.0	2.1	1.9	4.0	1.9	1.6
9	4.2	1.6	4.2	6.5	2.5	2.7	3.2	2.1	1.9	2.4	1.8	1.6
10	3.6	5.5	4.2	15	4.0	1.1	3.1	2.1	2.0	1.7	1.8	1.6
11	2.2	9.9	2.8	7.0	1.9	.74	2.7	2.1	2.1	1.9	1.8	1.6
12	1.3	23	1.3	5.5	.31	.53	8.3	2.1	3.2	1.7	1.8	1.6
13	2.4	19	.90	5.3	.04	.53	8.4	2.1	7.0	1.7	1.7	1.6
14	2.8	16	.86	4.6	.55	.53	10	3.2	4.6	1.7	1.7	1.6
15	6.2	5.3	1.1	4.6	.90	.53	6.3	4.0	3.6	1.7	2.2	1.6
16	4.2	4.2	.90	5.0	.16	.53	13	8.3	3.2	1.7	3.4	1.5
17	3.8	3.2	.42	.90	.19	.53	5.4	5.0	2.6	1.7	2.6	1.5
18	8.0	2.9	1.2	.42	.16	.47	3.4	3.6	9.8	1.7	2.0	1.5
19	4.4	2.7	.99	.29	1.1	.42	2.9	2.9	6.0	1.7	1.8	1.5
20	3.8	4.4	.99	1.1	1.5	2.9	2.6	2.6	2.1	1.7	1.8	1.5
21	3.6	4.0	.90	5.9	3.0	1.1	2.4	2.3	2.4	1.7	1.7	1.5
22	5.4	2.4	.59	6.6	3.7	.22	2.4	2.0	5.3	3.4	1.7	1.5
23	17	2.1	.66	2.1	4.8	1.2	2.4	2.0	5.3	3.6	1.7	1.5
24	6.1	1.9	.82	.37	5.8	2.4	3.2	2.0	3.4	2.3	1.7	1.5
25	5.9	1.7	.99	.29	8.3	2.4	6.7	2.0	2.9	1.9	1.7	1.5
26	5.6	1.7	2.0	.19	6.6	2.3	3.2	2.0	1.7	1.9	1.7	1.5
27	5.4	1.9	2.3	.29	6.3	4.7	2.6	2.0	1.1	1.9	1.7	1.5
28	9.5	3.2	1.8	.73	5.3	6.7	2.4	2.0	1.6	1.6	1.7	1.5
29	8.2	4.2	2.3	.37	---	3.2	2.3	2.0	4.0	2.4	1.7	1.5
30	14	2.6	5.7	.22	---	2.7	2.4	2.0	3.1	2.0	1.7	1.5
31	17	---	3.4	.22	---	2.6	---	2.0	---	1.9	1.7	---
TOTAL	178.9	167.1	101.72	91.99	69.54	67.13	130.8	81.4	94.5	65.09	60.9	47.6
MEAN	5.77	5.57	3.28	2.97	2.48	2.17	4.36	2.63	3.15	2.10	1.96	1.59
MAX	17	23	23	15	8.3	6.7	13	8.3	9.8	7.7	3.4	2.0
MIN	1.3	1.5	.42	.19	.04	.22	2.3	2.0	1.1	.90	1.7	1.5
AC-FT	355	331	202	182	138	133	259	161	187	129	121	94

CAL YR 1978 TOTAL 1368.49 MEAN 3.75 MAX 23 MIN .42 AC-FT 2710
WTR YR 1979 TOTAL 1156.67 MEAN 3.17 MAX 23 MIN .04 AC-FT 2290

HAWAII, ISLAND OF MOLOKAI

16405300 MOLOKAI TUNNEL AT WEST PORTAL

LOCATION.--Lat 21°07'27", long 156°59'50", Hydrologic Unit 20050000, on left bank 50 ft (15 m) upstream from the west portal, 2.5 mi (4.0 km) northeast of Kaunakakai, and 4.7 mi (7.6 km) south of Kalaupapa.

PERIOD OF RECORD.--July 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 970 ft (295.7 m), from tunnel plans.

REMARKS.--Records excellent. Tunnel diverts from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells and from the stream at elevation 728 ft (221.9 m) in Waikolu Valley near east portal and one well in the tunnel near east portal. Water is used for irrigation in west-central Molokai. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--14 years, 5.29 ft^3/s (0.150 m^3/s), 3,830 acre-ft/yr (4.72 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 34 ft^3/s (0.96 m^3/s) Feb. 5, 1972; minimum daily, 1.8 ft^3/s (0.051 m^3/s) Oct. 15, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 26 ft^3/s (0.74 m^3/s) Dec. 9, 10, minimum daily, 3.0 ft^3/s (0.085 m^3/s) Dec. 17, Jan. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.5	17	4.3	5.0	3.1	7.3	6.0	6.0	5.0	4.8	4.8	4.5
2	6.5	9.1	4.3	5.8	3.1	6.8	6.0	6.0	5.0	4.1	5.0	4.8
3	5.5	8.4	4.3	5.3	3.1	6.5	6.0	6.0	5.0	4.1	6.5	5.3
4	6.5	12	4.5	4.1	4.6	6.3	9.2	6.0	5.0	3.9	7.5	5.5
5	7.3	5.0	11	4.1	9.1	6.0	8.3	5.8	5.0	3.9	6.8	4.5
6	6.0	4.5	24	4.1	6.2	6.0	7.5	5.5	5.0	4.6	7.3	4.3
7	6.0	4.1	18	4.1	3.7	6.0	8.5	5.8	5.0	11	4.5	4.1
8	6.5	3.7	8.0	5.3	3.3	8.7	7.5	5.5	5.0	7.5	5.0	4.1
9	6.5	3.7	26	7.6	4.8	7.0	7.0	5.5	5.0	5.5	4.8	4.1
10	6.0	6.0	26	18	7.3	4.5	6.8	5.5	5.0	4.8	4.8	4.1
11	4.5	12	5.8	9.6	5.0	4.3	6.5	5.5	5.3	4.8	4.8	4.1
12	3.7	24	3.7	8.5	3.3	4.1	10	5.5	6.3	4.8	4.8	4.1
13	4.1	21	3.3	7.8	3.1	4.1	14	5.3	10	4.8	4.5	3.9
14	4.1	19	3.2	7.3	3.5	4.1	13	6.5	8.0	4.8	4.5	3.9
15	8.1	8.2	3.7	7.8	4.1	4.1	11	7.3	6.8	4.8	6.0	3.9
16	6.8	7.3	3.5	8.0	3.3	4.1	15	12	6.3	4.8	9.4	3.9
17	6.3	6.0	3.0	3.9	3.3	4.1	9.4	8.8	5.8	4.8	6.8	3.9
18	9.0	5.5	3.8	3.1	3.3	4.1	7.3	7.3	12	4.8	5.3	3.9
19	7.0	5.5	3.5	3.0	3.9	4.8	6.5	6.3	10	4.8	4.8	3.9
20	6.3	6.9	3.5	3.5	4.5	6.5	6.0	6.0	6.0	4.8	4.8	3.7
21	6.0	7.8	3.5	8.4	6.5	4.8	6.0	5.5	5.3	4.8	4.5	3.7
22	6.3	5.8	3.1	9.4	6.3	3.7	6.0	5.5	8.5	6.5	4.5	3.7
23	20	5.0	3.1	5.3	8.0	4.1	6.0	5.3	8.5	7.0	4.5	3.7
24	8.5	4.8	3.3	3.3	8.5	6.0	6.5	5.3	6.8	5.3	4.5	3.7
25	8.5	4.5	3.5	3.1	12	6.0	11	5.3	6.0	5.0	4.5	3.7
26	8.3	4.5	4.3	3.1	10	6.0	7.0	5.3	4.8	5.0	4.5	3.7
27	8.3	4.5	5.0	3.1	9.7	6.7	6.0	5.3	4.3	5.0	4.5	3.7
28	11	5.6	4.3	3.5	9.1	12	6.0	5.3	4.5	4.3	4.5	3.7
29	12	6.8	4.5	3.3	---	7.0	5.8	5.3	6.3	6.5	4.5	3.7
30	15	5.0	8.0	3.1	---	6.3	6.0	5.3	6.3	5.3	4.5	3.7
31	20	---	6.0	3.1	---	6.0	---	5.0	---	5.0	4.5	---
TOTAL	248.1	243.2	216.0	174.6	155.7	178.0	237.8	186.5	187.8	161.9	162.2	121.5
MEAN	8.00	8.11	6.97	5.63	5.56	5.74	7.93	6.02	6.26	5.22	5.23	4.05
MAX	20	24	26	18	12	12	15	12	12	11	9.4	5.5
MIN	3.7	3.7	3.0	3.0	3.1	3.7	5.8	5.0	4.3	3.9	4.5	3.7
AC-FT	492	482	428	346	309	353	472	370	373	321	322	241

CAL YR 1978 TOTAL 2236.6 MEAN 6.13 MAX 26 MIN 3.0 AC-FT 4440
WTR YR 1979 TOTAL 2273.3 MEAN 6.23 MAX 26 MIN 3.0 AC-FT 4510

16405500 WAIKOLU STREAM AT ALTITUDE 900 FT (274 M), NEAR KALAUPAPA

LOCATION.--Lat 21°08'43", long 156°55'18", Hydrologic Unit 20050000, on right bank 1.8 mi (2.9 km) southwest of Haupu Bay, 2.3 mi (3.7 km) upstream from mouth, and 5.2 mi (8.4 km) southeast of Kalaupapa.

DRAINAGE AREA.--1.99 mi^2 (5.15 km^2).

PERIOD OF RECORD.--May 1956 to October 1961, July 1962 to current year.

REVISED RECORDS.--WSP 1719: 1959. WSP 2137: 1963(P), 1964(M), 1965(P).

GAGE.--Water-stage recorder. Altitude of gage is 900 ft (274 m), from topographic map. Prior to July 1, 1962, at site 200 ft (61 m) upstream at datum 6.14 ft (1.871 m) higher.

REMARKS.--Records fair except those above 90 ft^3/s (2.55 m^3/s), which are poor. Since Nov. 16, 1960, water diverted above station at times, either into or from Molokai tunnel. Observations of specific conductance, pH, and water temperatures made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--18 years (water years, 1961, 1963-79), 7.23 ft^3/s (0.205 m^3/s), 5,240 acre-ft/yr (6.46 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft^3/s (58.9 m^3/s) Apr. 13, 1965, gage height, 6.12 ft (1.865 m), from rating curve extended above 43 ft^3/s (1.22 m^3/s); minimum, 0.02 ft^3/s (0.001 m^3/s) Oct. 26, 27, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 31, 1961, reached a stage of 13.62 ft (4.151 m), from flood-marks, former site and datum, discharge, 6,220 ft^3/s (176 m^3/s), by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 590 ft^3/s (16.7 m^3/s) and maximum (*), from rating curve extended above 43 ft^3/s (1.22 m^3/s):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 12	1200	1230	34.8	5.13	1.564	Jan. 11	1700	*1560	44.2	*5.76	1.756
Dec. 6	1200	840	23.8	4.36	1.329	Feb. 11	1530	1430	40.5	5.54	1.689

Minimum discharge, 0.02 ft^3/s (0.001 m^3/s) Oct. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	35	.92	1.6	6.2	2.9	2.0	2.6	1.6	3.0	1.6	1.4
2	.20	7.0	.92	1.4	5.5	2.9	2.0	2.9	1.6	3.0	1.6	1.4
3	.27	8.5	.92	1.2	5.0	2.6	2.0	3.2	1.6	3.0	1.8	1.4
4	.41	8.2	1.1	1.3	41	2.6	6.1	2.9	1.6	3.0	2.2	1.4
5	.19	.53	11	1.4	79	2.3	3.2	2.9	1.7	3.0	3.1	1.4
6	.24	.22	128	1.5	34	2.3	2.3	2.9	1.8	3.3	3.6	1.2
7	.21	.21	82	1.5	7.5	2.3	3.8	2.9	1.8	11	2.6	1.1
8	.17	.21	3.5	1.6	6.1	42	2.3	2.9	1.8	4.7	1.4	1.1
9	.19	.27	3.0	16	32	23	2.3	2.6	1.8	2.4	1.4	1.3
10	.13	18	2.7	48	123	9.6	2.0	2.6	1.9	2.2	1.4	1.3
11	.09	37	6.1	197	187	6.6	2.0	2.6	1.8	1.6	1.4	1.3
12	.13	197	6.9	79	23	5.8	17	2.6	1.8	1.6	1.4	1.3
13	.23	160	4.5	204	9.7	5.4	10	2.6	4.4	1.6	1.4	1.2
14	2.6	142	9.7	53	21	5.4	14	2.6	1.9	1.6	1.4	1.1
15	15	14	12	46	30	5.1	7.1	2.6	1.6	1.6	3.0	1.1
16	1.3	2.3	4.7	48	16	5.1	15	8.6	1.6	1.6	4.5	1.1
17	.15	1.5	4.0	11	16	5.1	4.8	3.5	1.7	1.8	1.4	1.1
18	11	1.5	14	6.7	19	5.1	2.3	2.0	8.1	1.8	1.4	1.1
19	.18	1.4	15	5.4	42	4.4	2.0	1.8	5.6	1.8	1.4	1.1
20	.08	4.2	13	10	38	5.4	2.0	1.6	2.6	1.8	1.4	1.1
21	.08	3.5	5.0	121	57	5.1	2.0	1.6	2.7	1.8	1.4	1.1
22	3.9	1.6	4.4	105	19	5.8	2.0	1.6	3.2	2.6	1.4	1.1
23	44	1.4	4.8	20	3.8	3.8	2.0	1.6	6.8	2.0	1.4	1.1
24	.56	1.4	4.5	7.7	7.8	2.3	2.0	1.6	1.8	1.6	1.2	1.1
25	.08	1.4	5.8	6.5	11	2.3	10	1.6	2.2	1.7	1.1	1.1
26	.05	1.4	4.4	5.9	6.2	2.3	2.0	1.6	3.0	1.7	1.2	1.1
27	.05	1.4	3.8	6.6	6.6	3.4	2.0	1.6	3.0	1.6	1.4	1.1
28	3.0	1.2	2.3	10	4.8	6.2	2.0	1.6	3.0	1.7	1.2	1.1
29	1.5	.97	1.3	8.6	---	2.6	2.0	1.6	4.2	1.6	1.1	1.1
30	30	.92	7.3	6.7	---	2.0	2.6	1.6	3.3	1.6	1.1	1.1
31	33	---	2.1	6.7	---	2.0	---	1.6	---	1.6	1.2	---
TOTAL	149.13	654.23	369.66	1040.3	857.2	183.7	128.8	76.5	81.5	74.9	53.5	35.5
MEAN	4.81	21.8	11.9	33.6	30.6	5.93	4.29	2.47	2.72	2.42	1.73	1.18
MAX	44	197	128	204	187	42	15	8.6	8.1	11	4.4	1.4
MIN	.05	.21	.92	1.2	3.8	2.0	2.0	1.6	1.6	1.6	1.1	1.1
AC-FT	296	1300	733	2060	1700	364	255	152	162	149	106	70

CAL YR 1978 TOTAL 2054.92 MEAN 5.63 MAX 197 MIN .05 AC-FT 4080
WTR YR 1979 TOTAL 3704.92 MEAN 10.2 MAX 204 MIN .05 AC-FT 7350

16408000 WAIKOLU STREAM BELOW PIPELINE CROSSING, NEAR KALAUPAPA

LOCATION.--Lat 21°09'45", long 156°55'54", Hydrologic Unit 20050000, on left bank 0.7 mi (1.1 km) upstream from mouth and 4.4 mi (7.1 km) southeast of Molokai Lighthouse near Kalaupapa.

DRAINAGE AREA.--3.68 mi^2 (9.53 km^2).

PERIOD OF RECORD.--July 1919 to November 1930, August 1931 to July 1932, September 1937 to January 1948, July 1948 to current year. Prior to August 1931, published as "at pipeline crossing, near Kalaupapa."

REVISED RECORDS.--WSP 1155: 1932(M), 1938-44(M), 1946-48(M). WSP 1319: 1923(M), 1930(M), 1932, 1938-40, 1945(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252 ft (76.810 m) above mean sea level (hand levels by Bureau of Reclamation). Prior to Nov. 19, 1930, at site 500 ft (152 m) upstream at different datums. Aug. 14, 1931, to July 20, 1932, and Sept. 20, 1937, to Jan. 26, 1948, at present site at datum 1.49 ft (0.454 m) higher, and July 30, 1948, to June 30, 1962, at present site at datum 1.00 ft (0.305 m) higher.

REMARKS.--Records fair except those above 80 ft^3/s (2.27 m^3/s), which are poor. Diversion above station for domestic use in Kalaupapa, and since Nov. 16, 1960, water has been diverted above station both to and from Molokai tunnel. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--19 years (water years 1961-79), 15.2 ft^3/s (0.430 m^3/s), 11,010 acre-ft/yr (13.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,600 ft^3/s (187 m^3/s) Oct. 31, 1961, gage height, 13.75 ft (4.191 m), present datum, from floodmarks, from rating curve extended above 39 ft^3/s (1.10 m^3/s) on basis of slope-area measurement of peak flow; minimum, 2.0 ft^3/s (0.057 m^3/s) Nov. 1, 2, 1925, June 5, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.94 ft (1.811 m) Jan. 11 (1700), discharge not determined; minimum, 5.3 ft^3/s (0.15 m^3/s) Oct. 5, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	57	9.5	11	14	16	14	13	11	10	8.6	8.2
2	5.5	15	9.2	11	14	15	14	13	11	11	8.7	8.1
3	5.5	37	9.2	10	13	15	14	13	11	10	8.6	8.4
4	5.7	24	9.8	10	45	15	17	14	10	11	8.9	7.9
5	5.5	8.6	21	10	80	15	14	13	10	10	10	7.8
6	5.5	7.4	198	10	34	15	14	12	10	11	11	7.9
7	5.5	6.8	105	10	19	14	15	12	10	19	9.7	8.0
8	5.5	6.6	16	10	17	72	13	12	10	13	8.4	7.9
9	5.5	6.6	14	16	36	42	13	12	10	10	8.4	7.9
10	5.5	69	13	73	145	23	13	12	11	9.8	8.4	7.9
11	5.7	77	15	204	190	19	13	12	10	9.2	8.3	7.8
12	5.5	331	17	145	38	18	24	12	10	9.1	8.4	7.8
13	5.5	288	14	261	22	17	22	12	13	8.9	8.3	7.9
14	8.2	260	17	59	30	17	27	12	11	9.1	8.4	8.0
15	41	32	21	51	39	17	19	12	10	9.1	13	8.0
16	8.2	15	14	52	25	17	25	18	10	9.1	13	7.6
17	6.3	13	13	22	26	17	16	14	10	9.0	8.8	7.8
18	38	12	22	17	27	16	14	12	16	9.1	8.4	7.8
19	6.8	11	23	16	52	16	13	12	14	8.9	8.2	7.8
20	6.1	14	22	22	45	17	13	12	11	8.8	8.2	7.8
21	6.0	13	15	203	91	16	13	11	11	9.1	8.0	7.8
22	11	11	14	158	34	16	13	11	11	9.4	8.0	7.8
23	71	11	14	22	17	15	13	11	17	9.2	8.0	7.8
24	7.2	11	14	14	27	14	13	11	10	8.8	7.9	7.8
25	6.5	10	15	13	27	14	21	11	12	8.7	7.8	7.8
26	6.0	10	13	13	20	14	13	11	11	8.7	7.8	7.8
27	6.0	10	13	13	18	14	13	11	11	8.7	7.8	7.8
28	7.2	9.8	12	14	17	16	13	11	11	9.0	7.8	7.8
29	7.2	9.8	11	14	---	14	13	11	12	8.7	8.0	7.8
30	60	9.5	16	13	---	14	13	11	11	8.6	8.0	7.7
31	57	---	11	13	---	14	---	11	---	8.6	7.9	---
TOTAL	431.6	1396.1	730.7	1510	1162	574	465	375	336	302.6	270.7	236.9
MEAN	13.9	46.5	23.6	48.7	41.5	18.5	15.5	12.1	11.2	9.76	8.73	7.88
MAX	71	331	198	261	190	72	27	18	17	19	13	8.4
MIN	5.5	6.6	9.2	10	13	14	13	11	10	8.6	7.8	7.7
AC-FT	856	2770	1450	3000	2300	1140	922	744	666	600	537	469

CAL YR 1978 TOTAL 5349.4 MEAN 14.7 MAX 331 MIN 5.5 AC-FT 10610
WTR YR 1979 TOTAL 7790.1 MEAN 21.3 MAX 331 MIN 5.5 AC-FT 15450

16414000 KAUNAKAKAI GULCH AT KAUNAKAKAI

LOCATION.--Lat 21°06'21", long 157°00'34", Hydrologic Unit 20050000, on left bank 0.6 mi (1.0 km) upstream from Molokai Ranch pipeline crossing, 1.3 mi (2.1 km) northeast of Kaunakakai Post Office, and 1.7 mi (2.7 km) upstream from mouth.

DRAINAGE AREA.--6.57 mi² (17.02 km²).

PERIOD OF RECORD.--December 1949 to current year. Prior to July 1958, published as Kaunakakai Stream at Kaunakakai.

REVISED RECORDS.--WSP 1289: 1950-51. WSP 1569: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 240 ft (73 m), from topographic map.

REMARKS.--Records fair. Flow has been augmented by occasional spillage from Molokai tunnel since May 1965.

AVERAGE DISCHARGE.--29 years (water years 1951-79), 1.50 ft³/s (0.042 m³/s), 1,090 acre-ft/yr (1.34 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,060 ft³/s (86.7 m³/s) Oct. 31, 1961, gage height, 9.30 ft (2.835 m), from rating curve extended above 620 ft³/s (17.6 m³/s) on basis of slope-area measurement of peak flow; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 280 ft³/s (7.93 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 14	0030	397	11.2	5.23	1.594	Jan. 13	1930	555	15.7	5.60	1.707
Dec. 7	0800	368	10.4	5.15	1.570	Feb. 10	1000	704	19.9	5.93	1.807
Jan. 11	1800	*1090	30.9	*6.66	2.030	Feb. 11	1630	984	27.9	6.49	1.978

No flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	30	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	45	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	29	.00	25	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	68	.00	2.1	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	3.2	.00	.05	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.02	.00	6.3	.24	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	10	68	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	101	153	.00	.00	.00	.00	.00	.00	.00
12	.00	13	.00	54	31	.00	.00	.00	.00	.00	.00	.00
13	.00	54	.00	173	5.7	.00	.00	.00	.00	.00	.00	.00
14	.00	84	.00	57	1.8	.00	.00	.00	.00	.00	.00	.00
15	.00	21	.00	24	4.8	.00	.00	.00	.00	.00	.00	.00
16	.00	1.5	.00	23	.78	.00	.25	.00	.00	.00	.00	.00
17	.00	.01	.00	7.8	.01	.00	2.0	.00	.00	.00	.00	.00
18	.00	.00	.00	1.3	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.04	4.5	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	3.5	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	26	38	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	110	13	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	20	1.6	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	2.0	.02	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	12	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	12.00	191.85	100.22	609.18	434.16	.24	2.25	.00	.00	.00	.00	.00
MEAN	.39	6.40	3.23	19.7	15.5	.008	.075	.000	.000	.000	.000	.000
MAX	12	84	68	173	153	.24	2.0	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	24	381	199	1210	861	.5	4.5	.00	.00	.00	.00	.00

CAL YR 1978 TOTAL 350.32 MEAN .96 MAX 84 MIN .00 AC-FT 695
WTR YR 1979 TOTAL 1349.90 MEAN 3.70 MAX 173 MIN .00 AC-FT 2680

HAWAII, ISLAND OF MOLOKAI

16419500 PAPIO GULCH AT HALAWA

LOCATION.--Lat 21°08'55", long 156°44'16", Hydrologic Unit 20050000, on left bank 200 ft (61 m) downstream from wooden bridge on Highway 45 and 0.8 mi (1.3 km) south of Halawa.

DRAINAGE AREA.--0.94 mi² (2.43 km²).

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 640 ft (195 m), from topographic map.

REMARKS.--Records fair. Diversion above station for domestic use at Puu O Hoku Ranch. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--16 years, 0.765 ft³/s (0.022 m³/s), 554 acre-ft/yr (683,000 m³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,720 ft³/s (77.0 m³/s) Apr. 13, 1965, gage height, 11.25 ft (3.429 m), from rating curve extended above 37 ft³/s (1.05 m³/s) on basis of slope-area measurements at gage heights 4.60 ft (1.402 m), 7.15 ft (2.179 m), and 11.25 ft (3.429 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 216 ft³/s (6.12 m³/s) Nov. 1, gage height, 4.09 ft (1.247 m), no other peak above base of 210 ft³/s (5.95 m³/s); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	18	.06	.15	.11	1.4	.46	.50	.18	.15	.05	.00
2	.00	2.1	.05	.15	.09	1.4	.94	.42	.18	.12	.15	.00
3	.00	4.3	.05	.12	.08	1.3	.63	.68	.18	.12	.21	.03
4	.14	3.3	.05	.07	1.0	1.2	.50	.50	.18	.09	.24	.14
5	.06	.73	1.0	.05	13	1.1	.50	.38	.18	.09	.12	.06
6	.00	.38	15	.04	4.4	1.1	.46	.42	.18	.09	.15	.05
7	.00	.27	2.8	.03	1.4	1.0	.50	.38	.18	.15	.24	.05
8	.00	.11	.78	.03	1.1	.98	.42	.34	.18	.21	.21	.04
9	.00	.06	.68	.06	10	.98	.38	.34	.21	.07	.06	.03
10	.00	4.1	.50	4.5	12	.93	.38	.34	.24	.07	.05	.07
11	.00	2.0	.30	20	7.5	.83	.38	.34	.24	.07	.05	.04
12	.00	7.0	.27	8.0	2.9	.83	.58	.30	.21	.07	.05	.03
13	.00	12	.21	3.0	1.7	.83	.83	.30	.24	.06	.05	.02
14	.00	6.2	.18	2.5	1.5	.78	2.2	.34	.30	.09	.05	.01
15	1.9	2.7	.18	.99	1.4	.73	1.1	.34	.27	.18	1.6	.01
16	.10	.50	.15	.50	1.4	.68	2.0	.34	.21	.15	1.2	.00
17	.53	.30	.15	.30	1.6	.63	.93	.50	.24	.09	.27	.00
18	.75	.27	.15	.20	3.7	.63	5.8	.34	.68	.15	.07	.00
19	.07	.27	.18	.14	13	.63	1.7	.27	.38	.12	.06	.00
20	.03	.68	.18	.42	5.2	.63	.73	.24	.21	.09	.05	.00
21	.82	.27	.18	13	16	.63	.63	.24	.18	.07	.04	.00
22	1.2	.15	.18	2.9	3.9	.63	.94	.24	.38	.12	.04	.00
23	3.3	.12	.21	.60	2.6	.58	.78	.24	.85	.15	.04	.00
24	.18	.09	.27	.36	4.4	.54	.58	.24	.30	.06	.04	.00
25	.24	.07	.27	.20	2.6	.54	.58	.24	.24	.05	.04	.00
26	.02	.06	.24	.10	2.4	.54	.46	.27	.24	.05	.04	.00
27	.01	.06	.18	.59	2.0	.73	.42	.27	.15	.05	.04	.00
28	.06	.34	.18	.30	1.6	.54	.38	.24	.21	.15	.03	.00
29	.04	.27	.21	.25	---	.50	.38	.21	.24	.18	.01	.00
30	1.4	.07	.38	.19	---	.50	.42	.18	.24	.06	.00	.00
31	4.9	---	.27	.13	---	.46	---	.18	---	.05	.00	---
TOTAL	15.75	66.77	25.49	59.87	118.58	24.78	26.99	10.16	7.90	3.22	5.25	.58
MEAN	.51	2.23	.82	1.93	4.24	.80	.90	.33	.26	.10	.17	.019
MAX	4.9	18	15	20	16	1.4	5.8	.68	.85	.21	1.6	.14
MIN	.00	.06	.05	.03	.08	.46	.38	.18	.15	.05	.00	.00
AC-FT	31	132	51	119	235	49	54	20	16	6.4	10	1.2

CAL YR 1978 TOTAL 142.06 MEAN .39 MAX 22 MIN .00 AC-FT 282
WTR YR 1979 TOTAL 365.34 MEAN 1.00 MAX 20 MIN .00 AC-FT 725

16501000 PALIKEA STREAM BELOW DIVERSION DAM, NEAR KIPAHULU

LOCATION.--Lat 20°41'03", long 156°04'10", Hydrologic Unit 20020000, on left bank 50 ft (15 m) downstream from old diversion dam, 2 mi (3 km) northwest of Kipahulu, and 2.1 mi (3.4 km) upstream from mouth.

DRAINAGE AREA.--6.29 mi² (16.29 km²).

PERIOD OF RECORD.--February 1927 to September 1929, December 1931 to September 1935, December 1935 to February 1938, May to October, December 1938, January 1939, August 1939 to current year. Published as Oheo Stream at elevation 1,550 ft (472 m) near Kipahulu 1927-29 and as Oheo Stream below diversion dam, near Kipahulu 1930-56.

REVISED RECORDS.--WSP 1155: 1939(M). WSP 1569: Drainage area. WSP 1719: 1932-34, 1937-40, 1948, 1949-50(P), 1951, 1952-54(P), 1956-58(P). WSP 1937: 1932-38(M), 1940-47(M), 1948-49(P), 1950(M), 1951-53(P), 1956(P), 1957(M), 1958-59(P), 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 1,546 ft (471 m) above mean sea level (by vertical angles). Prior to Sept. 6, 1929, at site 100 ft (30 m) upstream at different datum.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--44 years (water years, 1928, 1933-34, 1937, 1940-79), 57.3 ft³/s (1.623 m³/s), 41,510 acre-ft/yr (51.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,100 ft³/s (456 m³/s) Jan. 23, 1965, gage height, 18.3 ft (5.58 m), from floodmarks, from rating curve extended above 3,300 ft³/s (93.5 m³/s) on basis of computations of peak flow over dam at gage heights 12.68 ft (3.865 m) and 17.5 ft (5.33 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,700 ft³/s (105 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 28	0330	4180	118	9.53	2.905	Feb. 20	0700	*6460	183	*10.08	3.072
Feb. 5	2100	4180	118	9.53	2.905	Mar. 8	Unknown	4240	120	9.54	2.908
Feb. 10	0930	4180	118	9.53	2.905						

Minimum discharge, 0.01 ft³/s (<0.001 m³/s) several days in August and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	112	38	.15	95	32	.09	7.7	2.5	1.5	.48	.01
2	.15	221	47	.12	79	82	15	.15	1.8	.69	25	.01
3	.91	16	139	.12	23	200	30	.19	.81	.81	22	.01
4	210	69	49	.12	84	10	74	1.6	.29	68	3.5	.01
5	27	12	6.8	.09	558	3.0	20	.03	.09	73	.48	.01
6	12	3.5	196	.09	90	30	92	7.7	.03	61	.19	.01
7	21	5.6	28	.09	32	200	11	.29	.03	208	.07	.02
8	47	1.2	12	.09	5.3	500	25	13	.09	23	.03	.02
9	8.4	.91	287	.09	119	130	40	.24	.09	7.0	.02	.02
10	1.1	.64	68	7.2	900	20	5.9	29	.07	1.4	.02	.02
11	.72	.56	105	203	100	3.7	1.7	77	.12	.72	.02	.02
12	.91	.41	71	68	29	1.9	.64	86	86	.48	.01	.02
13	.56	7.9	24	841	21	.39	.30	40	74	.29	.02	.02
14	.19	256	113	297	182	.22	15	22	56	.41	25	.02
15	.09	32	127	483	475	.18	200	69	42	1.9	94	.02
16	.12	7.6	41	600	236	.16	9.8	102	69	.56	103	.02
17	.05	1.0	25	56	209	.14	3.2	89	132	.12	3.5	.02
18	16	22	465	29	524	.12	171	8.2	243	5.3	.41	.02
19	58	6.6	167	34	579	.12	17	7.0	77	3.6	.69	.02
20	2.8	396	38	147	1470	44	3.2	2.5	6.9	.81	.15	.01
21	74	203	9.7	511	74	11	125	.64	82	.15	.07	.01
22	138	95	2.2	810	16	1.8	83	.24	186	4.0	.09	.02
23	4.8	21	1.1	113	8.7	.21	13	.57	222	22	.07	.02
24	1.8	162	.81	40	180	.09	2.5	8.2	15	.48	.03	17
25	1.0	16	.64	68	442	.09	9.6	.12	88	6.4	.02	21
26	.64	79	.41	26	134	.09	1.1	2.9	83	.81	.02	1.0
27	.62	17	.35	66	221	.09	.56	30	16	1.3	.02	.24
28	412	30	.24	241	47	.12	.29	15	8.1	157	.01	.09
29	234	6.4	.29	224	---	.30	.12	1.4	87	29	.01	6.4
30	813	1.1	.24	81	---	.10	.07	11	11	5.3	.01	.24
31	87	---	.15	309	---	.09	---	8.1	---	1.4	.01	---
TOTAL	2173.95	1797.42	2062.93	5255.16	6533.0	1271.91	970.07	640.77	1589.92	688.38	283.30	46.35
MEAN	70.1	59.9	66.5	170	248	41.0	32.3	20.7	53.0	22.2	9.14	1.55
MAX	813	396	465	841	1470	500	200	102	243	208	103	21
MIN	.05	.41	.15	.09	5.3	.09	.07	.03	.03	.12	.01	.01
AC-FT	4310	3570	4090	10420	13750	2520	1920	1270	3150	1370	562	92

CAL YR 1978 TOTAL 16967.85 MEAN 46.5 MAX 813 MIN .01 AC-FT 33660
WTR YR 1979 TOTAL 23713.16 MEAN 65.0 MAX 1470 MIN .01 AC-FT 47040

NOTE.--No gage-height record Mar. 2 to Apr. 18.

16508000 HANAWI STREAM NEAR NAHIKU

LOCATION.--Lat 20°48'37", long 156°07'00", Hydrologic Unit 20020000, on left bank 200 ft (61 m) upstream from Koolau ditch intake and trail, 1.9 mi (3.1 km) southwest of Nahiku, and 4.5 mi (7.2 km) southeast of Keanae.

DRAINAGE AREA.--3.49 mi² (9.04 km²).

PERIOD OF RECORD.--January 1914 to January 1916, November 1921 to current year. Monthly discharge only April to June 1915, published in WSP 1319.

REVISED RECORDS.--WSP 1045: 1922-43(M). WSP 1569: Drainage area. WSP 1719: 1915(M), 1922, 1924-25, 1927, 1930-35, 1937, 1939-40, 1942-43.

GAGE.--Water-stage recorder. Datum of gage is 1,318 ft (401.7 m) above mean sea level (by vertical angles). Prior to Nov. 1, 1921, at site 50 ft (15 m) downstream at datum 0.12 ft (0.037 m) lower.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--57 years (water years 1923-79), 22.5 ft³/s (0.637 m³/s), 16,300 acre-ft/yr (20.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 5,570 ft³/s (158 m³/s) Jan. 18, 1916, gage height, 11.6 ft (3.54 m), present site and datum, from rating curve extended above 814 ft³/s (23.1 m³/s) by test model of station site; minimum, 1.2 ft³/s (0.034 m³/s) Oct. 17, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 28	0300	1870	53.0	6.76	2.060	Jan. 21	1630	2000	56.6	7.02	2.140
Jan. 11	2000	*2080	58.9	*7.17	2.185	Feb. 11	1730	1800	51.0	6.61	2.015
Jan. 13	1230	1860	52.7	6.74	2.054						

Minimum discharge, 2.3 ft³/s (0.070 m³/s) Sept. 20-24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	11	5.3	5.6	28	13	3.8	30	2.8	6.3	4.5	2.8
2	4.0	8.1	5.1	5.4	28	11	4.1	5.9	2.7	5.6	5.6	2.9
3	4.2	8.7	5.0	5.2	12	9.9	6.1	5.8	2.7	6.0	5.8	7.6
4	30	15	4.8	5.0	11	9.3	23	4.4	2.7	11	5.4	4.4
5	9.3	7.7	9.5	4.8	57	8.8	11	3.9	2.7	16	6.1	3.1
6	6.0	13	373	4.7	44	8.3	24	4.1	2.6	23	5.2	2.9
7	9.4	10	39	4.5	19	8.0	11	3.8	2.6	152	4.0	2.8
8	19	5.1	15	4.3	10	109	12	3.5	2.5	29	6.1	7.3
9	8.4	4.5	40	4.2	9.8	99	6.7	3.4	2.5	12	4.9	5.5
10	5.9	4.2	23	4.2	86	29	5.2	3.2	2.5	8.4	4.0	3.1
11	5.4	4.0	44	150	258	10	4.5	3.2	2.6	6.9	3.8	2.8
12	4.8	95	36	230	41	8.7	4.2	3.1	10	6.4	3.6	2.7
13	4.5	231	17	642	28	7.7	4.2	3.4	10	5.6	4.0	2.6
14	4.3	163	40	374	56	7.2	19	8.2	4.4	5.0	5.4	2.6
15	16	128	49	514	68	6.7	24	27	4.9	4.9	36	2.5
16	6.7	22	18	416	20	6.4	5.6	30	3.6	4.6	16	2.5
17	13	9.5	12	48	52	5.9	4.3	22	4.3	4.4	6.6	2.5
18	37	54	110	20	88	5.7	6.9	5.4	16	4.4	5.0	2.4
19	13	15	61	12	116	5.7	6.2	4.4	14	4.3	4.4	2.4
20	6.6	123	29	86	388	7.9	3.8	4.0	4.8	4.3	4.1	2.4
21	5.6	50	12	309	47	6.7	3.5	3.7	6.0	4.1	3.9	2.3
22	4.9	20	7.6	628	15	5.3	3.4	3.6	20	8.5	4.0	2.3
23	15	9.0	6.6	96	24	4.9	3.3	3.4	48	9.2	4.1	2.3
24	9.6	7.3	6.0	23	240	4.7	3.3	3.3	9.8	5.6	3.6	20
25	6.8	6.5	5.9	19	176	4.5	111	3.2	27	7.0	3.5	7.9
26	46	6.6	5.8	14	30	4.3	6.2	3.2	47	8.8	3.3	4.0
27	16	6.0	6.2	12	21	4.2	4.3	3.1	19	7.7	3.2	3.5
28	150	6.1	5.8	23	16	4.0	3.8	3.0	12	42	3.1	2.8
29	23	5.8	6.0	42	---	3.9	3.5	3.0	15	14	3.1	2.5
30	43	5.4	5.7	23	---	3.9	6.1	2.9	8.3	6.7	3.0	2.5
31	26	---	6.0	77	---	3.8	---	2.8	---	5.4	2.9	---
TOTAL	557.5	1054.5	1009.3	3805.9	1988.8	427.4	338.0	213.9	313.0	459.1	178.6	117.9
MEAN	18.0	35.2	32.6	123	71.0	13.8	11.3	6.90	10.4	14.8	5.76	3.93
MAX	150	231	373	642	388	109	111	30	48	152	36	20
MIN	4.0	4.0	4.8	4.2	9.8	3.8	3.3	2.8	2.5	4.1	2.9	2.3
AC-FT	1110	2090	2000	7550	3940	848	670	424	621	911	354	234

CAL YR 1978 TOTAL 6204.9 MEAN 17.0 MAX 373 MIN 2.1 AC-FT 12310
WTR YR 1979 TOTAL 10463.9 MEAN 28.7 MAX 642 MIN 2.3 AC-FT 20760

16512000 KOOLAU DITCH AT NAHIKU WEIR, NEAR NAHIKU

LOCATION.--Lat 20°48'56", long 156°07'15", Hydrologic Unit 20020000, on right bank between Kapaula and Waiohue Gulches, 1.8 mi (2.9 km) southwest of Nahiku, and 3.8 mi (6.1 km) southeast of Keanae.

PERIOD OF RECORD.--February 1919 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,289.14 ft (392.930 m) above mean sea level. Prior to Apr. 28, 1922, nonrecording gage at same site and datum.

REMARKS.--Records good. Ditch diverts water from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--60 years, 34.0 ft^3/s (0.963 m^3/s), 24,630 acre-ft/yr (30.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 99 ft^3/s (2.80 m^3/s) Apr. 27, May 11, 1963, May 25, 1964; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 93 ft^3/s (2.63 m^3/s) July 7; no flow Feb. 16 to Mar. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	51	26	24	73	.00	18	71	12	32	27	13
2	20	44	25	22	71	.00	19	31	12	28	27	13
3	21	46	24	22	48	3.4	26	32	11	28	30	26
4	73	55	23	21	44	6.7	58	27	11	46	28	20
5	47	38	42	20	64	15	41	23	11	59	31	14
6	33	44	84	19	78	26	61	22	10	59	26	13
7	40	42	79	19	64	26	43	20	10	93	22	13
8	63	29	59	18	45	64	43	19	11	84	28	20
9	39	26	81	17	43	87	30	17	11	55	26	20
10	30	24	72	18	64	67	26	17	11	41	21	14
11	28	22	78	58	78	36	23	16	11	36	20	12
12	25	58	75	86	69	31	21	16	34	33	18	12
13	23	85	58	85	68	28	22	17	32	28	21	11
14	21	82	67	83	80	31	37	29	17	26	26	11
15	36	78	79	82	28	33	49	57	18	25	82	11
16	32	68	57	82	.00	31	29	73	15	22	65	10
17	36	53	45	79	.00	29	23	57	19	20	36	9.9
18	61	63	80	54	.00	28	25	30	51	21	28	9.9
19	54	64	82	57	.00	28	25	25	49	21	24	9.7
20	34	84	74	80	.00	36	19	22	25	19	22	9.5
21	29	80	50	87	.00	33	18	20	32	18	21	9.4
22	26	67	40	87	.00	27	18	18	55	35	21	9.4
23	51	49	35	83	.00	25	17	17	78	35	21	9.2
24	40	41	31	68	.00	23	17	16	46	24	15	30
25	31	36	29	64	.00	22	73	16	76	29	18	31
26	78	35	28	52	.00	21	29	15	83	34	17	16
27	66	32	28	48	.00	20	23	14	72	30	16	15
28	74	32	26	68	.00	19	20	14	51	67	15	12
29	50	29	26	72	---	19	18	13	63	53	15	10
30	70	27	25	66	---	18	27	13	40	33	14	10
31	73	---	26	82	---	18	---	12	---	29	13	---
TOTAL	1325	1484	1554	1723	917.00	851.10	898	789	977	1183	758	424.0
MEAN	42.7	49.5	50.1	55.6	32.8	27.5	29.9	25.5	32.6	37.5	25.7	14.1
MAX	78	85	84	87	80	87	73	73	83	93	82	31
MIN	20	22	23	17	.00	.00	17	12	10	18	13	9.2
AC-FT	2630	2940	3080	3420	1820	1690	1780	1560	1940	2310	1580	841

CAL YR 1978 TOTAL 14042.70 MEAN 38.5 MAX 88 MIN 7.8 AC-FT 27850
WTR YR 1979 TOTAL 12903.10 MEAN 35.4 MAX 93 MIN .00 AC-FT 25590

16518000 WEST WAILUAIKI STREAM NEAR KEANAE

LOCATION.--Lat 20°49'16", long 156°08'37", Hydrologic Unit 20020000, on left bank 500 ft (152 m) upstream from Koolau ditch crossing and trail bridge and 2.8 mi (4.5 km) south of Keanae Post Office.

DRAINAGE AREA.--3.66 mi² (9.48 km²).

PERIOD OF RECORD.--January 1914 to December 1915, May 1916 to October 1917, November 1921 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1569. Drainage area. WSP 2137: 1915-16(M), 1923-25(M), 1929-31(M), 1934-35(M), 1937-39(M), 1941-43(M), 1946-47(M), 1948(P), 1949(M), 1952-53(M), 1955-56(M), 1959-60(M). WSP 2137: 1960(P), 1961(M), 1963(M).

GAGE.--Water-stage recorder. Datum of gage is 1,343.1 ft (409.38 m) above mean sea level (by vertical angles). Prior to Oct. 3, 1974, at present site at datum 0.50 ft (0.15 m) higher.

REMARKS.--Records fair. No diversion above station. Water is diverted by Koolau ditch, 500 ft (152 m) below station, for domestic supply and irrigation of sugarcane in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--59 years (water years, 1915, 1917, 1923-79), 34.9 ft³/s (0.988 m³/s), 25,290 acre-ft/yr (31.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,900 ft³/s (280 m³/s) Jan. 14, 1923, gage height, 13.5 ft (4.11 m), from floodmarks, from rating curve extended above 650 ft³/s (18.4 m³/s); minimum, 0.5 ft³/s (0.014 m³/s) July 26, 1922.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft³/s (53.9 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 12	2200	*3690	105	*9.74	2.969	Jan. 13	1000	3030	85.8	9.07	2.765
Nov. 18	1400	1970	55.8	7.79	2.374	Jan. 16	1030	2610	73.9	8.60	2.621
Dec. 6	0600	2480	70.2	8.44	2.573	Jan. 21	1630	2930	83.0	8.96	2.731
Jan. 11	1930	3550	101	9.60	2.926	Feb. 11	1700	2640	74.8	8.63	2.630

Minimum discharge, 2.1 ft³/s (0.060 m³/s) Sept. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	19	5.6	6.4	22	15	4.6	53	3.8	8.2	7.8	3.1
2	5.5	17	5.3	5.7	19	16	4.6	12	3.7	7.1	8.0	3.4
3	5.7	16	5.1	5.4	12	14	10	11	3.7	11	8.2	19
4	44	17	4.7	5.0	11	11	41	7.6	3.1	15	6.7	6.4
5	13	12	207	4.7	41	9.2	15	6.4	2.9	24	12	4.0
6	7.6	18	627	4.5	97	8.3	43	7.4	2.8	48	8.8	3.4
7	14	16	52	4.3	25	8.3	15	5.8	2.7	241	7.8	3.2
8	31	9.3	21	4.1	13	171	16	5.0	2.8	46	36	12
9	13	7.8	47	3.9	14	138	8.6	4.8	3.0	22	14	7.3
10	8.2	7.2	29	4.7	78	42	6.6	4.4	3.2	13	7.7	3.8
11	7.2	6.4	72	246	356	16	5.5	4.2	3.5	11	6.1	3.3
12	6.7	200	46	401	56	12	5.2	4.2	42	10	5.5	3.1
13	6.4	593	43	1160	35	10	5.1	5.8	22	8.3	6.0	3.0
14	5.5	303	78	572	58	9.8	16	21	7.2	7.4	8.8	2.8
15	13	172	54	874	68	8.3	20	55	7.7	6.7	66	2.7
16	16	40	34	717	25	7.9	15	52	5.1	6.0	25	2.5
17	8.1	18	25	79	90	6.7	9.2	32	5.6	5.4	9.3	2.5
18	72	103	117	28	72	6.6	15	13	24	7.2	7.2	2.4
19	21	23	76	21	78	6.8	15	8.4	21	5.6	6.2	2.3
20	9.1	166	66	104	200	10	6.8	6.8	6.8	4.9	5.5	2.2
21	8.7	69	27	460	60	7.6	5.5	5.8	13	4.6	5.1	2.2
22	7.5	21	19	891	25	5.5	5.5	5.5	31	13	6.1	2.3
23	42	14	14	134	33	5.3	4.9	5.1	89	26	5.6	2.4
24	22	11	11	35	351	5.0	10	4.6	17	8.9	4.5	29
25	12	9.7	9.7	26	276	5.0	172	4.4	49	12	4.2	10
26	77	9.0	11	19	41	4.7	18	4.6	85	14	3.8	6.9
27	47	8.0	9.0	16	25	4.5	12	5.3	32	100	3.7	5.2
28	146	7.4	7.5	24	20	4.4	8.8	4.6	17	39	3.6	3.6
29	43	6.6	7.8	24	---	4.2	7.3	3.8	22	20	4.0	3.4
30	71	6.0	6.8	18	---	4.1	13	3.6	11	10	3.4	3.1
31	54	---	8.7	45	---	4.2	---	3.6	---	9.0	3.2	---
TOTAL	842.9	1925.4	1746.2	5942.7	2201	581.4	534.2	370.7	542.6	764.3	309.8	160.5
MEAN	27.2	64.2	56.3	192	78.6	18.8	17.8	12.0	18.1	24.7	9.99	5.35
MAX	146	593	627	1160	356	171	172	55	89	241	66	29
MIN	5.5	6.0	4.7	3.9	11	4.1	4.6	3.6	2.7	4.6	3.2	2.2
AC-FT	1670	3820	3460	11790	4370	1150	1060	735	1080	1520	614	318

CAL YR 1978 TOTAL 10381.9 MEAN 28.4 MAX 627 MIN 1.7 AC-FT 20590
WTR YR 1979 TOTAL 15921.7 MEAN 43.6 MAX 1160 MIN 2.2 AC-FT 31580

16523000 KOOLAU DITCH NEAR KEANAE

LOCATION.--Lat 20°49'53", long 156°10'30", Hydrologic Unit 2002000, on right bank on west side of Keanae Valley, 2.7 mi (4.3 km) southwest of Keanae School, and 5.1 mi (8.2 km) southeast of Kailua.

PERIOD OF RECORD.--January 1910 to December 1912, November 1917 to February 1918, April 1918 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,237.7 ft (377.25 m) above mean sea level (by plane-table traverse). Jan. 1, 1910, to Dec. 31, 1912, nonrecording gage at same site and datum.

REMARKS.--Records good. Ditch diverts at altitude 1,260 ft (384 m) from nearly all streams from the Makapipi west to the Alo for power, domestic use, and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--63 years (water years, 1911-12, 1918-79), 101 ft^3/s (2.860 m^3/s), 73,170 acre-ft/yr (90.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 266 ft^3/s (7.53 m^3/s) Apr. 19, 1935; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 222 ft^3/s (6.29 m^3/s) Nov. 15; no flow Feb. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	172	67	68	194	21	48	211	36	88	78	37
2	61	151	64	63	183	59	54	97	36	77	80	39
3	63	152	62	60	128	68	80	103	36	90	89	105
4	206	172	58	59	112	72	178	77	33	149	78	63
5	141	120	151	56	181	71	132	64	32	173	107	43
6	90	147	216	53	208	79	199	66	31	176	82	39
7	126	137	220	51	183	78	135	58	31	221	68	37
8	207	89	179	50	125	177	144	53	32	217	108	92
9	123	79	217	48	123	219	86	50	32	183	59	70
10	86	74	206	51	169	201	71	48	33	126	68	41
11	80	69	216	165	214	128	62	45	35	106	59	37
12	72	154	219	215	119	99	58	45	166	95	56	34
13	68	216	191	195	8.1	88	57	55	118	80	65	34
14	63	217	216	219	.02	88	108	133	59	75	54	32
15	107	222	219	214	.76	84	136	190	61	72	153	31
16	123	214	205	213	.81	81	103	212	49	64	184	30
17	92	166	168	156	3.3	72	78	176	59	59	54	29
18	171	172	220	169	12	70	80	96	165	66	77	28
19	171	192	220	178	6.0	72	96	74	145	60	68	27
20	96	218	221	220	7.8	107	60	65	69	55	62	27
21	87	219	200	219	.01	92	54	58	87	52	58	26
22	76	194	149	214	.00	68	54	54	157	121	64	27
23	176	141	118	219	.25	62	52	50	206	145	63	27
24	159	114	97	214	8.4	59	53	47	137	74	52	87
25	97	99	89	210	14	56	210	45	209	117	49	128
26	218	95	83	166	.44	54	115	46	217	120	46	58
27	215	85	87	146	.02	52	82	45	210	99	44	49
28	217	84	75	194	.54	51	69	42	166	187	42	38
29	185	75	78	192	---	48	61	39	179	158	45	34
30	216	71	70	172	---	47	109	37	116	92	40	32
31	220	---	85	217	---	47	---	38	---	77	37	---
TOTAL	4076	4310	4666	4666	2001.45	2570	2824	2419	2942	3454	2354	1381
MEAN	131	144	151	151	71.5	82.9	94.1	78.0	98.1	111	75.9	46.0
MAX	220	222	221	220	214	219	210	212	217	221	153	128
MIN	61	69	58	48	.00	21	48	37	31	52	37	26
AC-FT	8080	8550	9260	9260	3970	5100	5600	4800	5840	6850	4670	2740

CAL YR 1978 TOTAL 42751.00 MEAN 117 MAX 224 MIN 21 AC-FT 84800
WTR YR 1979 TOTAL 37663.45 MEAN 103 MAX 222 MIN .00 AC-FT 74710

16531000 KULA DIVERSION FROM HAIPUAENA STREAM NEAR OLINDA

LOCATION.--Lat 20°48'24", long 156°13'27", Hydrologic Unit 20020000, on left bank of Haipuaena Stream, 3.4 mi (5.5 km) east of Olinda, and 6.2 mi (10.0 km) south of Kailua.

PERIOD OF RECORD.--July 1945 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir since Apr. 2, 1975. Altitude of gage is 4,320 ft (1,317 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record and those above 6.6 ft^3/s (0.19 m^3/s), which are poor. Water is diverted from Haipuaena Stream at station for domestic use and irrigation of truck crops in the Olinda and Kula areas. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--34 years, 0.694 ft^3/s (0.020 m^3/s), 503 acre-ft/yr (620,000 m^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 10 ft^3/s (0.28 m^3/s) Nov. 6, 1976; no flow Nov. 4, 1964, Dec. 3, 5, 1970, Mar. 27 to Apr. 1, Apr. 10-14, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 9.8 ft^3/s (0.28 m^3/s) July 7; minimum daily, 0.04 ft^3/s (0.001 m^3/s) Sept. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.46	.97	.14	.44	.84	.84	.14	2.5	.60	.32	.28	.06
2	.40	1.2	.16	.22	.44	.72	.22	1.0	.32	.19	2.4	.10
3	.35	.97	.14	.16	.28	.60	1.0	1.2	.25	.25	1.0	2.3
4	.72	.72	.12	.14	.28	.36	4.3	.78	.19	1.0	.60	.78
5	.50	.44	6.9	.12	2.9	.25	.84	.40	.14	1.9	.78	.25
6	.43	1.1	5.5	.10	1.8	.19	1.1	.32	.12	3.0	.60	.16
7	.80	1.4	2.5	.09	1.0	.16	.78	.22	.09	9.8	.32	.14
8	3.0	.44	1.2	.07	.54	5.9	.60	.19	1.4	3.0	.22	.75
9	2.5	.28	1.4	.07	.36	5.7	.40	.19	1.0	1.3	.19	.66
10	.60	.19	1.4	.12	4.8	1.8	.28	.16	.48	.60	.16	.25
11	.44	.16	2.1	2.8	6.0	.66	.19	.14	.36	.36	.14	.16
12	.54	1.7	2.8	6.7	3.5	.48	.16	.30	5.5	.25	.10	.12
13	.32	4.6	4.2	7.4	2.3	.48	.22	.97	2.1	.19	.09	.08
14	.19	2.6	5.1	6.9	2.3	.36	.44	1.7	.78	.19	.14	.08
15	.19	3.5	3.2	6.8	3.2	.25	.36	4.6	.91	.28	5.0	.07
16	.19	2.1	3.6	4.9	4.4	.22	.78	5.9	.72	.19	1.8	.05
17	.19	.60	2.1	2.9	2.3	.19	.66	2.5	.60	.14	.60	.79
18	1.6	.48	4.9	.97	4.4	.16	.36	4.0	2.3	.32	.28	.48
19	.84	.78	5.3	.78	4.6	.28	.22	1.3	1.7	.40	.16	.16
20	.60	6.1	5.5	8.5	6.2	.60	.16	.66	.60	.36	.14	.09
21	.22	3.3	2.5	8.7	1.8	.66	.14	.40	2.1	.22	.12	.07
22	.22	.84	2.0	5.1	1.8	.36	.19	.28	4.1	1.8	.12	.05
23	4.2	.48	1.4	2.7	1.6	.22	.19	.25	6.4	2.9	.10	.04
24	1.4	.32	.78	1.4	8.5	.16	.19	.25	1.2	.66	.10	2.8
25	.60	.22	.60	1.1	7.3	.14	5.9	.32	2.9	.97	.10	1.7
26	.54	.19	.54	.72	1.9	.12	1.1	.66	4.7	1.1	.28	.48
27	2.0	.16	.66	.48	1.1	.10	.60	.40	1.4	.78	.14	.28
28	1.3	.14	.36	.40	.84	.78	.54	.22	.97	3.5	.09	.48
29	3.4	.14	.28	.48	---	.36	.84	.19	1.2	1.4	.19	.66
30	4.9	.14	.22	.36	---	.19	1.1	1.0	.66	.48	.12	.28
31	4.2	---	.28	1.9	---	.14	---	1.1	---	.28	.08	---
TOTAL	37.84	36.26	67.88	73.52	77.28	23.43	24.00	34.10	45.79	38.13	16.35	14.37
MEAN	1.22	1.21	2.19	2.37	2.76	.76	.80	1.10	1.53	1.23	.53	.48
MAX	4.9	6.1	6.9	8.7	8.5	5.9	5.9	5.9	6.4	9.8	5.0	2.8
MIN	.19	.14	.12	.07	.28	.10	.14	.14	.09	.14	.08	.04
AC-FT	75	72	135	146	153	46	48	68	91	76	33	29

CAL YR 1978 TOTAL 430.12 MEAN 1.18 MAX 8.7 MIN .01 AC-FT 853
WTR YR 1979 TOTAL 488.99 MEAN 1.34 MAX 9.8 MIN .04 AC-FT 970

16538000 SPRECKELS DITCH AT HAIPUAENA WEIR, NEAR HUELO

LOCATION.--Lat 20°51'15", long 156°11'25", Hydrologic Unit 20020000, on right bank near Spreckels ditch trail between Haipuaena and Puohokamoa Streams, 2.7 mi (4.3 km) west of Keanae, and 4.5 mi (7.2 km) southeast of Huelo.

PERIOD OF RECORD.--April 1922 to current year. Published as "at Haipuaena, near Huelo" 1930-35.

REVISED RECORDS.--WSP 770: 1932-33.

GAGE.--Water-stage recorder and sharp-crested weir. Datum of gage is 1,470.96 ft (448.349 m) above mean sea level (East Maui Irrigation Co. bench mark). Apr. 29, 1922, to Feb. 19, 1930, at same site at different datum. Feb. 20, 1930, to Oct. 25, 1935, at site 100 ft (30 m) upstream at different datum.

REMARKS.--Records excellent. Spreckels ditch diverts from all streams between the Nuaailua and the Kailua above Koolau ditch east of the Puohokamoa, and below Koolau ditch west of the Puohokamoa. About 6 ft^3/s (0.17 m^3/s) was diverted above station to East Maui Irrigation Co. powerplant at Kolea Gulch prior to June 30, 1961, when the plant was abandoned. Water used for domestic supply and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE (since termination of powerplant diversion).--18 years (water years 1962-79), 29.3 ft^3/s (0.830 m^3/s), 21,230 acre-ft/yr (26.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 150 ft^3/s (4.25 m^3/s) Feb. 10, 1955, Feb. 18, 1956; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 138 ft^3/s (3.91 m^3/s) July 7; minimum daily, 3.9 ft^3/s (0.110 m^3/s) Sept. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	32	9.9	14	27	32	8.1	90	9.1	19	18	5.7
2	10	31	9.8	11	22	33	16	24	6.8	16	17	7.5
3	11	26	9.6	9.9	17	25	32	30	7.7	23	21	41
4	84	36	8.6	9.4	18	20	78	20	5.9	43	18	16
5	30	19	94	8.6	45	17	30	14	5.4	64	28	7.9
6	18	26	117	7.9	58	15	72	14	5.0	61	33	6.3
7	35	27	86	7.5	39	15	31	12	4.9	138	22	6.4
8	72	16	40	7.1	19	83	33	10	7.6	85	37	42
9	28	13	79	6.8	18	101	18	9.8	10	44	22	18
10	16	12	63	8.7	73	64	14	9.6	7.3	26	14	9.0
11	17	11	67	69	101	26	12	8.5	8.0	20	12	6.8
12	15	55	76	95	43	20	11	8.7	78	17	11	6.1
13	12	110	50	91	43	18	33	17	36	15	16	5.8
14	11	95	68	84	87	17	52	57	15	14	34	5.5
15	35	76	72	84	96	14	25	84	13	14	67	5.1
16	16	56	46	81	69	15	21	94	8.4	12	61	4.9
17	17	28	35	71	60	12	19	56	10	11	23	5.2
18	45	49	93	48	83	12	19	36	69	16	17	6.1
19	46	39	87	35	74	16	13	19	46	13	14	4.4
20	16	103	81	72	94	30	11	14	15	11	12	4.2
21	19	79	47	77	48	25	10	12	33	9.3	11	3.9
22	15	38	34	80	40	13	11	11	62	41	13	3.9
23	70	24	29	73	57	11	9.6	14	105	48	11	4.2
24	39	19	19	58	118	9.2	17	11	38	15	9.6	35
25	19	17	17	45	115	9.3	91	9.3	85	30	8.3	30
26	82	16	19	30	64	8.3	20	14	102	26	8.7	10
27	76	14	23	27	50	7.9	14	10	82	17	7.4	8.8
28	50	14	14	50	37	8.7	14	8.0	43	68	6.9	8.2
29	57	12	16	32	---	7.6	17	7.2	60	40	11	9.7
30	94	11	13	27	---	6.9	44	7.3	26	18	6.9	6.1
31	81	---	20	45	---	6.9	---	8.5	---	14	6.1	---
TOTAL	1147	1104	1442.9	1364.9	1615	698.8	795.7	739.9	1004.1	988.3	616.5	333.7
MEAN	37.0	36.8	46.5	44.0	57.7	22.5	26.5	23.9	33.5	31.9	19.9	11.1
MAX	94	110	117	95	118	101	91	94	105	138	87	42
MIN	10	11	8.6	6.8	17	6.9	8.1	7.2	4.9	9.3	6.1	3.9
AC-FT	2280	2190	2860	2710	3200	1390	1580	1470	1990	1960	1220	662

CAL YR 1978 TOTAL 12018.0 MEAN 32.9 MAX 117 MIN 3.0 AC-FT 23840
WTR YR 1979 TOTAL 11851.2 MEAN 32.5 MAX 138 MIN 3.9 AC-FT 23510

16541000 KOOLAU DITCH AT HAIPUAENA, NEAR HUELO

LOCATION.--Lat 20°51'17", long 156°11'19", Hydrologic Unit 20020000, on right bank at Haipuaena Stream, 1,000 ft (305 m) upstream from intake at Puohokamoa Stream, 3.3 mi (5.3 km) southeast of Kailua, and 4.5 mi (7.2 km) southeast of Huelo.

PERIOD OF RECORD.--April 1932 to current year.

GAGE.--Water-stage recorder and Parshall flume. Altitude of gage is 1,240 ft (378 m), from topographic map. Prior to Mar. 21, 1933, at datum 1.94 ft (0.591 m) lower, and Mar. 21, 1933, to Mar. 20, 1935, at datum 0.25 ft (0.076 m) lower, than present datum.

REMARKS.--Records excellent. Ditch is extension of Wailoa ditch east of Alo Stream; it receives water from Makapipi ditch at Hanawi Stream and diverts from nearly all streams from there west to the Alo. Water is used for power, domestic supply, and irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--47 years, 116 ft^3/s (3.285 m^3/s), 84,040 acre-ft/yr (104 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 300 ft^3/s (8.50 m^3/s) July 1, 17, 1963; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 290 ft^3/s (8.21 m^3/s) Nov. 13, Jan. 12; minimum daily, 0.26 ft^3/s (0.007 m^3/s) Feb. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	172	70	68	198	24	49	242	37	94	82	37
2	63	151	66	63	186	63	56	105	36	80	84	39
3	63	151	64	60	131	72	84	111	36	93	52	108
4	222	172	60	58	116	76	200	83	33	149	82	67
5	142	121	194	55	182	74	134	68	32	185	107	43
6	94	150	276	52	215	82	209	69	31	181	85	39
7	126	140	192	51	202	81	138	61	31	284	73	36
8	214	94	177	49	129	207	145	55	32	229	121	93
9	131	81	241	47	126	256	91	52	32	188	105	75
10	91	75	218	51	196	211	74	49	33	131	71	41
11	84	69	236	187	242	131	65	45	34	111	61	37
12	75	177	236	290	123	106	60	46	184	101	57	34
13	70	290	200	264	1.0	94	63	56	127	85	67	34
14	64	272	235	262	6.1	93	116	143	61	78	56	31
15	115	253	230	265	9.6	88	140	212	63	76	239	31
16	123	229	208	270	9.4	86	105	237	50	67	156	29
17	96	170	171	190	12	75	82	186	61	61	105	28
18	182	187	248	177	41	73	81	107	174	69	82	28
19	183	197	240	183	20	75	103	81	157	63	71	27
20	101	263	228	250	48	110	62	68	72	57	64	26
21	91	246	200	274	1.7	95	56	60	95	53	60	26
22	80	200	152	275	.26	71	56	56	178	122	66	26
23	188	145	122	267	6.0	65	54	52	242	148	65	26
24	160	119	103	225	78	61	54	48	144	78	54	94
25	101	105	93	218	89	58	244	46	232	118	50	133
26	241	101	88	171	14	55	123	47	251	121	46	60
27	228	91	90	150	.89	53	88	46	225	103	44	51
28	222	89	78	198	2.5	51	72	42	169	209	42	38
29	203	79	81	195	---	49	63	39	192	164	45	34
30	248	74	71	174	---	48	117	37	122	99	40	31
31	242	---	85	225	---	47	---	38	---	81	37	---
TOTAL	4309	4663	4953	5264	2385.45	2730	2984	2587	3166	3678	2453	1402
MEAN	139	155	160	170	85.2	88.1	99.5	83.5	106	119	80.4	46.7
MAX	248	290	276	290	242	256	244	242	251	284	239	133
MIN	63	69	60	47	.26	24	49	37	31	53	37	26
AC-FT	8550	9250	9820	10440	4730	5410	5920	5130	6280	7300	4940	2780

CAL YR 1978 TOTAL 45071.00 MEAN 123 MAX 290 MIN 20 AC-FT 89400
WTR YR 1979 TOTAL 40614.45 MEAN 111 MAX 290 MIN .26 AC-FT 80560

16541500 MANUEL LUIS DITCH AT PUOHOKAMOA GULCH, NEAR HUELO

LOCATION.--Lat 20°51'48", long 156°10'49", Hydrologic Unit 20020000, on right bank at lower portal of tunnel between Haipuaena and Puohokamoa Streams, 2.2 mi (3.5 km) west of Keanae, and 4.4 mi (7.1 km) southeast of Huelo.

PERIOD OF RECORD.--December 1917 to November 1924, January 1925 to current year.

REVISED RECORDS.--WSP 1719: 1918-30.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 920 ft (280 m), from topographic map.

REMARKS.--Records good. Ditch is extension of Center ditch and picks up water from streams between the Kolea and the Waikamoi for irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--60 years (water years, 1919-24, 1926-79), 8.13 ft^3/s (0.230 m^3/s), 5,890 acre-ft/yr (7.26 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 142 ft^3/s (4.02 m^3/s) Jan. 3, 1927; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 115 ft^3/s (3.26 m^3/s) Nov. 13, Jan. 22; minimum daily, 0.16 ft^3/s (0.005 m^3/s) June 7, 8, Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.87	5.6	.91	.72	1.3	2.3	.34	26	.23	2.3	.53	.36
2	.98	3.7	.81	.57	1.2	1.8	.40	1.2	.22	1.8	.60	.46
3	.95	4.7	.73	.51	1.1	1.4	3.1	2.7	.22	1.5	1.0	3.0
4	32	5.7	.67	.48	1.0	1.2	15	1.3	.22	1.8	.72	.70
5	5.0	2.6	56	.45	2.7	1.3	.97	.88	.20	11	.64	.47
6	2.6	4.0	81	.41	3.3	1.3	6.1	.71	.17	2.2	2.7	.35
7	2.3	2.7	50	.39	13	1.2	1.1	.62	.16	74	1.5	.37
8	8.3	1.6	2.0	.37	1.3	43	.99	.56	.16	13	12	2.9
9	2.4	1.4	12	.36	1.2	36	.64	.50	.19	2.9	.88	1.0
10	1.7	1.2	5.0	.50	21	7.7	.42	.52	.19	1.8	.41	.35
11	1.7	1.1	8.0	5.0	52	2.3	.35	.43	.17	1.5	.38	.28
12	1.3	41	9.9	80	14	1.9	.30	.41	7.0	1.3	.34	.28
13	1.2	115	5.4	7.0	2.2	1.7	2.4	.58	2.3	1.1	.38	.28
14	1.1	72	7.7	4.1	3.5	1.5	8.9	4.5	.86	1.0	.80	.28
15	9.0	41	9.0	3.5	8.3	1.3	2.0	9.8	.51	1.0	61	.25
16	1.6	12	2.9	3.1	4.3	1.0	.90	12	.36	.82	12	.22
17	1.1	4.2	1.0	2.4	6.2	.88	.73	3.8	.34	.72	2.7	.22
18	13	20	30	4.8	9.7	.87	2.1	.89	7.5	.78	1.8	.22
19	15	6.0	20	3.9	6.3	.91	1.2	.51	6.1	.76	1.5	.22
20	3.1	57	10	25	12	.93	.77	.44	.38	.59	1.3	.22
21	2.5	22	6.0	90	4.9	1.0	.64	.40	6.1	.53	1.1	.20
22	2.0	3.7	1.8	115	3.0	.68	.63	.34	15	3.0	1.4	.16
23	8.7	2.8	1.4	45	2.3	.56	.72	.34	47	2.3	1.1	.23
24	2.1	2.2	1.0	5.2	60	.52	.77	.33	3.7	.60	.89	13
25	1.7	1.9	.88	2.9	60	.48	30	.28	17	.69	.81	1.2
26	29	1.7	1.0	2.2	7.7	.45	.57	.37	26	.64	.73	.34
27	22	1.5	1.0	1.9	4.6	.40	.45	.29	12	.56	.67	.39
28	6.5	1.4	.75	3.7	3.2	.40	.41	.28	3.4	53	.66	.41
29	19	1.1	.84	2.2	---	.39	.37	.25	14	4.2	.52	.24
30	37	.97	.70	1.6	---	.34	4.4	.27	3.5	.55	.59	.21
31	25	---	.90	2.1	---	.34	---	.28	---	.46	.50	---
TOTAL	260.70	441.77	329.29	415.36	311.3	116.05	87.67	71.78	175.18	189.40	112.55	28.81
MEAN	8.41	14.7	10.6	13.4	11.1	3.74	2.92	2.32	5.84	6.11	3.63	.96
MAX	37	115	81	115	60	43	30	26	47	74	61	13
MIN	.87	.97	.67	.36	1.0	.34	.30	.25	.16	.46	.34	.16
AC-FT	517	876	653	824	617	230	174	142	347	376	223	57

CAL YR 1978 TOTAL 2390.07 MEAN 6.55 MAX 115 MIN .11 AC-FT 4740
WTR YR 1979 TOTAL 2539.86 MEAN 6.96 MAX 115 MIN .16 AC-FT 5040

NOTE.--No gage-height record Dec. 7 to Jan. 18.

16587000 HONOPOU STREAM NEAR HUELO

LOCATION.--Lat 20°53'20", long 156°15'20", Hydrologic Unit 20020000, on left bank 75 ft (23 m) upstream from Wailoa ditch intake, 2.2 mi (3.5 km) southwest of Huelo, and 2.5 mi (4.0 km) west of Kailua.

DRAINAGE AREA.--0.64 mi² (1.66 km²).

PERIOD OF RECORD.--December 1910 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1219: 1914(M), 1916-50(M). WSP 1249: 1948-50(P). WSP 1569: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,208 ft (368 m) above mean sea level (by vertical angles). Prior to June 19, 1914, nonrecording gage at same site and datum.

REMARKS.--Records excellent. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--68 years (water years 1912-79), 4.65 ft³/s (0.132 m³/s), 3,370 acre-ft/yr (4.16 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,710 ft³/s (162 m³/s) Nov. 18, 1930, gage height, 7.28 ft (2.219 m), from rating curve extended above 110 ft³/s (3.12 m³/s) by test of model of station site; minimum, 0.02 ft³/s (0.001 m³/s) several days in 1933, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 270 ft³/s (7.65 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 13	2400	658	18.6	3.62	1.103	Jan. 11	1930	520	14.7	3.45	1.052
Nov. 14	2100	*1880	53.2	*4.86	1.481	Jan. 21	1730	757	21.4	3.73	1.137
Dec. 5	0500	600	17.0	3.55	1.082						

Minimum discharge, 0.54 ft³/s (0.015 m³/s) Sept. 21-23, 28-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	6.9	2.7	2.5	4.3	7.1	1.3	9.4	.96	3.0	1.6	1.1
2	2.3	6.5	2.5	2.4	4.1	6.2	1.9	2.2	.84	2.8	1.9	1.1
3	2.1	6.6	2.4	2.3	3.3	5.4	3.5	3.7	.84	2.7	1.9	1.7
4	9.7	8.9	2.4	2.1	3.2	4.7	4.0	2.7	.84	3.9	1.5	1.3
5	2.8	4.9	75	2.1	5.5	4.3	2.1	2.1	.84	6.0	2.1	.96
6	2.4	5.6	84	2.0	3.9	3.7	3.2	2.0	.84	3.5	1.9	.84
7	2.3	4.3	19	1.9	3.8	3.5	2.1	1.9	.74	16	1.7	.96
8	4.1	3.7	11	1.9	2.8	24	2.3	1.9		6.5	1.5	1.2
9	2.5	3.3	14	1.7	2.7	36	1.9	1.9	[illegible]	4.9	1.3	1.2
10	2.1	3.2	11	2.8	7.0	6.5	1.6	1.9	.76	4.3	1.2	.96
11	2.1	3.0	13	63	22	4.7	1.5	1.7	.74	3.9	1.1	.84
12	2.3	27	9.3	47	5.8	4.3	1.5	1.7	1.9	3.7	1.1	.84
13	2.0	48	7.3	47	4.7	3.7	2.0	1.9	[illegible]	3.3	1.2	.84
14	1.9	89	9.7	42	8.7	3.5	5.3	[illegible]	[illegible]	3.0	1.9	.74
15	1.7	21	8.0	39	14	3.3	2.5	3.	[illegible]	2.8	18	.74
16	1.7	12	6.5	43	8.2	3.2	2.1	4.6	[illegible]	2.7	6.0	.64
17	1.6	8.8	5.8	19	7.1	2.8	2.5	2.1	.84	2.5	2.8	.64
18	3.5	8.3	9.5	13	8.8	2.7	2.2	1.7	2.1	2.4	2.4	.64
19	4.9	7.1	8.3	10	10	2.7	1.6	1.6	2.8	2.3	2.1	.64
20	1.9	20	6.0	9.3	10	2.7	1.5	1.5	.96	2.1	2.1	.64
21	1.9	10	5.4	45	6.7	2.8	1.5	1.5	1.6	2.0	2.0	.54
22	1.7	7.1	5.1	31	6.5	2.4	1.5	1.5	4.4	2.5	2.0	.54
23	5.4	6.5	4.7	14	6.7	2.1	1.8	1.3	11	2.0	1.9	.54
24	2.1	5.4	4.1	11	24	2.0	2.3	1.2	2.5	1.7	1.7	.84
25	1.7	4.9	3.9	9.0	47	1.9	3.9	1.2	5.7	1.7	1.6	.74
26	6.0	4.5	3.7	7.3	15	1.7	1.6	1.3	3.9	1.6	1.5	.64
27	5.6	3.9	3.5	6.5	9.8	2.0	1.5	1.2	4.7	1.5	1.5	.74
28	2.7	3.5	3.2	8.1	8.3	2.1	1.5	1.1	3.3	10	1.5	.64
29	13	3.2	3.0	6.0	---	1.6	1.5	1.1	7.2	2.3	1.5	.54
30	18	2.8	3.3	5.1	---	1.5	1.8	1.2	3.3	1.9	1.2	.54
31	23	---	2.8	5.6	---	1.5	---	.96	---	1.6	1.1	---
TOTAL	137.3	349.9	350.1	502.6	263.9	156.6	65.5	66.06	69.66	111.1	72.8	24.82
MEAN	4.43	11.7	11.3	16.2	9.43	5.05	2.18	2.13	2.32	3.58	2.35	.83
MAX	23	89	84	63	47	36	5.3	9.4	11	16	18	1.7
MIN	1.6	2.8	2.4	1.7	2.7	1.5	1.3	.96	.74	1.5	1.1	.54
AC-FT	272	694	694	997	523	311	130	131	138	220	144	49

CAL YR 1978 TOTAL 1808.02 MEAN 4.95 MAX 89 MIN .46 AC-FT 3590
WTR YR 1979 TOTAL 2170.34 MEAN 5.95 MAX 89 MIN .54 AC-FT 4300

16588000 WAILOA DITCH AT HONOPOU, NEAR HUELO

LOCATION.--Lat 20°53'20", long 156°15'19", Hydrologic Unit, 20020000, on right bank 100 ft (30 m) downstream from intake at Honopou Stream, 0.5 mi (0.8 km) west of Lupi, and 2.2 mi (3.5 km) southwest of Huelo.

PERIOD OF RECORD.--November 1922 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,208 ft (368.2 m) above mean sea level (by vertical angles).

REMARKS.--Records excellent. Wailoa ditch receives water from Koolau ditch at Alo Stream and from all streams from there west to Halehaku Gulch at altitude of about 1,200 ft (366 m). Water is used for domestic supply, power, and irrigation in Central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--56 years (water years 1924-79), 171 ft^3/s (4.843 m^3/s), 123,900 acre-ft/yr (153 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 326 ft^3/s (9.23 m^3/s) Apr. 1, 1967; no flow Jan. 24-27, 1923.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 306 ft^3/s (8.67 m^3/s) July 7; minimum daily, 43 ft^3/s (1.22 m^3/s) Sept. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	276	123	133	278	185	81	288	67	185	198	65
2	119	278	116	119	264	198	126	206	63	157	159	75
3	116	248	112	110	212	187	99	231	65	184	177	171
4	282	232	105	104	190	172	131	188	58	264	157	138
5	242	219	287	98	264	156	168	136	54	283	187	79
6	183	237	231	94	223	156	239	133	52	276	157	68
7	213	250	176	90	182	152	207	116	52	306	149	65
8	285	185	176	85	147	257	172	104	54	292	151	152
9	240	160	191	82	137	289	165	99	62	285	180	162
10	172	144	203	109	145	235	133	95	57	249	126	90
11	158	135	232	250	147	183	116	86	57	206	110	68
12	152	263	270	255	161	193	106	86	259	182	102	61
13	135	282	279	207	176	178	144	119	212	157	126	60
14	119	286	293	182	167	172	229	228	127	146	204	56
15	199	275	286	189	162	157	226	285	115	141	262	53
16	190	289	280	193	162	155	167	289	85	123	256	51
17	163	286	279	193	160	134	167	275	98	112	210	49
18	254	276	285	194	164	128	167	206	249	133	160	50
19	268	268	280	194	164	143	162	154	249	120	137	46
20	177	295	278	194	152	210	117	124	135	106	122	45
21	179	296	277	194	135	190	104	108	141	97	112	43
22	149	290	269	186	138	131	106	100	266	202	123	43
23	253	255	244	182	142	114	110	99	288	223	115	45
24	258	218	195	183	144	105	120	92	258	148	58	110
25	189	193	178	183	130	101	287	83	288	188	50	194
26	276	186	173	182	202	96	200	95	286	200	85	94
27	288	169	187	180	213	94	147	85	285	173	79	90
28	278	163	195	183	195	104	125	76	280	213	75	72
29	288	142	153	238	---	89	129	69	285	244	53	65
30	302	133	140	262	---	83	179	69	244	175	72	54
31	303	---	165	281	---	81	---	69	---	142	66	---
TOTAL	6550	6929	6608	5329	4956	4828	4629	4393	4791	5912	4288	2414
MEAN	211	231	213	172	177	156	154	142	160	191	138	80.5
MAX	303	296	293	281	278	289	287	289	288	306	262	194
MIN	116	133	105	82	130	81	81	69	52	97	66	43
AC-FT	12990	13740	13110	10570	9830	9580	9180	8710	9500	11730	8510	4790

CAL YR 1978 TOTAL 71707 MEAN 196 MAX 313 MIN 37 AC-FT 142200
WTR YR 1979 TOTAL 61627 MEAN 169 MAX 306 MIN 43 AC-FT 122200

16589000 NEW HAMAKUA DITCH AT HONOPOU, NEAR HUELO

LOCATION.--Lat 20°53'28", long 156°15'22", Hydrologic Unit 20020000, on right bank 15 ft (4.6 m) upstream from tunnel portal, 600 ft (183 m) downstream from Honopou Stream crossing, and 2.1 mi (3.4 km) southwest of Huelo.

PERIOD OF RECORD.--January 1918 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,170 ft (356.6 m) above mean sea level (by vertical angles). Prior to May 14, 1921, at site 300 ft (91 m) upstream at different datum. May 14, 1921, to Mar. 18, 1962, at present site at datum 1.00 ft (0.305 m) higher.

REMARKS.--Records excellent. Ditch diverts from streams between Waikamoi Stream and Halehaku Gulch above Center and Lowrie ditches for irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--61 years, 36.2 ft^3/s (1.025 m^3/s), 26,230 acre-ft/yr (32.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 182 ft^3/s (5.15 m^3/s) Nov. 2, 1967; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 169 ft^3/s (4.79 m^3/s) Nov. 13, 14; minimum daily, 0.02 ft^3/s (<0.001 m^3/s) Jan. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	102	2.5	1.8	60	.04	1.0	156	.52	3.4	1.4	.87
2	2.0	51	2.3	1.6	41	.04	4.6	13	.51	2.7	1.5	1.0
3	1.8	46	2.2	1.5	5.6	.04	46	39	.51	2.4	1.6	48
4	138	134	2.1	1.5	2.8	.04	154	3.6	.47	67	1.4	9.1
5	61	21	143	1.4	25	1.8	75	1.7	.46	113	23	1.1
6	3.8	33	47	1.4	14	3.5	142	1.4	.46	57	21	.85
7	29	61	14	1.3	.04	3.1	67	1.3	.41	165	37	.78
8	126	4.2	14	1.2	.05	109	105	1.2	.41	160	34	36
9	50	3.6	14	1.2	.05	164	10	1.1	.49	113	18	31
10	3.1	3.2	14	1.9	.06	137	1.1	1.1	.42	10	1.1	.99
11	2.8	2.9	14	48	.06	80	1.0	1.0	.41	3.8	.93	.76
12	2.8	102	5.4	22	.03	13	.91	.94	86	3.2	.87	.68
13	2.4	169	.67	.12	.04	3.4	2.7	1.1	51	2.7	.90	.63
14	2.1	169	27	.09	.07	3.1	55	64	1.2	2.5	7.7	.62
15	42	167	17	.09	.09	2.8	48	113	.86	2.4	157	.56
16	11	158	.07	.08	.05	2.5	17	156	.61	2.[illegible]	[illegible]	.51
17	5.8	60	.08	.03	.05	2.2	46	86	.59	[illegible]	[illegible].2	.51
18	84	61	.12	.03	.06	2.1	36	3.7	95	[illegible]	[illegible].5	.47
19	99	107	23	.03	.07	2.3	23	1.2	81	[illegible]	2.1	.45
20	11	159	49	.04	.07	9.0	1.6	1.0	1.1	[illegible]	[illegible].8	.41
21	4.0	162	86	.15	.03	20	1.3	.92	11	[illegible].5	1.6	.38
22	3.2	115	33	.08	.04	1.9	1.3	.87	103	54	1.7	.36
23	101	24	15	.03	.04	1.6	1.3	.81	134	76	1.5	.36
24	77	6.4	.19	.02	.08	1.5	3.7	.76	47	2.0	1.4	23
25	3.6	4.7	.16	.03	.13	1.4	143	.71	155	30	1.3	52
26	106	4.3	3.1	.03	.05	1.3	12	.81	154	6.5	1.2	.71
27	147	3.7	5.3	.03	.05	1.4	1.2	.67	153	2.5	1.1	.61
28	134	3.6	2.3	.06	.03	1.4	1.1	.62	93	101	1.1	1.5
29	89	3.0	2.3	.04	---	1.2	1.0	.59	119	90	1.2	.52
30	163	2.7	2.3	14	---	1.2	36	.59	14	2.1	.55	.45
31	160	---	8.9	108	---	1.1	---	.57	---	1.4	.51	---
TOTAL	1667.2	1943.3	549.99	207.78	149.64	572.96	1038.81	655.26	1305.43	1084.7	460.00	215.18
MEAN	53.8	64.8	17.7	6.70	5.34	18.5	34.6	21.1	43.5	35.0	15.5	7.17
MAX	163	169	143	108	60	164	154	156	155	165	157	52
MIN	1.8	2.7	.07	.02	.03	.04	.91	.57	.41	1.4	.87	.36
AC-FT	3310	3850	1090	412	297	1140	2060	1300	2590	2150	952	427

CAL YR 1978 TOTAL 15246.14 MEAN 41.8 MAX 169 MIN .07 AC-FT 30240
WTR YR 1979 TOTAL 9870.25 MEAN 27.0 MAX 169 MIN .02 AC-FT 19580

16592000 LOWRIE DITCH AT HONOPOU GULCH, NEAR HUELO

LOCATION.--Lat 20°54'57", long 156°15'08", Hydrologic Unit 20020000, on left bank 0.2 mi (0.3 km) downstream from siphon across Honopou Stream, 1.6 mi (2.6 km) west of Huelo, and 2.7 mi (4.3 km) northwest of Kailua.

PERIOD OF RECORD.--January 1910 to March 1927, February 1930 to current year. Published as "at Opana weir, near Huelo" 1910-27.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 598.0 ft (182.27 m) above mean sea level. Jan. 1, 1910, to Mar. 31, 1927, at site 1.5 mi (2.4 km) downstream at different datum.

REMARKS.--Records good. Lowrie ditch receives water from Center ditch at Nailiilihaele Stream and diverts from additional stream westward to Maliko Gulch for irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--65 years (water years, 1911-26, 1931-79), 37.3 ft^3/s (1.056 m^3/s), 27,020 acre-ft/yr (33.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 116 ft^3/s (3.29 m^3/s) Oct. 31, 1921; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 104 ft^3/s (2.95 m^3/s) July 7; minimum daily, 0.81 ft^3/s (0.023 m^3/s) Feb. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	4.4	23	17	28	1.2	9.0	90	5.3	25	15	7.2
2	28	28	18	22	25	1.2	9.3	22	5.1	28	12	8.9
3	21	63	19	28	22	1.2	17	24	5.0	20	10	17
4	82	76	33	28	21	17	89	19	4.7	20	16	20
5	55	49	76	28	53	28	40	13	4.4	64	22	16
6	30	46	20	17	29	27	46	11	4.3	27	23	8.1
7	31	56	5.0	11	2.6	24	20	10	4.2	104	36	7.3
8	59	36	4.0	14	1.6	61	12	9.3	4.2	88	22	10
9	45	32	4.5	9.8	1.4	85	13	9.5	4.3	46	18	28
10	28	29	4.0	16	1.9	84	23	15	4.2	25	6.8	18
11	28	27	4.0	80	1.6	45	31	17	4.2	25	6.5	9.7
12	30	99	4.1	59	1.0	28	17	17	40	25	20	6.3
13	27	56	3.7	5.6	.81	26	10	17	33	25	7.4	6.0
14	29	40	3.6	4.4	1.1	24	35	32	25	26	10	6.0
15	43	40	3.0	3.7	1.5	22	34	50	27	25	43	5.5
16	29	73	2.5	3.2	1.5	21	14	86	24	26	84	5.2
17	27	81	2.3	2.4	1.2	19	25	52	14	24	33	5.1
18	72	79	2.3	2.1	2.3	18	18	11	18	23	32	4.9
19	83	80	2.4	1.9	3.2	19	16	9.2	51	15	33	4.7
20	46	99	2.0	1.8	3.7	20	12	8.3	30	12	27	4.5
21	41	92	1.9	6.6	1.6	20	11	16	28	11	22	4.3
22	32	61	17	3.9	1.5	21	11	21	65	19	14	4.4
23	75	44	30	2.1	1.8	17	10	21	82	25	13	4.6
24	56	37	14	1.9	2.1	12	11	16	35	17	14	12
25	31	34	6.9	1.8	3.1	12	70	15	77	15	12	35
26	73	32	21	1.6	1.5	27	14	16	86	12	9.5	29
27	86	29	23	1.6	1.3	20	9.9	14	82	10	8.9	8.1
28	74	30	20	1.6	1.2	12	9.2	8.7	41	64	8.7	7.9
29	64	29	19	1.3	---	10	9.0	5.9	68	52	10	5.5
30	98	29	19	18	---	9.5	20	5.9	29	28	8.2	5.0
31	60	---	17	57	---	9.3	---	5.7	---	17	7.7	---
TOTAL	1510	1550.4	425.2	452.3	217.51	741.4	665.4	667.5	904.9	943	655.1	314.3
MEAN	48.7	51.7	13.7	14.6	7.77	23.9	22.2	21.5	30.2	30.4	21.1	10.5
MAX	98	99	76	80	53	85	89	90	86	104	93	35
MIN	21	4.4	1.9	1.3	.81	1.2	9.0	5.7	4.2	10	6.8	4.4
AC-FT	3000	3080	843	897	431	1470	1320	1320	1790	1870	1300	623

CAL YR 1978 TOTAL 12779.70 MEAN 35.0 MAX 99 MIN 1.9 AC-FT 25350
WTR YR 1979 TOTAL 9047.01 MEAN 24.8 MAX 104 MIN .81 AC-FT 17940

16594000 HAIKU DITCH AT HONOPOU GULCH, NEAR KAILUA

LOCATION.--Lat 20°55'07", long 156°14'58", Hydrologic Unit 20020000, on right bank on west side of Honopou Gulch, 160 ft (49 m) below new Government Road, 2.5 mi (4.0 km) northwest of Kailua, and 5.0 mi (8.0) east of Haiku.

PERIOD OF RECORD.--January 1910 to December 1928, February 1930 to current year. Published as "at Peahi weir, near Huelo" prior to July 1919, as "at Manawai Gulch, near Peahi" July 1919 to December 1928, and as "at Kapalalaea Gulch, near Huelo" February 1930 to January 1940. Monthly discharge only for some periods, published in WSP 1319.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 421.54 ft (128.485 m) above mean sea level. Prior to Oct. 7, 1914, at site at Peahi weir on old Haiku ditch at different datum. Oct. 7, 1914, to Dec. 31, 1928, at site 2.9 mi (4.7 km) downstream at different datum. Feb. 19, 1930, to Feb. 20, 1940, at site 0.9 mi (1.4 km) downstream at different datum.

REMARKS.--Records excellent. Ditch diverts from all streams between Nailiilihaele Stream and Maliko Gulch for irrigation in central Maui. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--64 years (water years, 1911, 1914, 1916-28, 1931-79), 24.9 ft^3/s (0.705 m^3/s), 18,040 acre-ft/yr (22.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 209 ft^3/s (5.92 m^3/s) Nov. 13, 1934, Jan. 8, 9, Feb. 25-27, 1935, Jan. 27, 1938; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 112 ft^3/s (3.17 m^3/s) Dec. 20; minimum daily, 0.11 ft^3/s (0.003 m^3/s) Jan. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	77	3.5	2.4	6.7	.19	1.7	87	.81	2.5	1.5	.56
2	2.2	40	3.3	2.3	5.8	.18	1.8	4.4	.81	2.2	1.2	.62
3	2.1	29	3.2	2.3	5.4	.17	4.6	3.3	.81	2.1	.76	1.1
4	72	62	3.2	2.2	6.1	7.9	53	2.8	.74	2.0	.66	.84
5	13	12	91	2.1	14	8.1	11	1.8	.63	44	.67	.75
6	3.0	14	30	2.0	.38	4.7	35	1.4	.38	2.5	.72	.70
7	3.2	32	1.7	1.8	.43	4.5	5.1	1.3	.43	105	3.7	.67
8	36	6.6	4.0	1.7	.31	35	4.5	1.2	.58	83	.79	.74
9	11	5.4	1.2	1.7	.28	63	3.3	1.2	.55	9.2	.76	.71
10	2.7	5.1	.96	4.0	.46	38	2.2	1.2	.53	2.5	.74	.67
11	3.3	5.3	38	55	.31	12	1.5	1.2	.53	2.4	.68	.66
12	3.0	81	35	40	.22	6.1	1.5	1.2	7.4	2.1	.66	.66
13	2.7	103	60	1.2	.17	4.8	1.9	1.2	8.3	2.0	.83	.63
14	2.6	94	70	.71	.24	3.8	6.5	2.1	2.5	1.8	.82	.61
15	7.2	69	28	.49	.26	3.1	7.1	38	1.8	1.2	64	.61
16	3.4	64	.66	.51	.26	3.0	2.4	99	.72	1.1	65	.59
17	2.5	17	.48	.26	.20	2.8	3.8	26	.56	1.1	4.4	.58
18	51	39	23	.23	.40	2.8	2.4	2.9	1.0	1.2	3.2	.56
19	53	36	63	.18	22	2.8	2.0	2.4	26	1.0	2.8	.58
20	6.2	70	112	.16	1.1	2.8	1.8	1.7	2.8	.93	2.4	.57
21	6.5	78	71	1.1	.39	2.5	1.7	.99	2.3	.93	1.7	.59
22	5.0	11	17	.53	.32	2.3	1.7	1.0	51	1.2	1.4	.59
23	48	8.2	4.5	.12	.35	2.2	1.6	1.0	73	1.1	1.2	.54
24	8.5	7.5	.44	.11	.49	2.2	1.6	.99	10	.99	.57	3.8
25	4.8	7.1	.40	.13	.60	2.1	44	.97	64	1.1	.99	4.8
26	36	6.7	9.0	.16	.31	2.0	3.6	.95	96	1.0	.96	2.0
27	65	5.2	2.8	.15	.24	2.1	2.9	.90	64	.82	.90	1.8
28	40	4.3	2.7	.13	.20	2.2	2.5	.86	12	53	.80	1.5
29	28	3.9	2.7	66	---	1.9	1.6	.90	45	32	.67	.65
30	91	3.7	2.9	36	---	1.8	7.2	.97	3.3	2.3	.61	.66
31	110	---	2.5	33	---	1.8	---	.89	---	1.9	.57	---
TOTAL	725.0	997.0	688.14	258.67	67.90	228.84	221.5	291.72	478.48	366.21	191.06	30.34
MEAN	23.4	33.2	22.2	8.34	2.43	7.38	7.38	9.41	15.9	11.8	6.16	1.01
MAX	110	103	112	66	22	63	53	99	96	105	84	4.8
MIN	2.1	3.7	.40	.11	.17	.17	1.5	.86	.38	.82	.57	.54
AC-FT	1440	1980	1360	513	135	454	439	579	949	726	379	60

CAL YR 1978 TOTAL 6231.68 MEAN 17.1 MAX 112 MIN .40 AC-FT 12360
WTR YR 1979 TOTAL 4544.86 MEAN 12.5 MAX 112 MIN .11 AC-FT 9010

HAWAII, ISLAND OF MAUI

16599500 OPANA TUNNEL AT KAILIILI

LOCATION.--Lat 20°51'04", long 156°16'17", Hydrologic Unit 20020000, on left bank at tunnel outlet, 0.3 mi (0.5 km) north of Kailiili, and 2.7 mi (4.3 km) east of Makawao.

PERIOD OF RECORD.--May 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,340 ft (713 m), from topographic map.

REMARKS.--Records excellent. Tunnel diverts from Opana Gulch for domestic use in the Kokomo, Makawao and Pukalani areas. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--14 years, 3.04 ft^3/s (0.086 m^3/s), 2,200 acre-ft/yr (2.71 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 13 ft^3/s (0.37 m^3/s) Apr. 1, 1969, Apr. 9, 10, 1972, Nov. 12, 1973; minimum daily, 0.11 ft^3/s (0.003 m^3/s) Nov. 5-10, 1973, Oct. 5, 6, 25, 26, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 12 ft^3/s (0.34 m^3/s) Jan. 13, 22; minimum daily, 0.36 ft^3/s (0.010 m^3/s) Sept. 20-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	6.2	2.7	3.5	5.5	6.1	2.0	2.6	1.1	1.5	1.5	.56
2	1.0	5.1	2.5	3.2	5.1	5.8	1.9	2.2	.93	1.2	1.7	.58
3	.98	4.5	2.3	3.0	4.9	5.5	2.3	2.0	.85	1.5	1.7	.70
4	1.4	7.7	2.2	2.8	4.7	5.1	6.7	1.8	.79	1.5	1.5	.77
5	1.3	4.7	9.1	2.6	5.5	4.8	3.6	1.7	.75	2.8	1.6	.61
6	1.1	4.5	11	2.5	6.0	4.4	3.5	1.6	.71	2.7	1.4	.52
7	1.3	6.9	8.7	2.3	5.6	4.1	2.9	1.5	.69	9.8	1.2	.56
8	2.8	4.0	7.6	2.2	4.8	6.6	2.7	1.4	.68	6.2	1.1	1.1
9	2.6	3.3	7.4	2.1	4.2	9.2	2.2	1.4	.73	4.0	1.1	1.6
10	1.5	2.9	7.2	3.1	7.8	6.9	2.0	1.3	.74	2.8	1.0	.97
11	1.3	2.6	7.3	5.9	10	5.9	1.8	1.2	.75	2.3	.55	.64
12	1.2	4.2	8.4	11	8.5	5.4	1.7	1.2	3.1	2.1	.86	.54
13	1.1	9.8	7.7	12	7.0	5.0	3.2	1.2	2.3	1.9	.88	.50
14	.99	7.6	8.2	11	6.7	4.6	5.8	1.8	1.2	1.8	.93	.46
15	.91	7.6	8.1	11	6.8	4.2	5.0	3.4	1.0	1.6	4.1	.45
16	.85	7.5	7.6	11	6.7	4.0	4.2	5.5	.90	1.5	2.7	.41
17	.79	6.3	7.3	8.5	6.6	3.7	4.4	3.9	.84	1.4	1.7	.42
18	1.1	5.5	8.2	7.1	7.3	3.5	4.5	2.2	1.8	1.5	1.2	.41
19	1.2	5.1	8.4	6.5	7.6	3.4	3.7	1.8	2.5	1.4	1.1	.38
20	.96	7.3	8.7	8.1	8.9	3.3	2.7	1.5	1.3	1.3	.94	.36
21	.85	8.0	8.0	11	7.1	3.1	2.3	1.3	1.3	1.2	.86	.36
22	.74	5.9	7.4	12	6.5	2.9	2.6	1.2	5.6	1.4	.87	.36
23	3.2	4.8	7.0	10	6.4	2.7	2.3	1.2	7.5	2.5	.81	.36
24	3.7	4.3	5.7	8.2	8.9	2.6	2.7	1.1	4.5	1.7	.76	1.6
25	1.8	3.9	4.9	7.4	10	2.4	8.1	1.0	5.0	1.8	.71	2.5
26	1.4	3.7	4.7	6.9	7.7	2.3	4.8	1.1	5.1	1.8	.71	.90
27	2.2	3.4	4.5	6.5	6.9	2.6	3.1	1.0	4.0	1.7	.67	.65
28	4.1	3.2	4.0	6.2	6.4	5.1	2.6	.98	2.5	4.5	.65	.52
29	5.6	3.0	3.7	6.0	---	2.9	2.5	.92	2.5	5.7	.68	.46
30	8.9	2.8	3.7	5.7	---	2.3	2.4	1.0	1.9	2.9	.63	.41
31	8.7	---	4.0	6.0	---	2.1	---	1.0	---	2.0	.58	---
TOTAL	66.67	156.3	198.2	205.3	190.1	132.5	100.2	53.00	63.56	78.0	37.49	20.66
MEAN	2.15	5.21	6.39	6.62	6.79	4.27	3.34	1.71	2.12	2.52	1.21	.69
MAX	8.9	9.8	11	12	10	9.2	8.1	5.5	7.5	9.8	4.1	2.5
MIN	.74	2.6	2.2	2.1	4.2	2.1	1.7	.92	.68	1.2	.58	.36
AC-FT	132	310	393	407	377	263	199	105	126	155	74	41

CAL YR 1978 TOTAL 990.83 MEAN 2.71 MAX 11 MIN .26 AC-FT 1970
WTR YR 1979 TOTAL 1301.98 MEAN 3.57 MAX 12 MIN .36 AC-FT 2580

16618000 KAHAKULOA STREAM NEAR HONOKOHAU
(National stream-quality accounting network station)

LOCATION.--Lat 20°58'54", long 156°33'26", Hydrologic Unit 20020000, on right bank 0.5 mi (0.8 km) downstream from Kapuna Stream, 1.3 mi (2.1 km) south of Kahakuloa, 2.0 mi (3.2 km) west of Puu Makawana, and 4.3 mi (6.9 km) southeast of Honokohau.

DRAINAGE AREA.--3.47 mi² (8.99 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1939 to August 1943, September 1947 to November 1970, December 1974 to current year. Records for January 1913 to December 1914 (fragmentary) at site 1.0 mi (1.6 km) upstream not equivalent owing to difference in drainage areas.

REVISED RECORDS.--WSP 1319: 1948, 1949(M). WSP 1569: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 330 ft (101 m), from topographic map.

REMARKS.--Records fair. No diversion above station.

AVERAGE DISCHARGE.--30 years (1940-42, 1948-70, 1976-79), 16.8 ft³/s (0.476 m³/s) 12,170 acre-ft/yr (15.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,800 ft³/s (108 m³/s) Nov. 25, 1970, gage height, 10.57 ft (3.222 m), from floodmarks, from rating curve extended above 510 ft³/s (14.4 m³/s) on basis of slope-area measurements at gage heights 6.70 ft (2.042 m), 8.48 ft (2.585 m), and 10.57 ft (3.222 m); minimum, 3.0 ft³/s (0.085 m³/s) Feb. 9-11, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 15	2130	1130	32.0	6.07	1.850	Jan. 13	2130	2080	58.9	7.27	2.216
Oct. 18	0400	902	25.5	5.79	1.765	June 23	0630	550	15.6	5.24	1.597
Nov. 13	1400	*3400	96.3	*9.60	2.926	Sept. 9	1730	545	15.4	5.23	1.594
Dec. 6	1130	540	15.3	5.22	1.591						

Minimum discharge, 5.2 ft³/s (0.15 m³/s) Oct. 1-3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	15	8.7	9.2	16	15	12	44	7.2	9.6	7.5	6.2
2	5.2	15	8.9	8.9	16	19	14	10	7.2	8.5	18	7.5
3	5.3	18	8.3	8.5	16	15	12	31	7.0	8.3	18	15
4	132	29	8.5	8.1	21	12	16	14	7.0	22	12	11
5	15	9.8	91	7.9	61	12	12	12	6.8	34	9.6	6.8
6	11	11	183	7.9	53	11	16	9.2	6.8	11	11	6.8
7	12	11	78	7.9	49	11	11	8.5	6.8	64	14	6.3
8	15	7.6	18	7.9	26	67	10	8.1	7.0	27	8.6	7.3
9	8.2	7.0	65	7.9	20	35	9.6	8.1	7.0	25	8.7	74
10	6.5	6.7	17	35	61	22	9.2	13	7.3	11	7.5	12
11	18	14	38	304	79	12	8.7	8.5	7.3	9.6	7.2	7.3
12	8.5	280	21	200	21	11	8.5	7.9	11	8.7	7.0	6.7
13	6.7	461	13	357	16	11	9.4	10	8.7	8.1	6.8	6.3
14	6.0	339	12	120	22	10	17	11	7.5	14	9.8	6.1
15	149	78	12	100	50	10	15	9.6	7.9	11	106	6.0
16	26	28	12	200	30	10	13	22	8.3	8.7	28	5.9
17	9.1	16	11	33	20	9.8	11	12	6.8	8.1	9.9	6.2
18	104	22	12	24	77	11	9.2	11	17	9.6	8.1	6.7
19	37	18	13	21	68	15	8.7	8.9	23	7.9	7.5	5.8
20	10	31	14	21	39	11	8.5	8.3	7.9	7.5	7.1	5.7
21	17	21	10	40	60	11	8.5	7.9	28	7.5	6.5	5.6
22	27	13	9.8	180	23	9.8	8.7	7.7	41	21	6.8	5.6
23	77	13	9.6	31	16	9.2	8.3	7.7	106	13	6.7	5.6
24	13	12	9.4	23	90	8.9	9.2	7.5	11	8.1	6.7	7.2
25	8.8	10	15	20	170	8.9	28	7.5	34	8.9	6.4	8.5
26	9.5	10	12	19	28	8.7	9.8	9.2	30	8.3	6.4	5.9
27	30	9.4	9.8	19	17	33	8.9	7.7	23	7.5	6.2	5.7
28	35	12	9.4	23	15	14	8.3	7.5	16	33	6.4	5.9
29	42	11	10	17	---	9.6	7.9	7.3	85	12	12	5.7
30	33	8.9	13	17	---	9.2	11	7.3	13	8.5	6.6	5.6
31	88	---	9.8	16	---	8.9	---	7.2	---	7.5	6.2	---
TOTAL	970.0	1537.4	762.2	1894.2	1180	461.0	339.4	351.6	562.5	448.9	389.6	276.9
MEAN	31.3	51.2	24.6	61.1	42.1	14.9	11.3	11.3	18.8	14.5	12.6	9.23
MAX	149	461	183	357	170	67	28	44	106	64	106	74
MIN	5.2	6.7	8.3	7.9	15	8.7	7.9	7.2	6.8	7.5	6.2	5.6
AC-FT	1920	3050	1510	3760	2340	914	673	697	1120	890	773	549

CAL YR 1978 TOTAL 7359.7 MEAN 20.2 MAX 461 MIN 4.0 AC-FT 14600
WTR YR 1979 TOTAL 9173.7 MEAN 25.1 MAX 461 MIN 5.2 AC-FT 18200

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
OCT											
10...	1130	6.4	69	7.8	20.5	.48	10.1	10	780	17	0
NOV											
06...	1215	8.3	69	7.6	20.5	.60	10.0	20	1200	16	0
14...	1100	170	29	7.3	20.5	14	9.9	57	710	5	0
DEC											
05...	1230	64	46	7.2	20.5	18	9.9	770	3500	8	1
JAN											
03...	1215	5.7	83	8.0	19.0	.20	10.1	8	340	21	0
FEB											
12...	1415	17	62	6.9	17.5	13	9.9	17	200	13	5
MAR											
12...	1330	10	80	7.2	19.5	.25	9.3	7	140	20	4
APR											
09...	1200	9.7	86	7.9	19.0	.60	10.0	9	160	23	1
MAY											
07...	1215	8.7	83	8.1	20.0	.60	8.9	17	180	24	3
JUN											
04...	1300	6.5	92	8.3	20.5	.40	9.6	6	750	29	5
JUL											
09...	1330	22	49	7.0	21.5	--	--	--	--	--	--
16...	1315	9.1	75	7.8	21.0	.60	9.0	23	370	18	1
AUG											
13...	1200	6.7	87	7.7	21.0	.40	8.4	8	240	21	0
SEP											
10...	1130	11	58	7.6	20.5	3.0	9.6	77	930	15	3

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
OCT											
10...	3.0	2.4	6.4	43	.7	--	.8	17	4.4	9.0	.0
NOV											
06...	3.0	2.1	6.5	45	.7	--	.8	19	3.5	8.5	.0
14...	.7	.7	3.3	58	.7	--	.5	7	2.2	4.8	.0
DEC											
05...	1.4	1.1	4.3	51	.7	--	.7	7	5.3	7.7	.0
JAN											
03...	4.2	2.6	8.2	44	.8	--	.9	21	3.3	8.8	.0
FEB											
12...	2.3	1.7	6.1	50	.7	--	.6	8	4.6	9.4	.0
MAR											
12...	4.4	2.3	7.8	44	.8	--	.8	16	2.0	10	.1
APR											
09...	4.8	2.7	7.6	41	.7	--	.8	22	2.1	9.4	.1
MAY											
07...	4.5	3.2	7.7	39	.7	--	1.0	21	3.7	9.7	.1
JUN											
04...	6.5	3.0	9.0	39	.7	10	1.4	24	3.8	11	.1
JUL											
09...	--	--	--	--	--	--	--	--	--	--	--
16...	3.4	2.2	6.9	44	.7	7.9	1.0	17	5.0	9.3	.0
AUG											
13...	4.1	2.7	8.1	44	.8	9.0	.9	21	4.3	15	.0
SEP											
10...	2.8	1.9	6.5	47	.7	7.3	.8	12	7.7	7.0	.1

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)
OCT										
10...	16	50	52	.07	.86	.08	--	.00	--	.22
NOV										
06...	17	52	53	.07	1.17	.08	--	.01	--	.06
14...	5.8	31	22	.04	14.2	.07	--	.02	--	.13
DEC										
05...	7.5	43	32	.06	7.43	.19	--	.02	--	.40
JAN										
03...	19	59	60	.08	.91	.07	--	.00	--	.18
FEB										
12...	13	44	43	.06	2.02	.08	--	.01	--	.04
MAR										
12...	18	59	55	.08	1.59	.07	--	.01	--	.07
APR										
09...	20	54	61	.07	1.41	.08	--	.01	--	.00
MAY										
07...	22	48	65	.07	1.13	.09	--	.01	.01	.08
JUN										
04...	22	68	71	.09	1.19	.08	--	.01	.01	.09
JUL										
09...	--	--	--	--	--	--	--	--	--	--
16...	19	55	57	.07	1.35	.12	--	.04	.05	.06
AUG										
13...	21	68	69	.09	1.23	--	.08	.01	.01	.26
SEP										
10...	14	53	49	.07	1.57	.15	.15	.01	.01	.34

DATE	NITRO-GEN, DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS TOTAL (MG/L AS PO4)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHATE, TOTAL (MG/L AS PO4)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)
OCT										
10...	--	.22	.00	.23	.30	1.3	--	.02	--	.02
NOV										
06...	--	.07	.00	--	.15	.68	--	.02	--	.02
14...	--	.15	.00	.17	.22	.97	--	.05	--	.02
DEC										
05...	--	.42	.03	.39	.61	2.7	--	.04	--	.01
JAN										
03...	--	.18	.03	.15	.25	1.1	--	.05	--	.06
FEB										
12...	--	.05	.00	.00	.13	.58	--	.02	--	.03
MAR										
12...	--	.08	.05	.03	.15	.66	--	.02	--	.03
APR										
09...	--	.01	.00	.01	.09	.40	--	.02	--	.02
MAY										
07...	--	.09	.00	.10	.18	.80	.06	.02	.06	.02
JUN										
04...	--	.10	.06	.04	.18	.80	.06	.02	.06	.01
JUL										
09...	--	--	--	--	--	--	--	--	--	--
16...	--	.10	.00	--	.22	.97	.15	.05	--	.01
AUG										
13...	--	.27	.00	.27	.35	1.5	.06	.02	--	.01
SEP										
10...	.38	.35	.12	.23	.50	2.2	.06	.02	--	.02

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
OCT										
10...	1130	0	0	0	0	0	3	0	3	0
NOV										
14...	1100	0	0	0	0	0	8	5	3	0
APR										
09...	1200	0	0	0	0	0	3	2	1	0
JUL										
16...	1315	1	1	3	0	3	2	1	<1	0

DATE	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)
OCT										
10...	0	0	0	0	0	3	3	0	110	60
NOV										
14...	0	0	0	0	0	4	2	2	980	910
APR										
09...	0	0	3	3	0	3	3	0	20	10
JUL										
16...	0	0	<3	0	<3	3	3	0	40	20

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)
OCT										
10...	50	14	0	14	10	10	0	.0	.0	.0
NOV										
14...	70	--	--	--	10	10	0	.1	.0	.2
APR										
09...	10	13	10	3	10	0	10	.1	.1	.0
JUL										
16...	20	8	0	9	<1	0	<1	.1	.1	.0

DATE	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT									
10...	0	0	0	0	0	0	0	0	0
NOV									
14...	1	0	1	0	0	0	10	10	0
APR									
09...	0	0	0	0	0	0	0	0	0
JUL									
16...	0	0	0	0	0	0	<3	0	<3

< Actual value is known to be less than the value shown.

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
OCT				
10...	1130	--	1.6	.0
NOV				
06...	1215	1.8	--	--
14...	1100	--	3.7	--
DEC				
05...	1230	6.1	--	--
JAN				
03...	1215	1.7	--	--
FEB				
12...	1415	2.2	--	--
MAR				
12...	1330	.9	--	--
APR				
09...	1200	--	2.3	.2
MAY				
07...	1215	1.7	--	--
JUN				
04...	1300	1.2	--	--
JUL				
16...	1315	--	3.4	.0
SEP				
10...	1130	.6	--	--

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	LENGTH OF EXPO-SURE (DAYS)
OCT										
10...	1130	340	--	--	3.00	2.00	18.9	5.70	--	29
NOV										
06...	1215	460	--	--	--	--	--	--	--	--
14...	1100	58	--	--	--	--	--	--	--	--
DEC										
05...	1230	170	--	--	--	--	--	--	--	--
JAN										
03...	1215	300	--	--	.870	.550	14.7	1.99	--	29
FEB										
12...	1415	45	--	--	--	--	--	--	--	--
MAR										
12...	1330	1800	--	--	--	--	--	--	--	--
APR										
09...	1200	720	--	--	26.0	21.7	74.4	8.36	--	27
MAY										
07...	1215	470	--	--	--	--	--	--	--	--
JUN										
04...	1300	650	--	--	--	--	--	--	--	--
JUL										
16...	1315	35	--	--	3.23	2.99	48.5	5.07	--	42
AUG										
13...	1200	0	--	--	--	--	--	--	--	--
SEP										
10...	1130	130	--	--	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT					
10...	1130	6.4	2	.03	100
NOV					
06...	1215	8.3	2	.04	--
14...	1100	170	20	9.2	100
DEC					
05...	1230	64	11	1.9	100
JAN					
03...	1215	5.7	1	.02	100
FEB					
12...	1415	17	2	.09	100
MAR					
12...	1330	10	1	.03	100
APR					
09...	1200	9.7	2	.05	100
MAY					
07...	1215	8.7	1	.02	100
JUN					
04...	1300	6.5	2	.04	100
JUL					
09...	1330	22	--	--	--
16...	1315	9.1	1	.02	100
AUG					
13...	1200	6.7	1	.02	100
SEP					
10...	1130	11	3	.09	100

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, APRIL 1978 TO SEPTEMBER 1978

DATE	APR 10,78		MAY 8,78		JUN 5,78		JUL 17,78		AUG 14,78		SEP 11,78	
TIME	1100		1200		1200		1200		1130		1135	
TOTAL CELLS/ML	43		29		160		57		1200		170	
DIVERSITY: DIVISION	0.0		0.0		0.0		0.0		0.1		1.3	
.CLASS	0.0		0.0		0.0		0.0		0.1		1.3	
..ORDER	0.0		0.0		0.0		0.0		0.1		1.4	
...FAMILY	0.9		1.0		1.6		0.0		0.1		2.5	
....GENUS	0.9		1.0		1.6		0.0		0.1		2.5	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	4	2
....TREUBARIA	--	-	--	-	--	-	--	-	--	-	9	5
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-	4	2
....MELOSIRA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	14#	50	--	-	--	-	--	-	--	-
....RHOICOSPHENIA	28#	67	--	-	67#	43	--	-	--	-	11	6
...CYMBELLACEAE												
....CYMBELLA	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	14#	50	45#	29	57#	100	--	-	57#	33
...NAVICULACEAE												
....NAVICULA	--	-	--	-	45#	29	--	-	22	2	11	6
...NITZSCHIACEAE												
....NITZSCHIA	14#	33	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	--	-	9	5
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	1200#	58	53#	31
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-	14	8

\# - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

NOTE: DATA FOR OCTOBER 1977 TO MARCH 1978 PUBLISHED IN 1978 REPORT.

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	OCT 10,78	NOV 6,78	NOV 14,78	DEC 5,78	JAN 3,79
TIME	1130	1215	1100	1230	1215
TOTAL CELLS/ML	340	460	58	170	300
DIVERSITY: DIVISION	0.1	0.0	1.0	1.0	1.1
.CLASS	0.1	0.0	1.0	1.0	1.1
..ORDER	0.1	0.3	1.0	1.0	1.3
...FAMILY	0.1	0.8	1.5	1.5	1.4
....GENUS	0.1	0.8	1.5	1.5	1.4

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	15	5
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	--	-	15	5
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	87#	50	--	-
....RHOICOSPHENIA	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	2	1	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	2	1	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	--	-	14#	25	--	-	10	3
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	14#	25	--	-	51#	17
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	29	6	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	330#	98	390#	84	--	-	58#	33	200#	69
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	43	9	29#	50	29#	17	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	2	1	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

HAWAII, ISLAND OF MAUI

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	FEB 12,79	MAR 12,79	APR 9,79	MAY 7,79	JUN 4,79
TIME	1415	1330	1200	1215	1300
TOTAL CELLS/ML	45	1800	720	470	650
DIVERSITY: DIVISION	0.8	0.4	0.0	0.7	1.0
.CLASS	0.8	0.4	0.0	0.7	1.0
..ORDER	0.8	0.4	0.0	0.7	1.0
...FAMILY	1.9	0.4	1.5	2.4	1.4
....GENUS	1.9	0.5	1.9	2.4	1.4

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	13	2
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	58	3	88	12	--	-	--	-
....RHOICOSPHENIA	--	-	14	1	150#	21	150#	32	--	-
...CYMBELLACEAE										
....CYMBELLA	5	11	--	-	--	-	14	3	--	-
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	26	4
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	15#	33	--	-	88	12	70	15	--	-
...NAVICULACEAE										
....NAVICULA	15#	33	58	3	370#	52	84#	18	65	10
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	22	3	56	12	90	14
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	10#	22	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	1700#	93	--	-	98#	21	450#	70
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

HAWAII, ISLAND OF MAUI

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	JUL 16,79		AUG 13,79		SEP 10,79	
TIME	1315		1200		1130	
TOTAL CELLS/ML	35		0		130	
DIVERSITY: DIVISION	0.0		0.0		1.0	
.CLASS	0.0		0.0		1.0	
..ORDER	0.0		0.0		1.0	
...FAMILY	0.9		0.0		1.7	
....GENUS	0.9		0.0		1.7	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	--	-	--	-
....CHLORELLA	--	-	--	-	55#	42
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	--	-
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	--	-	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	--	-	--	-	--	-
....RHOICOSPHENIA	23#	67	--	-	55#	42
...CYMBELLACEAE						
....CYMBELLA	--	-	--	-	--	-
...FRAGILARIACEAE						
....FRAGILARIA	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	5	4
...GOMPHONEMATACEAE						
....GOMPHONEMA	--	-	--	-	5	4
...NAVICULACEAE						
....NAVICULA	12#	33	--	-	10	8
...NITZSCHIACEAE						
....NITZSCHIA	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
.CRYPTOPHYCEAE						
..CRYPTOMONADALES						
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	--	-	--	-	--	-
..HORMOGONALES						
...OSCILLATORIACEAE						
....OSCILLATORIA	--	-	--	-	--	-
...RIVULARIACEAE						
....RAPHIDIOPSIS	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....TRACHELOMONAS	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16620000 HONOKOHAU STREAM NEAR HONOKOHAU

LOCATION.--Lat 20°57'48", long 156°35'22", Hydrologic Unit 20020000, on right bank 1,000 ft (305 m) upstream from intake of Honokohau ditch and 4.1 mi (6.6 km) southeast of Honokohau.

DRAINAGE AREA.--4.11 mi^2 (10.64 km^2).

PERIOD OF RECORD.--September, November, and December 1911 (combined flow of stream and ditch below point of diversion), March 1913 to September 1920, May 1922 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 1937: Drainage area.

GAGE.--Water-stage recorder and masonry control. Altitude of gage is 870 ft (265 m), from topographic map. Prior to Mar. 7, 1913, nonrecording gage at site just below Honokohau ditch intake at different datum.

REMARKS.--Records good. No diversion above station. All medium and low flow, together with the inflow from two development tunnels below station, is diverted into Honokohau ditch. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--63 years (water years, 1914-19, 1923-79), 39.1 ft^3/s (1.107 m^3/s), 28,330 acre-ft/yr (34.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,120 ft^3/s (202 m^3/s) revised, Dec. 14, 1942, gage height, 8.40 ft (2.560 m), from rating curve extended above 547 ft^3/s (15.5 m^3/s), on basis of slope-area measurement at gage height 6.76 ft (2.060 m); minimum, 8.4 ft^3/s (0.24 m^3/s) May 1, 1945, Jan. 5, 1946.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,100 ft^3/s (31.2 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 13	0900	3210	90.9	6.76	2.060	Jan. 21	1800	1190	33.7	5.23	1.594
Jan. 11	1800	2310	65.4	6.22	1.896	Feb. 10	1030	1300	36.8	5.35	1.631
Jan. 13	2330	*3460	98.0	*6.90	2.103	Feb. 24	2100	1160	32.9	5.20	1.585

Minimum discharge, 15 ft^3/s (0.42 m^3/s) Sept. 23, 24, 30.

REVISIONS.--Revised peak discharges and annual maximum (*) for the fiscal years 1927-60, superseding figures published in WSP 655, 675, 710, 725, 740, 755, 770, 795, 815, 835, 865, 885, 905, 935, 965, 985, 1015, 1045, 1065, 1095, 1125, 1155, 1185, 1219, 1249, 1289, 1349, 1399, 1449, 1569, 1639, 1719, and for water years 1960-70, superseding figures published in WSP 1937, 2137.

Fiscal Year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1927	May 15, 1927	0730	*3910	111	*7.13	2.173
1928	Feb. 18, 1928	--	*2340	66.3	*6.24	1.902
1930	Nov. 25, 1929	--	*1710	48.4	*5.75	1.753
1931	Nov. 18, 1930	--	*4910	139	*7.58	2.310
1932	Feb. 27, 1932	--	*2440	69.1	*6.30	1.920
1933	Mar. 5, 1933	--	*2440	69.1	*6.30	1.920
1934	Dec. 22, 1933	--	*1520	43.0	*5.58	1.701
1935	Feb. 25, 1935	--	*1160	32.9	*5.20	1.585
1936	Jan. 17, 1936	--	*1940	54.9	*5.95	1.814
1937	May 2, 1937	--	*1840	52.1	*5.87	1.789
1938	Apr. 7, 1938	--	*2520	71.4	*6.35	1.935
1939	Apr. 4, 1939	--	*5080	144	*7.65	2.332
1940	May 12, 1940	--	*1410	39.9	*5.47	1.667
1941	Nov. 20, 1940	--	*2960	83.8	*6.62	2.018
1942	Sept. 6, 1941	--	*1330	37.7	*5.39	1.643
1943	Dec. 14, 1942	--	*7120	202	*8.40	2.560
1944	Mar. 4, 1944	--	*1780	50.4	*5.82	1.774
1945	Apr. 7, 1945	--	*3120	88.4	*6.71	2.045
1946	Jan. 22, 1946	--	*1830	51.8	*5.86	1.786
1947	Dec. 21, 1946	--	*1450	41.1	*5.51	1.679
1948	Nov. 14, 1947	1530	1760	49.8	5.80	1.768
	Dec. 17, 1947	0800	1880	53.2	5.90	1.798
	Jan. 26, 1948	1600	*1940	54.9	*5.95	1.814
	Apr. 1, 1948	1700	1540	43.6	5.60	1.707
1949	Aug. 15, 1948	1900	*1300	36.8	*5.36	1.634
1950	Jan. 11, 1950	0730	*1460	41.3	*5.52	1.682
	Apr. 27, 1950	0230	1390	39.4	5.45	1.661
1951	Oct. 9, 1950	1800	1510	42.8	5.57	1.698
	Nov. 16, 1950	1030	1310	37.1	5.37	1.637
	Nov. 30, 1950	1630	1940	54.9	5.95	1.814
	Dec. 3, 1950	2030	*3280	92.9	*6.80	2.073
1952	Oct. 30, 1951	1830	*2220	62.9	*6.16	1.878
	Jan. 19, 1952	2100	1330	37.7	5.39	1.643
	Mar. 26, 1952	1400	1940	54.9	5.95	1.814
1953	Mar. 4, 1953	0900	*1420	40.2	*5.48	1.670
1954	Mar. 1, 1954	--	*1050	29.7	*5.08	1.548
1955	Dec. 5, 1954	1830	1570	44.5	5.63	1.716
	Dec. 7, 1954	1330	*2700	76.5	*6.46	1.969
	Dec. 16, 1954	0900	1750	49.6	5.79	1.765
1956	Aug. 18, 1955	1900	*1540	43.6	*5.60	1.707
	Dec. 20, 1955	0300	1400	39.6	5.46	1.664
1957	Oct. 17, 1956	0830	*1320	37.4	*5.38	1.640
1958	Aug. 24, 1957	0700	3680	104	7.02	2.140
	Aug. 30, 1957	1400	*7090	201	*8.39	2.557
	Dec. 3, 1957	2000	1330	37.7	5.39	1.643
1959	Aug. 1, 1958	2230	1880	53.2	5.90	1.798
	Jan. 17, 1959	2230	*3590	102	*6.97	2.124

HAWAII, ISLAND OF MAUI

16620000 HONOKOHAU STREAM NEAR HONOKOHAU--Continued

Revised peak discharges and annual maximum (*) for water years 1960-78--Continued

Water Year	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
1960	Feb. 13, 1960	0200	1860	52.7	5.88	1.792
	Apr. 16, 1960	--	1650	46.7	a5.70	1.737
	May 12, 1960	1600	*2030	57.5	*6.02	1.835
1961	Oct. 17, 1960	0300	*2070	58.6	*6.05	1.844
1962	Nov. 2, 1961	0800	*3240	91.8	*6.78	2.067
1963	Jan. 16, 1963	1930	1340	37.9	5.40	1.646
	July 20, 1963	0300	*1380	39.1	*5.44	1.658
1964	May 25, 1964	0900	*1480	41.9	*5.54	1.689
1965	Dec. 16, 1964	2000	1890	53.5	5.91	1.801
	Apr. 5, 1965	0500	1770	50.1	5.81	1.771
	May 1, 1965	1730	*3530	100	*6.94	2.115
1966	Nov. 14, 1965	2330	1390	39.4	5.45	1.661
	Apr. 29, 1966	2330	*2250	63.7	*6.18	1.884
1967	Feb. 10, 1967	1530	*4170	118	*7.25	2.210
	Mar. 17, 1967	1700	2460	69.7	6.31	1.923
	Mar. 24, 1967	0130	1560	44.2	5.62	1.713
	Apr. 1, 1967	1200	1510	42.8	5.57	1.698
	July 20, 1967	1700	1570	44.5	5.63	1.716
1968	Nov. 24, 1967	1930	2650	75.0	6.43	1.960
	Feb. 21, 1968	0800	1410	39.9	5.47	1.667
	Mar. 16, 1968	0530	*6610	187	*8.23	2.509
1969	Nov. 29, 1968	0300	2000	56.6	6.00	1.829
	Mar. 9, 1969	0100	1940	54.9	5.95	1.814
	Mar. 17, 1969	0230	2040	57.8	6.03	1.838
	Mar. 30, 1969	2230	*2470	70.0	*6.32	1.926
1970	Dec. 25, 1969	0600	*1680	47.6	*5.73	1.747
	Dec. 28, 1969	1000	1610	45.6	5.66	1.725
	Aug. 26, 1970	0330	1350	38.2	5.41	1.649
1971	Nov. 25, 1970	2030	*4290	121	*7.31	2.228
	Jan. 5, 1971	1200	1840	52.1	5.87	1.789
	Jan. 28, 1971	0700	3190	90.3	6.75	2.057
	Apr. 23, 1971	1330	3140	88.9	6.72	2.048
1972	Feb. 8, 1972	--	*1010	28.6	*5.03	1.533
1973	Oct. 3, 1972	--	*1160	32.9	*5.20	1.585
1974	Jan. 26, 1974	1715	*1580	44.7	*5.64	1.719
	Mar. 19, 1974	1300	1480	41.9	5.54	1.689
1975	Nov. 21, 1974	0815	*1550	43.9	*5.61	1.710
1976	Mar. 4, 1976	1730	*1370	38.8	*5.43	1.655
1977	July 27, 1977	--	*1210	34.3	*5.26	1.603
1978	May 5, 1978	--	*1120	31.7	*5.15	1.570

a Floodmark in well.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	25	22	22	26	34	47	81	19	21	18	17
2	20	25	23	22	26	33	83	25	19	20	44	21
3	22	24	22	21	25	31	52	79	18	22	74	53
4	152	31	26	21	65	30	70	38	18	48	33	24
5	31	21	80	21	85	30	36	25	18	54	37	18
6	29	24	180	21	68	29	62	23	18	26	27	19
7	47	23	119	21	47	29	33	22	18	182	20	18
8	35	19	32	21	31	165	32	22	19	43	18	33
9	23	19	151	21	39	91	29	22	19	26	18	69
10	20	18	65	57	145	51	26	22	20	21	17	21
11	34	26	79	275	158	32	25	21	21	20	17	17
12	21	400	42	233	42	30	25	22	60	19	17	17
13	20	442	30	485	38	29	28	33	34	19	22	17
14	19	236	33	197	79	29	45	56	23	23	43	17
15	60	78	30	184	173	29	34	34	54	23	145	16
16	22	36	34	347	95	31	42	56	36	21	80	16
17	20	26	28	45	66	29	27	28	22	20	22	17
18	91	28	35	32	84	28	25	23	69	32	19	17
19	60	29	36	31	82	32	24	25	54	20	18	16
20	24	81	37	54	57	49	24	23	21	19	18	16
21	25	58	25	134	87	33	24	21	113	28	18	16
22	26	26	26	277	46	29	24	20	73	83	18	16
23	104	25	25	65	32	28	23	20	195	27	18	15
24	24	24	23	34	316	27	24	20	25	19	18	26
25	21	24	26	30	289	27	60	22	96	23	17	20
26	20	27	25	28	66	27	24	26	57	21	17	16
27	23	23	23	28	63	64	23	20	67	19	17	29
28	33	34	22	35	38	35	22	20	37	87	17	20
29	23	25	23	30	---	27	22	19	88	28	28	16
30	34	23	24	27	---	27	36	19	29	20	17	16
31	92	---	23	27	---	26	---	19	---	18	17	---
TOTAL	1194	1900	1369	2846	2368	1191	1051	906	1360	1052	959	649
MEAN	38.5	63.3	44.2	91.8	84.6	38.4	35.0	29.2	45.3	33.9	30.9	21.6
MAX	152	442	180	485	316	165	83	81	195	182	145	69
MIN	19	18	22	21	25	26	22	19	18	18	17	15
AC-FT	2370	3770	2720	5650	4700	2360	2080	1800	2700	2090	1900	1290

CAL YR 1978 TOTAL 13890 MEAN 38.1 MAX 442 MIN 12 AC-FT 27550
WTR YR 1979 TOTAL 16845 MEAN 46.2 MAX 485 MIN 15 AC-FT 33410

16638500 KAHOMA STREAM AT LAHAINA

LOCATION.--Lat 20°53'10", long 156°40'36", Hydrologic Unit 20020000, on right bank 0.2 mi (0.3 km) west of Kelawea, 0.6 mi (1.0 km) northeast of Lahaina, 0.6 mi (1.0 km) downstream from Kanaha Stream, and 0.9 mi (1.4 km) upstream from mouth.

DRAINAGE AREA.--5.22 mi² (13.52 km²).

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2137: 1963-65(P).

GAGE.--Water-stage recorder. Altitude of gage is 90 ft (27 m), from topographic map.

REMARKS.--Records poor. Diversion above station by Pioneer Mill Co. for irrigation of sugarcane. Diversion from Kanaha Stream above station by Maui County Board of Water Supply for domestic use. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--16 years (water years 1964-79), 3.19 ft³/s (0.090 m³/s), 2,310 acre-ft/yr (2.85 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,490 ft³/s (70.5 m³/s) July 11, 1965, gage height, 11.03 ft (3.362 m), from rating curve extended above 206 ft³/s (5.83 m³/s) on basis of slope-area measurements at gage heights 7.58 ft (2.310 m), 8.07 ft (2.460 m), and 11.03 ft (3.362 m); no flow many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge of flood of May 13, 1960, 7,750 ft³/s (219 m³/s), by slope-area measurement at site 0.5 mi (0.8 km) upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 590 ft³/s (16.7 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 13	Unknown	*1550	43.9	*9.00	2.743
Feb. 10	1100	932	26.4	7.77	2.368

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	16	.00	.00	.00	.00	.00
4	.00	.00	.60	.00	22	.00	31	.00	.00	.00	.00	.00
5	.00	.00	1.3	.00	7.2	.00	.00	.00	.00	.00	.00	.00
6	.00	.01	.27	.00	23	.00	.00	.00	.00	.00	.00	.00
7	.00	.01	.38	.00	.00	.00	.00	.00	.00	12	.00	.00
8	.00	.00	.00	.00	.00	12	.00	.00	.00	.00	.00	.00
9	.00	.00	.01	.00	.50	16	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	71	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	9.1	.00	.00	.00	.00	.00	.00	.00
12	.00	2.7	.00	.00	.26	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	170	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	9.5	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.27	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.40	.00	.00	.00
20	.00	3.0	.00	.00	.33	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	7.7	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	130	.50	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	17	.00	.00	.00	.00	1.5	.00	.00	.00
24	.00	.00	.00	.40	30	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.80	12	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	3.6	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	5.72	2.56	327.70	187.19	28.00	47.00	.00	1.90	12.00	.27	.00
MEAN	.000	.19	.083	10.6	6.69	.90	1.57	.000	.063	.39	.009	.000
MAX	.00	3.0	1.3	170	71	16	31	.00	1.5	12	.27	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	11	5.1	650	371	56	93	.00	3.8	24	.5	.00

CAL YR 1978 TOTAL 21.49 MEAN .059 MAX 5.2 MIN .00 AC-FT 43
WTR YR 1979 TOTAL 612.39 MEAN 1.68 MAX 170 MIN .00 AC-FT 1210

HAWAII, ISLAND OF HAWAII

16700000 WAIAKEA STREAM NEAR MOUNTAIN VIEW

LOCATION.--Lat 19°38'30", long 155°10'28", Hydrologic Unit 20010000, on left bank 200 ft (61 m) upstream from Olaa Flume Road, 7.3 mi (11.7 km) northwest of Mountain View, and 8.0 mi (12.9 km) southwest of Hilo Post Office.

DRAINAGE AREA.--17.4 mi² (45.1 km²).

PERIOD OF RECORD.--September 1930 to current year. Prior to July 1960, published as "at middle flume house, near Mountain View."

REVISED RECORDS.--WSP 2137: 1939(M), 1942(M), 1944-45(M), 1947(M), 1949(P), 1950-51(M), 1952-53(P), 1955(P), 1956(M), 1957-58(P), 1960(M).

GAGE.--Water-stage recorder and combined Parshall flume and concrete-weir control. Datum of gage is 1,934 ft (589 m) above mean sea level (by stadia survey). Prior to Jan. 21, 1938, at datum 0.23 ft (0.070 m) lower.

REMARKS.--Records good. No diversion above station. Large part of flow comes from 3 tunnels. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--49 years, 11.9 ft³/s (0.337 m³/s), 8,620 acre-ft/yr (10.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 565 ft³/s (16.0 m³/s) Mar. 14, 1942, Aug. 26, 1970, from rating curve extended above 160 ft³/s (4.53 m³/s); maximum gage height, 4.45 ft (1.356 m) Aug. 26, 1970; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*), from rating curve extended above 160 ft³/s (4.53 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 22	2230	224	6.34	3.86	1.177	Feb. 20	1300	516	14.6	4.38	1.335
Feb. 5	0830	*516	14.6	*4.38	1.335	Feb. 26	2200	106	3.00	3.48	1.061

Minimum discharge, 0.44 ft³/s (0.012 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	8.1	13	10	32	46	7.1	11	6.0	17	6.1	2.9
2	5.5	9.7	12	9.4	34	42	9.1	11	6.2	16	5.7	2.8
3	5.2	9.6	11	8.7	33	35	8.3	10	6.3	16	5.6	2.6
4	10	8.9	10	7.9	32	31	12	9.6	6.3	17	5.2	2.4
5	9.4	9.3	9.4	7.1	68	28	11	8.9	6.2	17	5.2	2.3
6	8.1	23	9.2	6.5	54	24	12	8.3	6.2	17	4.8	2.1
7	8.1	19	8.7	6.1	50	20	11	7.8	6.1	25	4.7	2.0
8	9.6	19	8.2	5.6	43	18	11	7.3	6.0	24	4.5	1.9
9	9.8	18	14	5.2	35	22	11	6.9	5.8	23	4.2	1.8
10	9.2	17	13	4.9	30	22	11	6.9	5.4	21	4.0	1.7
11	8.9	17	14	4.9	27	19	11	6.5	6.5	20	3.8	1.6
12	8.7	16	16	8.0	22	18	10	6.5	12	18	4.0	1.4
13	8.2	15	17	18	19	17	9.7	7.1	14	17	4.9	1.4
14	7.6	14	18	36	18	17	9.3	7.7	13	16	5.4	1.3
15	7.3	15	21	54	22	16	9.7	8.9	12	14	6.4	1.2
16	7.0	13	23	54	19	15	8.5	9.4	12	13	8.2	1.0
17	6.9	12	23	60	19	14	8.3	10	12	12	7.5	1.0
18	8.4	11	26	70	34	13	8.7	9.6	12	12	6.7	1.0
19	12	11	26	60	46	12	15	8.9	12	11	6.2	.85
20	8.5	21	27	50	172	13	12	8.3	12	9.9	5.7	.75
21	8.1	22	27	45	79	13	12	7.9	12	9.3	5.3	.70
22	7.5	21	26	75	70	12	12	7.8	12	8.8	5.1	.60
23	7.0	22	24	70	62	11	12	7.3	16	8.7	4.8	.56
24	6.6	25	22	65	57	11	12	7.0	18	8.1	4.7	.56
25	7.2	22	19	65	66	11	12	6.7	18	7.7	4.4	.80
26	7.7	20	18	58	59	9.7	12	6.5	21	7.7	4.2	.56
27	7.0	18	16	48	60	9.2	12	6.3	21	8.1	4.0	.52
28	7.1	17	15	39	52	8.7	11	6.2	20	7.1	3.8	.52
29	6.5	16	14	33	---	8.1	11	6.2	20	6.6	3.7	.52
30	7.5	14	13	31	---	7.5	11	5.7	18	6.4	3.3	.44
31	7.7	---	11	31	---	6.9	---	6.7	---	6.3	3.0	---
TOTAL	244.0	483.6	524.5	1046.3	1314	550.1	322.7	244.9	354.0	420.7	155.6	39.78
MEAN	7.87	16.1	16.9	33.8	46.9	17.7	10.8	7.90	11.8	13.6	5.02	1.33
MAX	12	25	27	75	172	46	15	11	21	25	8.2	2.9
MIN	5.2	8.1	8.2	4.9	18	6.9	7.1	5.7	5.4	6.3	3.0	.44
AC-FT	484	959	1040	2080	2610	1090	640	486	702	834	309	79

CAL YR 1978 TOTAL 4002.43 MEAN 11.0 MAX 36 MIN .20 AC-FT 7940
WTR YR 1979 TOTAL 5700.18 MEAN 15.6 MAX 172 MIN .44 AC-FT 11310

16700900 OLAA FLUME SPRING NEAR KAUMANA

LOCATION.--Lat 19°41'59", long 155°11'13", Hydrologic Unit 20010000, on left bank 58 ft (18 m) downstream from tunnel entrance, 3.3 mi (5.3 km) northwest of Kaumana School, and 6.5 mi (10.5 km) southwest of Hilo Post Office.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 1,970 ft (600 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record, which are fair. County of Hawaii, Department of Water Supply, diverts by 16 inch (41 cm) pipeline 50 ft (15 m) above station for domestic use in the Kaumana and Piihonua areas since Oct. 2, 1978. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--5 years, 12.2 ft^3/s (0.346 m^3/s), 8,840 acre-ft/yr (10.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 43 ft^3/s (1.22 m^3/s) Jan. 8, 1975; minimum daily, 0.55 ft^3/s (0.016 m^3/s) Feb. 12, Sept. 8, 9, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 17 ft^3/s (0.48 m^3/s) several days in January and February; minimum daily, 2.4 ft^3/s (0.068 m^3/s) Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	3.9	4.5	4.5	13	13	4.6	4.0	4.0	8.5	4.2	3.4
2	4.2	4.0	4.5	4.4	12	12	4.7	4.2	4.5	8.0	4.2	3.3
3	3.4	4.2	4.5	4.4	11	11	5.0	4.2	4.5	7.5	3.9	3.3
4	3.4	4.2	4.5	4.3	10	10	6.2	4.2	4.0	8.0	3.7	3.3
5	3.8	4.0	4.4	4.3	11	9.3	9.5	4.0	4.0	8.0	3.6	3.2
6	3.9	5.4	4.4	4.3	14	7.9	8.5	4.0	4.0	8.0	3.6	3.2
7	3.6	10	5.0	4.2	12	6.6	8.3	4.0	4.0	10	3.6	3.0
8	3.6	9.1	4.8	4.2	10	5.6	8.3	4.0	4.0	9.5	3.6	3.0
9	3.8	6.2	5.4	4.2	9.3	5.4	7.7	4.0	3.5	9.0	3.6	2.9
10	3.8	4.5	9.5	4.2	8.5	8.9	5.8	4.0	3.5	7.2	3.6	3.2
11	3.7	4.3	9.3	4.2	7.2	9.9	4.7	4.0	4.5	5.3	3.4	3.3
12	3.6	4.3	8.9	4.2	6.0	8.5	4.6	4.0	7.0	4.7	3.4	3.2
13	3.6	4.3	9.1	4.3	5.3	6.6	4.4	4.0	8.5	4.6	3.4	3.2
14	3.6	4.3	9.9	9.3	5.0	5.6	4.2	4.2	8.0	4.5	3.6	2.9
15	3.6	4.2	11	14	6.4	5.3	4.2	4.2	7.0	4.5	3.8	2.9
16	3.6	4.0	11	17	9.1	5.2	4.2	4.3	7.0	4.4	4.3	2.8
17	3.6	4.0	9.9	17	9.3	5.2	4.0	4.4	7.0	4.4	4.4	2.8
18	3.6	4.0	10	16	11	5.0	4.2	4.4	7.0	4.3	4.2	2.6
19	3.7	4.0	11	13	13	5.0	4.2	4.3	6.5	4.3	4.0	2.8
20	3.8	4.4	11	10	17	5.2	4.5	4.2	6.5	4.3	3.8	2.8
21	3.7	9.5	10	9.7	17	5.6	4.3	4.2	6.0	4.3	3.7	2.8
22	3.6	11	9.5	11	15	5.8	4.2	4.2	6.0	4.3	3.7	2.6
23	3.6	9.7	8.5	16	12	5.6	3.9	4.2	8.0	4.3	3.7	2.5
24	3.6	9.1	6.6	17	12	5.3	3.8	4.2	9.0	4.3	3.6	2.4
25	3.6	8.3	5.4	16	14	5.0	3.8	4.0	9.0	4.3	3.6	2.6
26	3.6	6.6	5.0	13	16	5.0	3.8	4.0	10	4.3	3.6	2.8
27	3.6	5.9	4.7	11	15	5.0	3.8	4.0	10	4.3	3.6	2.9
28	3.6	5.2	4.7	10	14	4.8	3.8	4.0	9.5	4.2	3.4	2.9
29	3.6	4.7	4.6	10	---	4.7	3.9	4.0	9.5	4.2	3.4	2.9
30	3.8	4.5	4.5	11	---	4.7	4.0	3.5	9.0	4.2	3.4	2.9
31	3.9	---	4.5	12	---	4.6	---	4.0	---	4.2	3.4	---
TOTAL	115.3	171.8	220.6	288.7	315.1	207.3	151.1	126.9	195.0	175.9	115.0	88.6
MEAN	3.72	5.73	7.12	9.31	11.3	6.69	5.04	4.09	6.50	5.67	3.71	2.95
MAX	5.2	11	11	17	17	13	9.5	4.4	10	10	4.4	3.4
MIN	3.4	3.9	4.4	4.2	5.0	4.6	3.8	3.5	3.5	4.2	3.4	2.4
AC-FT	229	341	438	573	625	411	300	252	387	349	228	176

CAL YR 1978 TOTAL 3177.66 MEAN 8.71 MAX 24 MIN .55 AC-FT 6300
WTR YR 1979 TOTAL 2171.30 MEAN 5.95 MAX 17 MIN 2.4 AC-FT 4310

NOTE.--No gage-height record May 25 to July 9.

16701750 WAILUKU RIVER NEAR HUMUULA

LOCATION.--Lat 19°42'55", long 155°18'36", Hydrologic Unit 20010000, on right bank 300 ft (91 m) upstream from trail terminus, 10 mi (16 km) east of Humuula, and 14 mi (22 km) west of Hilo.

DRAINAGE AREA.--34.8 mi² (90.1 km²).

PERIOD OF RECORD.--February 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,250 ft (1,295 m), from topographic map.

REMARKS.--Records good except those above 40 ft³/s (1.13 m³/s), which are fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--14 years, 2.82 ft³/s (0.080 m³/s), 2,040 acre-ft/yr (2.52 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,180 ft³/s (90.1 m³/s) Nov. 20, 1973, gage height, 11.00 ft (3.353 m), from rating curve extended above 18 ft³/s (0.51 m³/s); no flow at times in 1965, 1969-79.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 310 ft³/s (8.78 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 21	0300	393	11.1	5.77	1.759
Jan. 23	0230	*980	27.8	*7.60	2.316
Feb. 20	1900	318	9.01	5.44	1.658

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.36	.36	.68	.72	2.7	2.4	.45	.36	.54	.48	.21	.00
2	.33	.60	.68	.68	2.7	2.6	.54	.36	.51	.48	.15	.00
3	.33	.60	.68	.68	1.9	1.6	.45	.33	.30	.54	.15	.00
4	.54	.45	.68	.64	1.6	1.2	.84	.33	.21	.54	.13	.00
5	.51	1.0	.64	.60	6.1	1.0	.48	.30	.18	.54	.13	.00
6	.39	6.2	1.4	.60	1.9	.88	.45	.30	.15	.48	.13	.00
7	.39	1.6	.76	.57	1.5	.80	.45	.27	.15	.80	.13	.00
8	.45	.76	.68	.54	1.2	.72	.48	.27	.13	.84	.11	.00
9	.45	.60	1.4	.54	1.1	.72	.39	.24	.15	.64	.09	.13
10	.39	.57	1.6	.51	1.0	1.4	.36	.30	.15	.51	.09	.21
11	.36	.75	.88	.57	.92	.68	.33	.33	.21	.48	.05	.01
12	.39	.76	1.6	.57	.84	.60	.30	.30	.60	.45	.09	.00
13	.42	.83	1.7	.80	.72	.60	.27	.36	.72	.42	.20	.00
14	.48	1.0	2.4	3.1	.72	.60	.24	.30	.54	.42	.50	.00
15	.48	.68	2.7	34	.80	.57	.48	.36	.45	.42	.60	.00
16	.42	.57	1.6	12	.76	.54	.48	.39	.48	.39	.42	.00
17	.48	.57	1.2	11	.80	.51	.51	.45	.51	.39	.24	.00
18	.45	.54	5.3	2.7	2.5	.48	.51	.39	.45	.36	.11	.00
19	.45	.54	2.6	1.9	4.5	.48	.80	.36	.45	.36	.11	.00
20	.39	5.0	1.9	1.7	81	.51	1.0	.24	.39	.33	.05	.00
21	.36	71	1.4	1.6	8.8	.51	1.2	.24	.39	.30	.05	.00
22	.33	1.9	1.2	112	3.0	.42	.72	.21	.92	.36	.05	.00
23	.33	1.4	1.2	176	2.0	.39	.42	.24	1.1	.42	.04	.00
24	.33	1.2	1.1	6.5	1.9	.39	.36	.24	.80	.33	.04	.00
25	.36	1.2	1.0	3.8	12	.36	.42	.21	.68	.30	.04	.01
26	.45	1.0	.92	2.5	2.8	.36	.48	.18	2.1	.27	.04	.02
27	.39	.92	.88	1.9	4.6	.33	.45	.21	.88	.27	.05	.02
28	.42	.80	.84	1.7	2.3	.33	.45	.21	.68	.30	.04	.00
29	.39	.72	.80	3.2	---	.30	.42	.21	.57	.24	.11	.00
30	.36	.68	.80	3.4	---	.30	.36	.21	.54	.21	.03	.00
31	.42	---	.76	9.7	---	.30	---	.33	---	.27	.00	---
TOTAL	12.60	104.80	41.98	396.72	152.66	22.88	15.09	9.03	15.93	13.14	4.18	.40
MEAN	.41	3.49	1.35	12.8	5.45	.74	.50	.29	.53	.42	.13	.013
MAX	.54	71	5.3	176	81	2.6	1.2	.45	2.1	.84	.60	.21
MIN	.33	.36	.64	.51	.72	.30	.24	.18	.13	.21	.00	.00
AC-FT	25	208	83	787	303	45	30	18	32	26	8.3	.8

CAL YR 1978 TOTAL 260.56 PEAK .71 MAX 71 MIN .00 AC-FT 517
WTR YR 1979 TOTAL 789.41 PEAK 2.16 MAX 176 MIN .00 AC-FT 1570

16701800 WAILUKU RIVER NEAR KAUMANA

LOCATION.--Lat 19°43'15", long 155°16'08", Hydrologic Unit 20010000, on right bank 0.2 mi (0.3 km) upstream from Waipahoehoe Gulch and 8.4 mi (13.5 km) west of Kaumana.

DRAINAGE AREA.--43.4 mi² (112.4 km²).

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,520 ft (1,073 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record, which are fair. No diversion above station. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--13 years, 27.6 ft³/s (0.782 m³/s), 20,010 acre-ft/yr (24.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,580 ft³/s (271 m³/s) Aug. 8, 1967, gage height, 13.35 ft (4.069 m), from rating curve extended above 2,200 ft³/s (62.3 m³/s); no flow Mar. 13, 14, 1970, Jan. 13-18, Feb. 6, 7, 12, 13, 25-28, Mar. 1, 2, 4-8, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*), from rating curve extended above 2,200 ft³/s (62.3 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 21	0300	2810	79.6	7.98	2.432
Jan. 23	0100	*5760	163	*10.75	3.277

Minimum discharge, 0.15 ft³/s (0.004 m³/s) Sept. 8, 17, 21-24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.95	1.4	4.1	2.8	60	25	5.0	4.9	11	5.4	.73	.22
2	.90	13	4.1	2.4	50	30	7.0	4.0	7.2	4.4	.67	.22
3	.88	6.3	4.1	2.2	30	20	6.0	3.4	2.4	5.4	.64	.22
4	5.9	3.5	3.4	1.8	20	15	10	3.4	1.7	4.9	.58	.22
5	6.1	45	2.5	1.6	100	10	7.0	3.0	1.4	6.6	.58	.22
6	1.6	215	52	1.4	30	8.5	6.0	2.6	1.2	4.4	.52	.22
7	1.2	24	7.6	1.3	20	8.0	6.0	2.2	1.2	18	.58	.17
8	2.7	11	3.8	1.2	20	7.5	6.5	2.2	1.2	16	.46	.15
9	2.3	7.6	42	1.1	15	7.5	6.0	2.0	1.2	11	.43	7.1
10	1.4	5.9	40	.97	15	15	5.5	2.3	1.1	5.5	.40	5.5
11	1.1	31	11	1.7	10	6.5	5.0	3.1	1.8	4.6	.37	.73
12	1.6	30	38	1.5	8.0	6.0	4.5	2.7	14	3.8	.31	.43
13	1.8	15	53	13	7.5	6.0	4.0	4.1	19	3.3	.88	.31
14	11	12	63	156	7.5	6.0	3.0	2.7	9.4	2.8	.88	.22
15	4.9	6.5	85	594	8.0	5.5	6.5	3.3	4.9	2.6	16	.19
16	2.5	5.0	31	353	7.5	5.5	6.5	5.7	6.3	2.2	4.6	.17
17	4.3	4.0	18	260	8.0	5.0	7.5	8.8	9.0	2.0	1.8	.15
18	3.0	3.8	173	41	30	4.5	7.5	4.9	5.4	1.7	.88	.67
19	2.7	3.4	74	22	60	4.5	10	4.0	5.7	1.5	.85	.43
20	1.8	121	41	17	500	5.0	20	2.7	4.4	1.4	.67	.22
21	1.7	637	21	21	120	5.0	35	2.2	4.4	1.2	.58	.15
22	1.7	25	16	994	40	4.0	10	2.1	27	1.2	.58	.15
23	1.3	16	12	1010	30	4.0	8.0	2.0	43	2.2	.52	.15
24	1.2	13	10	100	25	3.5	7.5	2.1	20	1.4	.49	.32
25	1.5	9.9	8.3	70	150	3.5	7.0	1.7	11	1.2	.46	1.0
26	3.0	8.8	6.8	30	30	3.0	6.5	1.4	94	1.0	.40	.88
27	1.5	8.3	5.7	20	50	3.0	6.6	1.7	22	.97	.40	.85
28	1.7	5.7	4.9	15	30	3.0	6.6	1.7	14	.97	.40	.43
29	1.8	4.7	4.3	40	---	2.5	6.6	1.5	9.7	.97	.64	.46
30	1.7	4.1	3.8	50	---	2.5	5.4	1.4	6.6	.82	.40	.43
31	2.5	---	3.3	150	---	2.5	---	6.2	---	.85	.31	---
TOTAL	78.23	1296.9	846.7	3975.97	1481.5	237.5	238.7	96.0	361.2	120.28	36.01	22.58
MEAN	2.52	43.2	27.3	128	52.9	7.66	7.96	3.10	12.0	3.88	1.23	.75
MAX	11	637	173	1010	500	30	35	8.8	94	18	16	7.1
MIN	.88	1.4	2.5	.97	7.5	2.5	3.0	1.4	1.1	.82	.31	.15
AC-FT	155	2570	1680	7890	2940	471	473	190	716	239	75	45

CAL YR 1978 TOTAL 4077.64 MEAN 11.2 MAX 637 MIN .00 AC-FT 8090
WTR YR 1979 TOTAL 8793.57 MEAN 24.1 MAX 1010 MIN .15 AC-FT 17440

NOTE.--No gage-height record Jan. 26 to Apr. 26.

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA
(National stream-quality accounting network station)

LOCATION.--Lat 19°42'56", long 155°09'12", Hydrologic Unit 20010000, on right bank 0.2 mi (0.3 km) downstream from Hookelekele Stream, 0.9 mi (1.4 km) west of Piihonua, and 4.1 mi (6.6 km) west of Hilo Post Office. Prior to Nov. 16, 1977, at opposite site on left bank.

DRAINAGE AREA.--230 mi² (596 km²), of which 81 mi² (210 km²) probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1928 to July 1940, October 1940 to December 1947, April 1948 to current year. Monthly discharge only July 1928, published in WSP 1319. Prior to July 1960, published as "above Hilo Boarding School ditch intake, near Hilo."

REVISED RECORDS.--WSP 865: 1929-36(M). WSP 965: 1941.

GAGE.--Water-stage recorder. Altitude of gage is 1,090 ft (332 m), from topographic map. Prior to Nov. 16, 1977, at opposite site on left bank at same datum.

REMARKS.--Records good. Hawaii County Board of Water Supply diverts about 6 ft³/s (0.17 m³/s) above station for domestic supply. Kapehu ditch diverted from Kapehu Stream into Wailuku River above station 1938-63.

AVERAGE DISCHARGE.--48 years (water years, 1929-39, 1942-47, 1949-79), 286 ft³/s (8.100 m³/s), 207,200 acre-ft/yr (255 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,400 ft³/s (1,800 m³/s) Aug. 11, 1940, gage height, 28.6 ft (8.72 m), from floodmarks, from rating curve extended above 13,000 ft³/s (312 m³/s); minimum, 0.25 ft³/s (0.007 m³/s) Mar. 9, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,700 ft³/s (246 m³/s) and maximum (*), from rating curve extended above 13,000 ft³/s (312 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 21	0230	12200	346	16.15	4.922	Feb. 5	0930	14100	399	16.80	5.121
Jan. 16	2330	11000	312	15.75	4.801	Feb. 20	1300	17800	504	17.80	5.425
Jan. 23	0130	*19200	544	*18.15	5.532						

Minimum discharge, 3.5 ft³/s (0.10 m³/s) Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	108	141	49	833	699	59	111	266	169	38	11
2	32	201	174	41	870	855	148	88	210	136	28	11
3	28	164	169	37	486	478	148	74	83	193	29	11
4	216	99	149	32	385	342	588	74	63	215	28	12
5	189	365	123	28	2710	265	211	53	52	290	32	12
6	79	2080	532	25	782	216	189	59	44	245	27	9.9
7	72	546	213	23	489	182	258	55	39	642	25	9.0
8	124	264	161	21	330	153	296	66	36	555	23	7.8
9	122	174	993	20	258	281	165	47	34	366	20	7.6
10	75	126	674	18	223	796	135	87	32	229	17	43
11	60	141	410	53	214	279	128	80	116	176	15	16
12	51	189	804	77	158	205	152	65	457	140	18	10
13	62	146	812	395	135	170	110	124	602	118	123	8.2
14	44	129	986	2100	184	181	87	98	298	108	83	7.1
15	55	188	1080	5930	461	152	122	138	182	108	230	6.2
16	56	103	729	4320	370	144	99	151	209	92	178	5.8
17	69	79	498	3070	355	126	90	212	253	82	111	5.8
18	89	64	1570	940	1490	131	261	149	165	73	70	32
19	128	59	940	548	2250	158	277	118	229	70	60	16
20	74	1550	715	394	7210	196	312	79	156	61	46	9.1
21	67	3270	440	697	1380	202	266	72	161	53	35	6.5
22	56	452	298	5030	760	154	156	66	486	53	30	5.8
23	45	291	230	4940	480	116	102	62	901	95	26	6.2
24	38	336	178	1290	1140	92	77	62	701	74	24	7.4
25	36	223	148	1040	3420	84	81	56	451	60	22	17
26	78	227	123	635	1160	74	116	58	1290	68	20	23
27	47	213	104	457	1850	64	94	53	578	73	18	24
28	41	142	88	611	939	57	106	49	373	57	16	16
29	60	113	76	1060	---	50	96	40	308	50	19	17
30	153	96	64	1120	---	47	106	39	222	46	16	13
31	114	---	57	2600	---	43	---	127	---	49	13	---
TOTAL	2392	12138	13679	37601	31322	6992	5035	2612	8997	4746	1340	386.4
MEAN	77.2	405	441	1213	1119	226	168	84.3	300	153	46.5	12.9
MAX	216	3270	1570	5930	7210	855	588	212	1290	642	230	43
MIN	28	59	57	18	135	43	59	39	32	46	13	5.8
AC-FT	4740	24080	27130	74580	62130	13870	9990	5180	17850	9410	2660	766

CAL YR 1978 TOTAL 79763.7 MEAN 219 MAX 3270 MIN 1.8 AC-FT 158200
WTR YR 1979 TOTAL 127340.4 MEAN 349 MAX 7210 MIN 5.8 AC-FT 252600

16704000 WAILUKU RIVER AT PIIHONUA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-74, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May 1975 to September 1978.
WATER TEMPERATURES: May 1975 to Apr. 30, 1979.

INSTRUMENTATION.--Water-quality monitor since May 1975.

REMARKS.--Interruptions in the daily record were due to malfunctions of the instrument. No daily specific conductance and temperature records published due to number of missing days of record exceeded 20% of the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum recorded, 69 micromhos/cm Sept. 8, 1978; minimum recorded, 10 micromhos/cm Mar. 14, 1978.
WATER TEMPERATURE: Maximum recorded, 24.5°C Feb. 23, 1977; minimum recorded, 14.5°C Mar. 20, 21, 1977.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
NOV											
07...	1315	340	35	7.1	20.0	.40	8.8	>400	350	9	0
28...	0930	146	36	7.1	18.0	.50	8.9	24	310	11	0
DEC											
27...	1300	126	40	6.5	19.5	.10	9.0	7	210	11	0
JAN											
15...	0945	8500	24	7.1	16.5	3.0	10.0	160	230	5	0
MAR											
13...	0930	177	36	7.3	18.0	.30	9.2	K9	82	10	3
27...	0900	95	37	7.4	18.5	.50	9.0	20	270	12	2
MAY											
16...	0900	146	34	7.2	16.5	.60	9.0	34	380	11	4
29...	0830	29	41	6.9	17.5	.50	8.9	14	290	12	0
JUN											
25...	0845	464	30	7.2	17.5	1.0	9.1	43	310	16	9
AUG											
01...	0830	33	39	7.7	21.0	.80	8.7	6	520	12	2
27...	0930	18	41	7.5	18.0	1.2	8.7	8	100	13	0
SEP											
28...	1100	6.2	48	7.7	17.5	.40	8.5	10	120	17	4

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV											
07...	2.3	.8	2.6	37	.4	--	.5	11	2.1	2.1	.1
28...	2.4	1.1	2.4	32	.3	--	.5	11	3.0	2.5	.0
DEC											
27...	2.6	1.0	3.0	36	.4	--	.6	11	1.2	2.8	.1
JAN											
15...	1.1	.6	1.9	43	.4	--	.2	6	1.7	2.3	.0
MAR											
13...	2.5	.9	3.8	43	.5	--	.8	7	1.8	3.8	.1
27...	3.1	1.0	2.8	33	.4	--	.5	10	2.0	2.1	.1
MAY											
16...	2.6	1.0	2.8	36	.4	--	.3	7	5.1	2.7	.1
29...	3.0	1.2	3.2	34	.4	4.0	.7	13	1.6	2.7	.1
JUN											
25...	4.9	.9	2.7	26	.3	3.3	.6	7	2.7	4.0	.1
AUG											
01...	2.9	1.2	2.9	33	.4	3.6	.7	10	3.7	5.1	.3
27...	3.0	1.3	3.1	33	.4	3.8	.7	14	2.1	3.7	.0
SEP											
28...	3.8	1.7	3.9	32	.4	5.3	1.4	13	3.0	2.4	.1

> Actual value is known to be greater than the value shown.
K Results based on colony count outside the acceptable range (non-ideal colony count).

16704000 WAILUKU RIVER AT PIIHONUA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)
NOV										
07...	12	20	29	.03	18.4	.11	--	.01	--	.18
28...	12	33	31	.04	13.0	.11	--	.00	--	.27
DEC										
27...	14	28	32	.04	9.53	.10	--	.01	--	.02
JAN										
15...	6.1	20	18	.03	459	.05	--	.00	--	.17
MAR										
13...	12	31	30	.04	14.8	.06	--	.01	--	.04
27...	12	34	30	.05	2.29	.08	--	.01	--	.04
MAY										
16...	10	31	29	.04	12.2	.06	--	.00	.00	.07
29...	13	--	33	.04	2.58	.07	--	.01	.01	.45
JUN										
25...	12	35	32	.05	43.8	.08	--	.01	.01	.09
AUG										
01...	16	23	39	.03	2.05	.08	--	.00	.00	.43
27...	16	--	38	.07	2.48	.10	--	.00	.00	.08
SEP										
24...	21	48	45	.07	.80	.06	.06	.02	.02	.75

DATE	NITRO-GEN, DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS TOTAL (MG/L AS PO4)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHATE, TOTAL (MG/L AS PO4)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)
NOV										
07...	--	.19	.00	.19	.30	1.3	--	.01	--	.01
28...	--	.27	.07	.20	.38	1.7	--	.00	--	.00
DEC										
27...	--	.03	.00	--	.13	.58	--	.00	--	.00
JAN										
15...	--	.17	.00	.17	.22	1.0	--	.02	--	.01
MAR										
13...	--	.05	.02	.03	.11	.49	--	.00	--	.00
27...	--	.05	.04	.01	.13	.58	--	.00	--	.00
MAY										
16...	--	.07	.01	.06	.13	.58	.00	.00	.00	.00
29...	--	.46	.00	.46	.53	2.3	.03	.01	.03	.00
JUN										
25...	--	.10	.10	.00	.18	.80	.03	.01	.03	.00
AUG										
01...	--	.43	.29	.14	.51	2.3	.09	.03	--	.01
27...	--	.08	.00	--	.18	.80	.06	.02	--	.00
SEP										
24...	.45	.77	.38	.39	.83	3.7	.06	.02	--	.01

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS-PENDED TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)
DEC										
27...	1300	0	--	0	8	0	8	<1	0	<1
MAR										
27...	0900	0	--	0	0	0	0	1	1	0
JUN										
25...	0845	0	--	0	0	0	0	3	0	3
SEP										
24...	1100	1	0	1	8	0	8	<1	0	<1

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)
DEC										
27...	0	0	0	<3	0	<3	3	1	2	30
MAR										
27...	20	20	0	0	0	0	1	1	0	40
JUN										
25...	10	10	0	<3	0	<3	3	3	0	150
SEP										
24...	10	0	10	<3	0	<3	1	1	0	40

DATE	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)
DEC										
27...	20	10	3	1	2	20	20	<1	.0	.0
MAR										
27...	30	10	10	10	0	10	10	0	.0	.0
JUN										
25...	80	70	12	10	2	1	0	1	.0	.0
SEP										
24...	--	30	3	3	0	2	0	2	.1	.1

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
DEC										
27...	.0	0	0	0	0	0	0	<3	0	<3
MAR										
27...	.0	0	0	0	0	0	0	0	0	0
JUN										
25...	.0	0	0	0	0	0	0	10	7	<3
SEP										
24...	.0	0	0	0	0	0	0	<3	0	<3

< Actual value is known to be less than the value shown.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)	DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
NOV					MAY				
07...	1315	2.4	--	--	16...	0900	3.3	--	--
28...	0930	2.2	--	--	29...	0830	2.1	--	--
DEC					JUN				
27...	1300	--	1.3	.0	25...	0845	--	2.0	--
JAN					AUG				
15...	0945	3.2	--	--	01...	0830	3.9	--	--
MAR					27...	0930	.6	--	--
13...	0930	.6	--	--	SEP				
27...	0900	--	1.2	.0	24...	1100	--	1.2	.0

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	CHLOR-A PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTO-PLANK-TON CHROMO FLUOROM (UG/L)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	LENGTH OF EXPO-SURE (DAYS)
NOV										
07...	1315	460	--	--	--	--	--	--	--	--
28...	0930	1200	--	--	--	--	--	--	--	--
DEC										
27...	1300	62	--	--	--	--	--	--	--	--
JAN										
15...	0945	200	--	--	--	--	--	--	--	--
MAR										
13...	0930	0	--	--	--	--	--	--	--	--
27...	0900	50	--	--	--	--	--	--	--	--
MAY										
16...	0900	70	--	--	--	--	--	--	--	--
29...	0830	3	--	--	.870	.470	1.37	.000	292	60
JUN										
25...	0845	150	--	--	--	--	--	--	--	--
AUG										
01...	0830	0	--	--	.550	.240	.430	.040	721	60
SEP										
24...	1100	260	--	--	.160	.080	1.63	.000	49.1	54

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV						MAY					
07...	1315	340	3	2.8	100	16...	0900	146	1	.39	100
28...	0930	146	2	.79	100	29...	0830	29	5	.39	100
DEC						JUN					
27...	1300	126	1	.34	100	25...	0845	464	2	2.5	100
JAN						AUG					
15...	0945	8500	8	184	100	01...	0830	33	3	.27	100
MAR						27...	0930	18	1	.05	100
13...	0930	177	1	.48	100	SEP					
27...	0900	25	1	.07	100	24...	1100	6.2	3	.05	100

16704000 WAILUKU RIVER AT PIIHONUA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, APRIL 1978 TO SEPTEMBER 1978

DATE	APR 25,78	MAY 23,78	JUN 12,78	AUG 29,78	SEP 12,78
TIME	0830	0845	1000	1345	1330
TOTAL CELLS/ML	180	81	100	18	66
DIVERSITY: DIVISION	0.0	1.4	0.6	0.9	0.0
.CLASS	0.0	1.4	0.6	0.9	0.0
..ORDER	0.0	1.4	1.4	0.9	0.0
...FAMILY	1.0	1.4	2.2	2.2	1.6
....GENUS	1.0	1.4	2.2	2.2	1.6

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	15	14	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	5#	31	--	-
..OEDOGONIALES										
...OEDOGONIACEAE										
....OEDOGONIUM	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	16#	20	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	29#	29	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	20	11	--	-	--	-	1	8	22#	33
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE										
....DIATOMA	--	-	--	-	15	14	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	140#	78	--	-	15	14	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	20	11	--	-	--	-	3#	15	22#	33
...NAVICULACEAE										
....NAVICULA	--	-	49#	60	29#	29	5#	31	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	--	-	3#	15	22#	33
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....ANACYSTIS	--	-	16#	20	--	-	--	-	--	-
..HORMOGONALES										
...SCYTONEMATACEAE										
....PLECTONEMA	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENOPSIS	--	-	--	-	--	-	--	-	--	-

- DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

NOTE: DATA FOR OCTOBER 1977 TO MARCH 1978 PUBLISHED IN 1978 REPORT.

16704000 WAILUKU RIVER AT PIIHONUA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	NOV 7,78		NOV 28,78		DEC 27,78		JAN 15,79		MAR 13,79		MAR 27,79	
TIME	1315		0930		1300		0945		0930		0900	
TOTAL CELLS/ML	460		1200		62		200		0		50	
DIVERSITY: DIVISION	0.7		0.2		0.0		0.9		0.0		1.0	
.CLASS	0.7		0.2		0.0		0.9		0.0		1.0	
..ORDER	1.1		0.2		0.0		0.9		0.0		1.4	
...FAMILY	1.2		0.3		1.3		1.1		0.0		2.1	
....GENUS	1.2		0.3		1.3		1.1		0.0		2.1	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	20#	40
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	8	4	--	-	--	-
..ZYGNEMATALES												
...ZYGNEMATACEAE												
....SPIROGYRA	--	-	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-	5	10
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	29	6	--	-	38#	63	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	5	10
...FRAGILARIACEAE												
....FRAGILARIA	14	3	--	-	15#	25	--	-	--	-	10#	20
....SYNEDRA	--	-	29	2	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	14	1	8	13	15	8	--	-	--	-
...NAVICULACEAE												
....NAVICULA	14	3	--	-	--	-	23	12	--	-	10#	20
...NITZSCHIACEAE												
....NITZSCHIA	--	-	--	-	--	-	--	-	--	-	--	-
...TABELLARIACEAE												
....TABELLARIA	--	-	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	29	6	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	1200#	97	--	-	--	-	--	-	--	-
....OSCILLATORIA	360#	78	--	-	--	-	150#	77	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....TRACHELOMONAS	14	3	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16704000 WAILUKU RIVER AT PIIHONUA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA

PHYTOPLANKTON ANALYSES, OCTOBER 1978 TO SEPTEMBER 1979

DATE	MAY 16,79		MAY 29,79		JUN 25,79		AUG 1,79		AUG 27,79		SEP 24,79	
TIME	0900		0830		0845		0830		0930		1100	
TOTAL CELLS/ML	70		3		150		0		0		260	
DIVERSITY: DIVISION	1.0		1.0		0.4		0.0		0.0		0.0	
.CLASS	1.0		1.0		0.4		0.0		0.0		0.0	
..ORDER	1.0		1.0		0.4		0.0		0.0		0.0	
...FAMILY	1.9		1.0		1.7		0.0		0.0		1.2	
....GENUS	1.9		1.0		1.7		0.0		0.0		1.2	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...OOCYSTACEAE												
....ANKISTRODESMUS	--	-	1#	50	13	8	--	-	--	-	--	-
...SCENEDESMACEAE												
....SCENEDESMUS	--	-	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES												
...ZYGNEMATACEAE												
....SPIROGYRA	28#	40	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-	14	5
...FRAGILARIACEAE												
....FRAGILARIA	--	-	--	-	26#	17	--	-	--	-	--	-
....SYNEDRA	14#	20	--	-	--	-	--	-	--	-	27	11
...GOMPHONEMATACEAE												
....GOMPHONEMA	14#	20	1#	50	--	-	--	-	--	-	190#	74
...NAVICULACEAE												
....NAVICULA	14#	20	--	-	--	-	--	-	--	-	27	11
...NITZSCHIACEAE												
....NITZSCHIA	--	-	--	-	38#	25	--	-	--	-	--	-
...TABELLARIACEAE												
....TABELLARIA	--	-	--	-	77#	50	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

16713000 WAILUKU RIVER AT HILO

LOCATION.--Lat 19°43'43", long 155°05'40", Hydrologic Unit 20010000, on right bank 500 ft (152 m) upstream from Wailuku bridge and 0.2 mi (0.3 km) west of Hilo Post Office.

DRAINAGE AREA.--256 mi² (663 km²), of which 81 mi² (210 km²) probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1977 to September 1979. Station destroyed by flood of November 17, 1979.

GAGE.--Water-stage recorder. Altitude of gage is 80 ft (24 m), from topographic map.

REMARKS.--Records good. Hilo Electric Light Co. diverts above station for Hydro-plant use.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,800 ft³/s (1,070 m³/s) Feb. 20, 1979, gage height 24.40 ft (7.437 m) from floodmarks and from rating curve extended above 6,840 ft³/s (194 m³/s) on basis of slope-area measurement at gage height 23.30 ft (7.102 m); minimum, 6.9 ft³/s (0.20 m³/s) Jan. 18, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,500 ft³/s (269 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 20	2400	13600	385	14.50	4.420	Jan. 23	0130	29400	833	21.30	6.492
Jan. 15	0900	21100	598	17.80	5.425	Feb. 5	0830	23900	677	19.00	5.791
Jan. 16	2330	22800	646	18.50	5.639	Feb. 20	1300	*37800	1070	/*24.40	7.437

Minimum discharge, 12.0 ft³/s (0.34 m³/s) Sept. 17, 18.

/ Floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	204	190	42	1100	1050	69	146	341	260	52	34
2	26	334	194	32	1180	1240	250	117	349	212	42	37
3	24	280	171	27	715	770	212	87	81	310	52	38
4	398	144	136	26	592	568	934	112	52	370	47	38
5	344	450	87	29	4060	446	280	58	45	463	62	35
6	99	2460	550	24	1490	355	275	76	43	370	52	33
7	99	886	220	23	725	280	370	66	42	985	52	34
8	190	452	134	24	540	220	452	83	42	905	42	31
9	214	295	1240	24	418	491	218	54	42	600	40	31
10	103	210	875	26	361	1160	180	136	42	379	40	61
11	61	180	508	75	352	407	169	122	189	289	35	45
12	46	225	1010	100	242	301	210	78	800	214	45	25
13	70	200	957	930	206	242	128	210	900	171	200	15
14	36	385	1180	3400	310	286	89	138	470	144	117	18
15	33	801	1540	8840	800	210	153	242	242	146	392	16
16	57	307	895	6530	652	242	120	268	282	112	418	14
17	66	214	660	4800	663	202	81	370	418	92	150	12
18	144	158	2050	1420	2440	181	436	230	214	70	87	40
19	287	151	1320	925	3610	355	478	180	370	69	67	25
20	99	1850	1080	700	11400	370	450	120	212	52	46	13
21	87	4750	725	1000	2250	373	350	87	230	60	44	18
22	61	725	494	6240	1160	280	242	71	682	60	44	16
23	40	494	379	6200	805	194	150	68	1460	120	44	15
24	65	660	295	1820	1620	150	85	64	1100	90	42	22
25	60	385	232	1490	4010	120	95	54	750	80	41	26
26	85	407	188	1000	1720	99	150	66	1980	75	39	35
27	52	385	150	750	2730	78	106	53	512	85	43	42
28	37	238	116	1010	1350	61	141	51	640	83	56	21
29	57	184	89	1520	---	55	112	49	548	68	53	22
30	318	144	70	1660	---	52	136	46	391	52	45	15
31	200	---	55	3190	---	42	---	161	---	57	37	---
TOTAL	3484	18558	17790	53877	47501	10920	7121	3663	13469	7043	2566	827
MEAN	112	619	574	1738	1696	352	237	118	449	227	82.8	27.6
MAX	398	4750	2050	8840	11400	1280	934	370	1980	985	418	61
MIN	24	144	55	23	206	42	69	46	42	52	35	12
AC-FT	6910	36810	35290	106900	94220	21660	14120	7270	26720	13970	5050	1640

CAL YR 1978 TOTAL 129183.8 MEAN 354 MAX 4920 MIN 6.9 AC-FT 256200
WTR YR 1979 TOTAL 186819.0 MEAN 512 MAX 11400 MIN 12 AC-FT 370600

16713000 WAILUKU RIVER AT HILO--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1977 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: March 1977 to current year.

INSTRUMENTATION.--Automatic pumping sediment sampler since March 1977.

REMARKS.--In addition to the sediment sampler record, water-quality samples were collected at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 274 mg/L Feb. 20, 1979; minimum daily mean, 1 mg/L on several days in April, July, August, September 1978, and Sept. 17, 1979.
SEDIMENT DISCHARGE: Maximum daily, 14,100 tons (12,800 tonnes) Feb. 20, 1979; minimum daily, 0.03 ton (0.03 tonne) Sept. 17, 1979.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 274 mg/L Feb. 20; minimum daily mean, 1 mg/L Sept. 17.
SEDIMENT DISCHARGE: Maximum daily, 14,100 tons (12,800 tonnes) Feb. 20, minimum daily, 0.03 ton (0.03 tonne) Sept. 17.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
NOV											
07...	0830	910	26	6.7	18.0	6.1	9.0	K740	1600	--	--
28...	1030	240	41	7.2	20.0	1.0	8.9	92	280	--	--
DEC											
27...	1100	150	60	6.6	19.5	.40	9.0	44	350	19	1
JAN											
15...	1030	11400	22	6.6	18.0	14	10.2	K2200	540	3	1
FEB											
20...	0800	11900	18	6.8	17.0	24	--	--	--	--	--
21...	0800	2200	38	7.1	18.0	8.5	--	--	--	--	--
22...	1200	1160	41	7.5	19.0	1.4	--	--	--	--	--
MAR											
13...	0830	242	49	7.3	19.0	.60	9.1	180	100	24	14
27...	0930	80	60	7.4	19.0	.50	9.0	65	120	23	8
MAY											
16...	1015	265	49	7.2	18.0	1.2	9.0	90	300	16	5
29...	0815	49	69	7.4	18.0	8.0	9.0	58	340	24	5
JUN											
25...	0830	850	36	7.2	18.0	5.2	9.2	260	3760	12	5
AUG											
01...	1000	52	61	7.8	19.0	1.0	8.8	120	320	23	3
27...	1000	38	68	7.7	19.0	.70	8.7	22	120	24	5
SEP											
24...	0900	20	74	7.6	18.0	.90	8.6	K340	K2400	30	8

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM, POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV											
07...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
27...	3.8	2.4	3.7	29	.4	--	.5	18	1.6	4.6	.0
JAN											
15...	.4	.4	.9	40	.2	--	.2	2	2.5	1.9	.0
FEB											
20...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
MAR											
13...	2.3	4.4	2.8	20	.3	--	.2	10	11	4.9	.0
27...	4.8	2.6	3.6	25	.3	--	.4	15	6.8	4.3	.0
MAY											
16...	3.2	1.9	3.0	28	.3	--	.5	11	3.9	3.7	.0
29...	4.7	3.0	3.9	25	.3	--	.6	19	1.8	4.7	.1
JUN											
25...	2.2	1.6	2.5	30	.3	3.0	.5	7	5.3	4.5	.0
AUG											
01...	4.5	2.8	3.7	26	.3	4.3	.6	20	5.4	4.8	.3
27...	4.7	2.9	3.9	26	.3	4.4	.5	19	3.3	5.1	.0
SEP											
24...	5.9	3.7	4.7	24	.4	6.1	1.4	22	5.8	5.4	.0

K Results based on colony count outside the acceptable range (non-ideal colony count).

16713000 WAILUKU RIVER AT HILO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, DIS-SOLVED (MG/L AS N)
NOV											
07...	--	--	--	--	--	.09	--	.01	--	.42	--
28...	--	--	--	--	--	.14	--	.01	--	.90	--
DEC											
27...	14	51	42	.07	20.7	.16	--	.01	--	.07	--
JAN											
15...	2.4	16	10	.02	492	.05	--	.01	--	.36	--
FEB											
20...	--	--	--	--	--	.05	--	.02	--	.60	--
21...	--	--	--	--	--	.13	--	.02	--	.24	--
22...	--	--	--	--	--	.15	--	.02	--	.09	--
MAR											
13...	11	--	39	.16	75.1	.15	--	.01	--	.13	--
27...	12	47	44	.06	10.2	.17	--	.01	--	.03	--
MAY											
16...	8.9	35	32	.05	25.0	.12	--	.00	.00	.09	--
29...	13	48	43	.07	5.69	.17	--	.01	.01	.04	--
JUN											
25...	8.5	--	30	--	--	.11	--	.01	.01	.12	--
AUG											
01...	14	46	48	.06	6.46	.15	--	.00	.00	.50	--
27...	15	60	47	.08	6.16	.18	--	.00	.00	.92	--
SEP											
24...	17	56	58	.08	3.02	.16	.16	.06	.07	.32	.54

DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS TOTAL (MG/L AS PO4)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHATE, TOTAL (MG/L AS PO4)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P)
NOV										
07...	.43	--	--	.52	2.3	--	.07	--	--	.01
28...	.91	--	--	1.1	4.6	--	.03	--	--	.03
DEC										
27...	.08	.00	.10	.24	1.1	--	.01	--	.01	--
JAN										
15...	.37	.31	.06	.42	1.9	--	.09	--	.02	--
FEB										
20...	.62	--	--	.67	3.0	--	.18	--	--	.04
21...	.26	--	--	.39	1.7	--	.03	--	--	.01
22...	.11	--	--	.26	1.2	--	.02	--	--	.01
MAR										
13...	.14	.06	.08	.29	1.3	--	.01	--	.00	--
27...	.04	.01	.03	.21	.93	--	.00	--	.00	--
MAY										
16...	.09	.03	.06	.21	.93	.00	.00	.00	.00	--
29...	.05	.00	--	.22	.97	.03	.01	.03	.00	--
JUN										
25...	.13	.13	.00	.24	1.1	.06	.02	.06	.02	--
AUG										
01...	.50	.20	.30	.65	2.9	.09	.03	--	.02	--
27...	.92	.74	.18	1.1	4.9	.06	.02	--	.00	--
SEP										
24...	.38	.00	.38	.54	2.4	.18	.06	--	.03	--

16713000 WAILUKU RIVER AT HILO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS-PENDED TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)
DEC										
27...	1100	0	--	0	100	90	9	1	0	<1
FEB										
20...	0800	3	--	0	--	--	--	0	--	0
21...	0800	--	--	0	--	--		--	--	0
22...	1200	0	--	0	0	0	0	1	1	0
MAR										
27...	0930	0	--	0	0	0	0	1	1	0
JUN										
25...	0830	0	--	0	0	0	0	1	0	1
SEP										
24...	0900	1	0	1	9	0	9	<1	0	<1

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)
DEC										
27...	0	0	0	1	0	<3	2	1	1	160
FEB										
20...	20	--	10	--	--	--	70	--	10	5300
21...	--	--	0	--	--	--	--	--	10	--
22...	0	0	0	0	0	0	4	3	1	140
MAR										
27...	20	20	0	0	0	0	1	1	0	130
JUN										
25...	10	10	0	<3	0	<3	4	4	0	960
SEP										
24...	20	20	0	<3	0	<3	1	1	0	240

DATE	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)
DEC										
27...	110	50	1	0	2	20	20	<1	.0	.0
FEB										
20...	--	--	0	--	0	80	--	--	.3	.3
21...	--	--	--	--	0	--	--	--	--	--
22...	100	40	8	7	1	0	0	0	.0	.0
MAR										
27...	80	50	9	9	0	10	10	0	.0	.0
JUN										
25...	780	180	9	8	1	20	20	4	.0	.0
SEP										
24...	--	40	5	5	0	10	8	2	.1	.0

DATE	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
DEC										
27...	.0	0	0	0	3	3	0	10	7	<3
FEB										
20...	.0	1	--	--	--	--	--	200	--	--
21...	.0	--	--	--	--	--	--	--	--	--
22...	.0	0	0	0	0	0	0	10	0	10
MAR										
27...	.0	0	0	0	0	0	0	10	10	0
JUN										
25...	.0	0	0	0	0	0	0	10	7	<3
SEP										
24...	.1	0	0	0	0	0	0	10	7	<3

< Actual value is known to be less than the value shown.

16713000 WAILUKU RIVER AT HILO--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C)
NOV				
07...	0830	11	--	--
28...	1030	1.8	--	--
DEC				
27...	1100	--	1.2	.0
JAN				
15...	1030	13	--	--
FEB				
20...	0800	11	--	--
21...	0800	4.7	--	--
22...	1200	1.3	--	--
MAR				
13...	0830	1.9	--	--
MAR				
27...	0930	--	1.5	.0
MAY				
16...	1015	5.7	--	--
29...	0815	1.6	--	--
JUN				
25...	0830	--	5.6	.0
AUG				
01...	1000	1.7	--	--
27...	1000	1.7	--	--
SEP				
24...	0900	--	1.4	.0

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS)	LENGTH OF EXPO-SURE (DAYS)
DEC								
27...	1100	280	--	--	--	--	--	--
JAN								
15...	1030	470	--	--	--	--	--	--
MAR								
13...	0830	0	--	--	--	--	--	--
27...	0930	150	--	--	--	--	--	--
MAY								
16...	1015	810	.790	.390	2.96	1.12	135	50
29...	0815	51	--	--	--	--	--	--
JUN								
25...	0830	38	.000	.000	.070	.000	.00	40
AUG								
01...	1000	52	--	--	--	--	--	--
SEP								
24...	0900	720	1.34	.870	.000	.000	--	54

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV					
07...	0830	910	19	47	--
28...	1030	240	2	1.3	--
DEC					
27...	1100	150	1	.40	--
JAN					
15...	1030	11400	79	2430	--
FEB					
20...	0800	11900	--	--	--
21...	0800	2200	--	--	--
22...	1200	1160	--	--	--
MAR					
13...	0830	242	1	.65	100
MAR					
27...	0930	80	2	.43	100
MAY					
16...	1015	265	4	2.9	100
29...	0815	49	4	.53	100
JUN					
25...	0830	850	7	16	100
AUG					
01...	1000	52	1	.14	100
27...	1000	38	1	.10	100
SEP					
24...	0900	20	4	.22	100

16713000 WAILUKU RIVER AT HILO--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	26	3	.21	204	4	2.2	190	2	1.0
2	26	3	.21	334	10	9.0	194	2	1.0
3	24	3	.19	280	8	6.0	171	2	.92
4	398	7	7.5	144	5	1.9	136	2	.73
5	344	6	5.6	450	24	86	87	2	.47
6	99	4	1.1	2460	74	950	550	20	30
7	99	4	1.1	886	10	24	220	10	5.9
8	190	5	2.6	452	6	7.3	134	6	2.2
9	214	6	3.5	295	5	4.0	1240	15	50
10	103	4	1.1	210	5	2.8	875	6	14
11	61	3	.49	180	4	1.9	508	3	4.1
12	46	2	.25	225	4	2.4	1010	7	19
13	70	2	.38	200	3	1.6	957	6	16
14	36	3	.29	385	42	69	1180	8	25
15	33	2	.18	801	175	592	1540	7	29
16	57	2	.31	307	10	8.3	895	6	14
17	66	3	.53	214	8	4.6	660	5	8.9
18	144	6	2.3	158	6	2.6	2050	12	66
19	287	15	12	151	4	1.6	1320	10	36
20	99	10	2.7	1850	109	1460	1080	7	20
21	87	8	1.9	4750	110	2380	725	5	9.8
22	61	6	.99	725	10	20	494	4	5.3
23	40	5	.54	494	3	4.0	379	4	4.1
24	65	5	.88	660	68	202	295	3	2.4
25	60	3	.49	385	10	10	232	3	1.9
26	85	4	.92	407	6	6.6	188	3	1.5
27	52	4	.56	385	4	4.2	150	3	1.2
28	37	4	.40	238	4	2.6	116	2	.63
29	57	3	.46	184	3	1.5	89	2	.48
30	318	5	4.3	144	3	1.2	70	2	.38
31	200	5	2.7	---	---	---	55	2	.30
TOTAL	3484	---	56.68	18558	---	5869.3	17790	---	372.21
		JANUARY			FEBRUARY			MARCH	
1	42	2	.23	1100	5	15	1050	3	8.5
2	32	2	.17	1180	5	16	1280	5	17
3	27	2	.15	715	4	7.7	770	4	8.3
4	26	2	.14	592	3	4.8	568	3	4.6
5	29	2	.16	4060	131	2720	446	3	3.6
6	24	2	.13	1490	50	201	355	2	1.9
7	23	2	.12	725	10	20	280	2	1.5
8	24	2	.13	540	4	5.8	220	2	1.2
9	24	2	.13	418	3	3.4	491	4	5.3
10	26	2	.14	361	3	2.9	1160	7	22
11	75	10	2.0	352	3	2.9	407	4	4.4
12	100	15	4.1	242	2	1.3	301	3	2.4
13	930	30	75	206	2	1.1	242	3	2.0
14	3400	31	311	310	3	2.5	286	2	1.5
15	8840	66	1740	800	6	13	210	2	1.1
16	6530	55	1290	652	5	8.8	242	2	1.3
17	4800	40	984	663	11	31	202	2	1.1
18	1420	8	31	2440	38	283	181	4	2.0
19	925	6	15	3610	34	437	355	8	7.7
20	700	12	23	11400	274	14100	370	6	6.0
21	1000	20	54	2250	33	239	373	5	5.0
22	6240	93	2770	1160	7	22	280	4	3.0
23	6200	98	2760	805	4	8.7	194	3	1.6
24	1820	12	59	1620	22	96	150	2	.81
25	1490	7	28	4010	47	551	120	2	.65
26	1000	5	13	1720	28	178	99	2	.53
27	750	4	8.1	2730	18	133	78	2	.42
28	1010	6	16	1350	5	18	61	2	.33
29	1520	7	29	---	---	---	55	2	.30
30	1660	5	22	---	---	---	52	2	.28
31	3190	24	207	---	---	---	42	2	.23
TOTAL	53877	---	10442.70	47501	---	19122.9	10920	---	116.55

HAWAII, ISLAND OF HAWAII

16713000 WAILUKU RIVER AT HILO--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	69	2	.37	146	2	.79	341	14	13
2	250	3	2.0	117	2	.63	349	14	13
3	212	3	1.7	87	2	.47	81	8	1.7
4	934	10	25	112	2	.60	52	6	.84
5	280	5	3.8	58	2	.31	45	6	.73
6	275	4	3.0	76	2	.41	43	5	.58
7	370	4	4.0	66	2	.36	42	5	.57
8	452	4	4.9	83	3	.67	42	5	.57
9	218	3	1.8	54	2	.29	42	5	.57
10	180	3	1.5	136	3	1.1	42	5	.57
11	169	2	.91	122	2	.66	189	7	3.6
12	210	2	1.1	78	2	.42	800	12	26
13	128	2	.69	210	4	2.3	900	12	29
14	89	2	.48	138	2	.75	470	7	8.9
15	153	3	1.2	242	2	1.3	242	4	2.6
16	120	2	.65	268	3	2.2	282	5	3.8
17	81	2	.44	370	2	2.0	418	5	5.6
18	436	20	24	230	2	1.2	214	4	2.3
19	478	20	26	180	2	.97	370	4	4.0
20	450	10	12	120	2	.65	212	3	1.7
21	350	8	7.6	87	2	.47	230	3	1.9
22	242	5	3.3	71	2	.38	682	7	13
23	150	5	2.0	68	2	.37	1460	18	71
24	85	4	.92	64	2	.35	1100	9	27
25	95	4	1.0	54	2	.29	750	6	12
26	150	4	1.6	66	3	.53	1980	28	150
27	106	3	.86	53	4	.57	512	10	14
28	141	2	.76	51	4	.55	640	6	10
29	112	2	.60	49	5	.66	548	5	7.4
30	136	2	.73	46	6	.75	391	4	4.2
31	---	---	---	161	10	4.3	---	---	---
TOTAL	7121	---	134.91	3663	---	27.30	13469	---	430.13
		JULY			AUGUST			SEPTEMBER	
1	260	4	2.8	52	2	.28	34	4	.37
2	212	3	1.7	42	3	.34	37	4	.40
3	310	4	3.3	52	4	.56	38	4	.41
4	370	5	5.0	47	2	.25	38	3	.31
5	463	5	6.3	62	3	.50	35	3	.28
6	370	4	4.0	52	2	.28	33	4	.36
7	985	50	185	52	3	.42	34	3	.28
8	905	10	24	42	5	.57	31	3	.25
9	600	5	8.1	40	4	.43	31	2	.17
10	379	4	4.1	40	3	.32	61	4	.66
11	289	3	2.3	35	4	.38	45	2	.24
12	214	3	1.7	45	4	.49	25	3	.20
13	171	3	1.4	200	8	4.3	15	3	.12
14	144	3	1.2	117	7	2.2	18	2	.10
15	146	2	.79	392	15	16	16	2	.09
16	112	2	.60	418	20	23	14	3	.11
17	92	2	.50	190	10	5.1	12	1	.03
18	70	2	.38	87	7	1.6	40	2	.22
19	69	2	.37	67	5	.90	25	2	.14
20	52	2	.28	46	4	.50	13	2	.07
21	60	2	.32	44	5	.59	18	3	.15
22	60	2	.32	44	4	.48	16	3	.13
23	120	3	.97	44	4	.48	15	2	.08
24	90	3	.73	42	5	.57	22	3	.18
25	80	2	.43	41	5	.55	26	3	.21
26	75	2	.41	39	4	.42	35	3	.28
27	85	2	.46	43	4	.46	42	2	.23
28	83	2	.45	56	3	.45	21	2	.11
29	68	2	.37	53	5	.72	22	2	.12
30	52	2	.28	45	4	.49	15	2	.08
31	57	---	---	37	4	.40	---	---	---
TOTAL	7043	---	258.56	2566	---	64.03	827	---	6.38
YEAR	186819		36901.65						

16717000 HONOLII STREAM NEAR PAPAIKOU
(Hydrologic bench-mark station)

LOCATION.--Lat 19°46'00", long 155°09'16", Hydrologic Unit 20010000, on left bank 0.7 mi (1.1 km) downstream from Pohakupaa Stream, 4.1 mi (6.6 km) west of Papaikou, and 4.8 mi (7.7 km) northwest of Hilo Post Office.

DRAINAGE AREA.--11.6 mi² (30.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1911 to March 1913 (published as "at Kaiwiki, near Hilo"), February 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,540 ft (469 m), from topographic map. Prior to Aug. 27, 1911, nonrecording gage and Aug. 27, 1911, to Mar. 24, 1913, water-stage recorder, at site 0.5 mi (0.8 km) upstream at different datum.

REMARKS.--Records good. No diversion above station. During period 1911-13, Honolii ditch diverted an average of about 3.2 ft³/s (0.091 m³/s) above station for fluming cane and domestic use.

AVERAGE DISCHARGE.--13 years, 125 ft³/s (3.540 m³/s), 90,560 acre-ft/yr (112 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s (640 m³/s) May 23, 1978, gage height, 20.00 ft (6.096 m), from floodmarks and from rating curve extended above 4,610 ft³/s (131 m³/s) on basis of slope-area measurement at gage height 20.00 ft (6.096 m); minimum, 0.8 ft³/s (0.023 m³/s) Jan. 31, 1912.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,400 ft³/s (125 m³/s) and maximum (*), from rating curve as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 20	2245	5160	146	12.62	3.847	Feb. 5	1100	*6660	189	*14.16	4.316
Jan. 15	2300	5360	152	12.85	3.917	Feb. 20	1230	6030	171	13.53	4.124
Jan. 23	0100	4600	130	12.00	3.658						

Minimum discharge, 2.3 ft³/s (0.06 m³/s) Sept. 15-17, 21-24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	74	33	14	76	153	30	62	95	33	21	5.8
2	18	123	39	13	224	193	94	41	61	27	17	5.2
3	16	66	37	11	96	71	81	33	30	84	23	5.4
4	194	37	29	9.4	71	46	396	44	21	72	22	8.0
5	82	178	21	8.7	1150	36	55	25	15	102	33	6.5
6	32	746	113	8.1	114	33	87	30	12	67	18	4.7
7	32	98	46	7.3	54	29	97	32	10	384	16	4.4
8	105	43	42	6.4	39	26	122	39	9.5	205	13	3.8
9	58	33	553	5.8	38	34	44	24	8.4	83	12	3.8
10	31	26	171	5.5	34	36	40	64	10	44	11	20
11	22	24	91	80	31	36	41	42	85	35	9.8	8.8
12	23	43	360	160	29	35	52	36	340	28	11	5.0
13	42	47	361	664	31	31	38	73	268	25	48	4.1
14	21	39	370	1600	92	49	35	52	95	24	70	3.5
15	27	139	413	3330	291	36	41	83	41	30	141	2.9
16	36	47	132	1980	116	53	36	96	98	24	140	2.6
17	43	36	90	803	234	42	35	97	95	23	97	2.6
18	58	27	681	93	837	52	215	49	62	20	26	24
19	43	39	272	52	1020	70	156	41	105	20	23	9.7
20	26	975	225	151	2420	114	121	30	46	17	18	4.4
21	27	1180	116	435	203	94	66	24	54	14	15	3.2
22	22	71	53	2060	80	53	54	23	209	20	13	2.9
23	17	67	41	1420	63	35	62	24	520	52	12	2.6
24	16	88	34	309	411	28	36	24	214	35	11	4.7
25	23	39	29	185	289	26	42	21	126	27	11	24
26	43	56	26	80	265	24	54	32	699	41	9.6	27
27	26	89	23	58	569	20	48	26	187	40	9.6	24
28	30	36	20	292	187	18	54	18	75	41	8.3	17
29	57	27	18	314	---	17	48	18	74	33	11	15
30	121	23	17	1000	---	15	56	17	43	25	9.7	8.6
31	78	---	15	1090	---	14	---	47	---	31	7.1	---
TOTAL	1384	4516	4471	16245.2	9064	1519	2336	1267	3702.9	1706	637.1	264.2
MEAN	44.6	151	144	524	324	49.0	77.9	40.9	123	55.0	27.0	8.81
MAX	194	1180	681	3330	2420	193	396	97	699	384	141	27
MIN	15	23	15	5.5	29	14	30	17	8.4	14	7.1	2.6
AC-FT	2750	8960	8870	32220	17980	3010	4630	2510	7340	3380	1660	524

CAL YR 1978 TOTAL 33890.7 MEAN 92.9 MAX 1640 MIN 3.5 AC-FT 67220
WTR YR 1979 TOTAL 47312.4 MEAN 130 MAX 3330 MIN 2.6 AC-FT 93840

HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIKOU--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--September 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
NOV											
07...	1015	90	23	6.8	18.0	8.6	480	K650	480	6	1
28...	1245	34	44	7.2	20.0	8.6	140	60	K33	13	0
DEC											
27...	0915	24	57	6.7	18.5	9.0	56	4	56	19	0
JAN											
15...	1400	2980	11	6.4	19.0	9.6	K1300	K1500	171	2	1
MAR											
08...	1230	--	--	--	--	--	--	--	--	26	9
09...	1530	--	--	--	--	--	--	--	--	10	8
13...	1015	30	48	7.1	18.0	8.9	--	110	42	--	--
27...	0830	21	60	7.1	18.5	8.9	K65	K3	58	25	5
MAY											
16...	0930	84	26	7.2	16.0	8.8	820	83	250	8	1
29...	1030	--	--	--	--	--	>1100	17	K14	25	6
JUN											
25...	1015	117	22	7.2	16.0	8.7	1830	160	280	6	4
AUG											
01...	0900	21	58	7.2	17.0	8.8	1200	K18	130	19	6
27...	0900	9.5	73	7.2	18.0	8.8	400	6	110	29	4
SEP											
25...	0830	24	53	7.5	17.0	8.6	2500	460	2500	29	9

DATE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
NOV											
07...	1.3	.7	1.4	32	.2	--	.3	5	3.7	1.7	.0
28...	2.6	1.6	2.3	27	.3	--	.3	13	3.1	3.0	.0
DEC											
27...	3.7	2.3	2.7	23	.3	--	.5	19	--	3.5	.0
JAN											
15...	.5	.3	1.1	48	.3	--	.1	1	3.9	2.5	.1
MAR											
08...	6.4	2.4	3.0	20	.3	--	.3	17	2.4	2.9	.0
09...	2.7	.7	1.8	28	.3	--	.2	2	2.6	2.8	.0
13...	--	--	--	--	--	--	--	16	1.1	--	.0
27...	5.4	2.7	3.1	21	.3	--	.2	20	2.5	3.1	.0
MAY											
16...	1.6	1.0	2.0	34	.3	2.3	.3	7	4.7	2.7	.0
29...	5.5	2.7	3.0	20	.3	--	--	--	--	3.0	--
JUN											
25...	1.2	.8	1.7	36	.3	1.9	.2	2	4.9	2.9	.0
AUG											
01...	3.8	2.2	2.7	24	.3	3.0	.3	13	4.3	3.2	.1
27...	6.0	3.4	3.5	21	.3	3.8	.3	25	3.1	3.4	.0
SEP											
25...	4.7	2.5	3.2	24	.3	--	--	13	--	3.7	.0

K Results based on colony count outside the acceptable range (non-ideal colony count).
> Actual value is known to be greater than the value shown.
< Actual value is known to be less than the value shown.

NOTE.--Water-quality samples collected by U.S. Forest Service for March 8 and 9.

16717000 HONOLII STREAM NEAR PAPAIKOU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS PO4)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHATE, TOTAL (MG/L AS PO4)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)
NOV											
07...	3.9	23	16	.03	5.59	.03	--	--	.04	--	--
28...	8.9	36	30	.05	3.30	.02	--	--	.01	--	--
DEC											
27...	12	47	36	.06	3.05	.02	--	--	.00	--	--
JAN											
15...	1.2	15	10	.02	121	.05	--	--	.12	--	--
MAR											
08...	12	--	40	.05	--	--	.03	--	--	--	.00
09...	4.6	--	17	.02	--	--	.01	--	--	--	.00
13...	11	31	--	.04	2.51	.02	--	--	.01	--	--
27...	12	44	41	.06	2.49	.02	--	--	.00	--	--
MAY											
16...	4.4	23	21	.03	5.22	.01	--	.00	.00	.00	--
29...	--	--	40	.03	.91	--	--	.03	--	.03	--
JUN											
25...	3.9	21	17	.03	6.63	.02	--	.06	.02	.06	--
AUG											
01...	12	41	36	.06	2.32	.02	--	.09	.03	--	--
27...	18	65	53	.09	1.67	.04	--	.06	.02	--	--
SEP											
25...	12	38	34	.05	2.46	.06	--	.15	.05	--	--

DATE	TIME	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL)	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
NOV							
07...	1015	--	0	0	1	0	3
MAR							
08...	1230	90	--	--	0	10	10
09...	1530	360	--	--	0	20	20
MAY							
29...	1030	--	--	--	--	--	--

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)
NOV							
07...	2000	1	20	.0	0	0	10
MAR							
08...	170	0	10	--	--	--	--
09...	480	0	10	--	--	--	--
MAY							
29...	360	9	0	--	--	--	10

NOTE.--Water-quality samples collected by U.S. Forest Service for March 8 and 9.

HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIKOU--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	CYANIDE TOTAL (MG/L AS CN)	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	CHLORDANE, TOTAL (UG/L)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG)
NOV										
07...	1015	.00	--	--	--	--	--	--	--	--
DEC										
27...	0915	--	.0	0	.00	.0	.0	0	.00	.0

DATE	DDE, TOTAL (UG/L)	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG)
NOV										
07...	--	--	--	--	--	--	--	--	--	--
DEC										
27...	.00	.0	.00	.0	.00	.00	.0	.00	.00	.0

DATE	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG)	MALATHION, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)
NOV										
07...	--	--	--	--	--	--	--	--	--	--
DEC										
27...	.00	.00	.0	.00	.0	.00	.0	.00	.00	.00

DATE	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
NOV									
07...	--	--	--	--	--	--	--	--	--
DEC									
27...	.00	.00	.00	0	0	.00	.00	.00	.00

DATE	TIME	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM DISSOLVED, EXTRACTION (UG/L)
DEC									
27...	0915	.5	<.4	1.1	<.4	1.0	<.4	.02	<.01

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)
NOV				
07...	1015	90	12	2.9
28...	1245	34	2	.18
DEC				
27...	0915	24	1	.06
JAN				
15...	1400	2980	42	338
MAR				
13...	1015	30	1	.08
27...	0830	21	1	.06
MAY				
16...	0930	84	4	.91
29...	1030	--	1	--
JUN				
25...	1015	117	3	.95
AUG				
01...	0900	21	1	.06
27...	0900	9.5	1	.03
SEP				
25...	0830	--	4	--

< Actual value is known to be less than the value shown.

16717800 POHAKUPUKA STREAM NEAR PAPAALOA

LOCATION.--Lat 19°57'20", long 155°11'20", Hydrologic Unit 20010000, on right bank 200 ft (61 m) downstream from Highway 19, 2.8 mi (4.5 km) northwest of Honohina, and 3.0 mi (4.8 km) southeast of Papaaloa.

DRAINAGE AREA.--2.76 mi² (7.15 km²).

PERIOD OF RECORD.--April 1962 to September 1979. Station destroyed by flood of November 1979.

GAGE.--Water-stage recorder. Datum of gage is 250 ft (76.2 m) above mean sea level (by stadia survey).

REMARKS.--Records good except those for period of no gage-height record, which are fair. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--17 years, 27.1 ft³/s (0.767 m³/s), (19,630 acre-ft/yr (24.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,340 ft³/s (151 m³/s) Nov. 26, 1967, gage height, 13.37 ft (4.075 m), from rating curve extended above 1,100 ft³/s (31.2 m³/s); minimum, 0.28 ft³/s (0.008 m) Nov. 9, 1962.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft³/s (39.6 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 15	0645	*3530	100	*11.10	3.383
Jan. 22	1845	2180	61.7	9.09	2.771
Feb. 20	0330	1540	43.6	7.95	2.423

Minimum discharge, 1.8 ft³/s (0.051 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	4.4	3.4	4.0	18	15	5.0	36	6.5	5.3	4.5	2.8
2	6.0	5.1	3.4	3.3	16	20	12	12	6.0	4.7	4.4	2.7
3	5.5	6.4	3.3	3.0	11	8.0	10	9.9	5.0	24	4.6	2.8
4	26	6.1	3.1	2.8	10	6.0	25	9.9	4.0	24	6.4	2.7
5	15	5.7	3.0	2.7	68	5.0	7.0	9.6	3.6	19	23	2.7
6	6.7	70	20	2.6	13	5.0	10	10	3.4	22	5.3	2.7
7	13	12	5.7	2.5	9.9	4.0	12	9.6	3.3	208	4.3	2.6
8	27	5.4	4.1	2.5	8.8	3.0	15	9.6	3.2	29	3.9	2.6
9	16	3.6	78	2.4	8.3	5.0	6.5	9.3	3.3	13	3.6	2.5
10	8.6	3.1	20	3.3	8.0	5.5	6.0	9.4	3.1	8.1	3.5	2.5
11	6.0	4.4	15	91	169	5.5	6.0	9.4	29	6.7	3.3	2.4
12	23	5.8	59	642	44	5.0	7.0	9.4	108	5.5	3.2	2.4
13	15	7.5	76	502	14	4.5	5.5	11	42	5.1	20	2.4
14	5.9	60	86	785	26	6.0	5.0	15	21	4.9	37	2.4
15	5.6	165	52	1000	114	5.0	6.0	35	6.0	4.7	54	2.3
16	4.9	48	19	400	23	7.0	5.5	31	4.8	4.5	34	2.3
17	19	68	13	150	48	6.0	5.0	20	5.9	7.8	8.7	2.3
18	24	19	88	30	91	7.0	35	9.4	4.5	4.7	5.3	2.3
19	8.6	15	51	15	111	8.0	25	9.4	13	4.8	4.5	2.2
20	5.5	278	65	139	381	15	20	9.4	13	4.5	4.0	2.1
21	5.5	126	29	143	35	10	15	9.4	15	4.1	3.8	2.1
22	4.3	11	8.8	650	17	7.0	12	10	19	8.6	3.5	2.0
23	16	7.9	6.4	295	27	6.0	15	9.8	122	12	3.4	2.0
24	12	6.4	5.3	91	50	5.5	12	9.4	61	9.1	3.3	2.4
25	32	5.5	4.8	48	30	5.0	10	9.4	56	15	3.2	3.6
26	46	7.3	5.1	17	25	5.0	10	9.0	220	16	3.2	2.8
27	12	9.1	5.5	14	75	6.0	12	8.0	38	21	3.0	2.9
28	6.2	4.8	4.2	25	20	5.5	19	7.5	12	9.7	3.0	3.4
29	5.4	3.9	3.7	28	---	4.5	34	7.0	9.8	5.7	3.0	2.1
30	7.6	3.5	3.7	47	---	4.0	28	6.5	6.6	4.9	3.0	1.9
31	4.5	---	3.5	179	---	4.0	---	6.0	---	5.1	2.9	---
TOTAL	398.0	977.9	748.0	5320.1	1471.0	208.0	395.5	376.3	848.0	521.5	273.2	74.9
MEAN	12.8	32.6	24.1	172	52.5	6.71	13.2	12.1	28.3	16.8	8.81	2.50
MAX	46	278	88	1000	381	20	35	36	220	208	54	3.6
MIN	4.3	3.1	3.0	2.4	8.0	3.0	5.0	6.0	3.1	4.1	2.9	1.9
AC-FT	789	1940	1480	10550	2920	413	784	746	1680	1030	542	149

CAL YR 1978 TOTAL 7610.9 MEAN 20.9 MAX 278 MIN 1.7 AC-FT 15100
WTR YR 1979 TOTAL 11612.4 MEAN 31.8 MAX 1000 MIN 1.9 AC-FT 23030

NOTE.--No gage-height record Feb. 24 to Apr. 27.

16720000 KAWAINUI STREAM NEAR KAMUELA

LOCATION.--Lat 20°05'18", long 155°40'58", Hydrologic Unit 20010000, on left bank 250 ft (76 m) upstream from Upper Hamakua ditch intake and 4.5 mi (7.2 km) north of Kamuela.

DRAINAGE AREA.--1.58 mi² (4.09 km²).

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,060 ft (1,237 m), from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--15 years, 14.0 ft³/s (0.396 m³/s), 10,140 acre-ft/yr (12.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,400 ft³/s (68.0 m³/s) Jan. 11, 1967, gageheight, 9.15 ft (2.789 m), from rating curve extended above 53 ft³/s (1.50 m³/s) on basis of computation of peak flow over dam; minimum, 0.01 ft³/s (<0.001 m³/s) Jan. 20, 21, 24-28, Feb. 20-22, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 440 ft³/s (12.5 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 6	0230	*1400	39.6	*7.55	2.301	Feb. 10	1330	640	18.1	5.70	1.737
Jan. 13	2300	568	16.1	5.46	1.664	Feb. 25	1700	1040	29.5	6.80	2.073
Jan. 22	1045	664	18.8	5.78	1.762						

Minimum discharge, 0.38 ft³/s (0.011 m³/s) Mar. 31, Apr. 1, Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	.89	1.8	4.2	8.1	14	.47	2.2	.72	1.7	3.5	8.2
2	3.8	.83	1.5	2.2	3.1	5.2	1.1	3.6	18	1.3	5.0	13
3	2.0	1.3	1.2	1.5	1.8	2.5	6.8	2.4	77	29	7.0	5.8
4	27	.98	.89	1.2	1.3	1.7	40	1.6	43	15	7.5	2.1
5	20	.77	75	1.0	3.2	1.3	9.8	2.8	8.2	9.2	6.0	1.4
6	4.0	17	237	.90	26	1.6	20	1.6	3.3	6.5	5.0	1.1
7	6.4	4.4	18	.76	3.4	1.1	14	3.8	17	4.7	2.5	4.3
8	60	1.8	12	.66	1.8	1.5	4.0	3.6	71	7.5	1.8	29
9	23	1.2	58	.60	1.5	154	1.1	34	33	3.3	1.4	3.9
10	8.5	.86	26	.60	118	71	.86	21	23	29	1.2	1.7
11	5.5	8.0	18	53	53	8.6	.76	22	21	43	1.1	1.2
12	5.4	30	32	162	33	2.8	2.0	4.6	66	28	.50	.91
13	2.5	28	50	277	35	4.3	1.8	2.1	56	24	1.3	.74
14	1.7	17	57	261	44	20	1.2	1.4	27	25	25	.60
15	1.3	45	19	228	51	29	1.5	1.0	95	22	74	.49
16	2.1	26	6.0	166	20	43	2.3	3.7	48	14	30	.42
17	1.3	11	6.1	52	24	14	2.2	8.6	37	46	6.8	16
18	1.1	7.3	15	11	29	3.5	10	2.8	50	5.9	2.4	2.2
19	.99	3.5	26	11	7.0	4.5	3.1	1.7	17	3.7	1.5	1.1
20	2.0	52	27	97	11	37	13	6.6	4.4	8.1	1.1	.70
21	6.2	39	11	40	7.3	17	4.2	3.1	2.4	12	.52	.60
22	1.8	5.5	4.7	313	2.5	6.4	1.7	1.7	24	46	.78	.57
23	17	2.6	5.9	118	5.8	2.7	1.2	1.2	23	34	.68	3.5
24	15	1.6	3.0	29	86	1.7	1.3	1.3	23	43	.74	4.8
25	7.5	5.3	2.1	16	138	1.2	5.7	1.2	48	5.6	.74	1.4
26	20	7.8	3.4	8.7	19	.93	8.9	.94	111	5.0	.62	28
27	9.8	17	3.9	6.9	37	.71	8.0	.77	43	5.0	.50	4.1
28	3.0	15	3.1	18	26	.62	31	.74	12	7.0	.64	1.9
29	1.9	8.1	2.7	11	---	.56	7.7	.74	4.0	6.0	1.4	1.9
30	1.3	2.6	2.3	4.1	---	.48	2.6	.67	3.0	3.0	1.2	1.4
31	1.1	---	5.3	41	---	.43	---	.56	---	2.5	.71	---
TOTAL	264.49	362.33	734.89	1937.32	796.8	453.33	208.29	144.02	1009.02	496.0	155.53	193.03
MEAN	8.53	12.1	23.7	62.5	28.5	14.6	6.94	4.65	33.6	16.0	6.32	4.77
MAX	60	52	237	313	138	154	40	34	111	46	74	29
MIN	.99	.77	.89	.60	1.3	.43	.47	.56	.72	1.3	.50	.42
AC-FT	525	719	1460	3840	1580	899	413	286	2000	984	389	384

CAL YR 1978 TOTAL 5874.48 MEAN 16.1 MAX 237 MIN .26 AC-FT 11650
WTR YR 1979 TOTAL 6745.45 MEAN 18.5 MAX 313 MIN .42 AC-FT 13380

16720300 KAWAIKI STREAM NEAR KAMUELA

LOCATION.--Lat 20°05'13", long 155°40'59", Hydrologic Unit 20010000, on right bank 0.2 mi (0.3 km) upstream from Upper Hamakua ditch intake and 4.4 mi (7.1 km) north of Kamuela.

DRAINAGE AREA.--0.45 mi² (1.17 km²).

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 4,090 ft (1,247 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, which are fair. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--11 years, 4.03 ft³/s (0.114 m³/s), 2,920 acre-ft/yr (3.60 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 595 ft³/s (16.9 m³/s) Oct. 20, 1974, Dec. 6, 1978, gage height, 5.65 ft (1.722 m), from rating curve extended above 33 ft³/s (0.94 m³/s); minimum, 0.03 ft³/s (0.001 m³/s) Nov. 12-15, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*), from rating curve extended above 33 ft³/s (0.94 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 6	0130	*595	16.9	*5.65	1.722	Feb. 10	a1330	200	5.66	4.00	1.219
Jan. 13	2300	162	4.59	3.62	1.103	Feb. 25	a1700	400	11.3	5.00	1.524
Jan. 22	1100	252	7.14	4.26	1.298						

Minimum discharge, 0.25 ft³/s (0.007 m³/s) May 31.

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DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.2	1.8	2.5	4.0	5.0	.45	1.8	.35	.80	3.0	1.0
2	2.7	1.2	1.6	2.0	2.0	4.0	.80	.85	7.0	.60	4.0	6.1
3	1.9	1.6	1.5	1.5	1.5	2.0	4.0	.54	30	10	5.0	4.1
4	10	1.3	1.2	1.5	1.0	1.5	8.1	.45	15	6.0	6.5	2.5
5	6.7	1.3	16	1.0	2.0	1.0	3.2	1.5	5.0	4.5	6.0	1.6
6	2.2	6.1	57	.85	8.0	1.0	6.2	.50	2.0	3.5	3.5	1.3
7	4.2	2.4	5.3	.75	2.0	.80	4.1	2.0	8.0	2.5	1.5	1.6
8	18	1.6	5.5	.70	1.5	1.0	1.9	2.0	25	4.0	1.2	7.3
9	7.2	1.3	14	.65	1.0	30	1.2	10	12	2.0	1.0	3.7
10	3.3	1.2	4.5	.65	25	12	.83	7.0	8.5	10	.95	1.8
11	3.1	5.0	6.4	12	12	4.0	.65	7.5	8.0	20	.95	1.3
12	2.9	11	5.0	30	8.0	2.0	.57	3.0	20	12	.85	1.2
13	2.1	9.1	14	60	8.5	3.0	.54	140	18	12	.55	.95
14	1.8	8.2	12	50	10	5.0	.48	.75	10	10	7.5	.95
15	1.9	9.4	3.3	40	12	7.0	1.2	.40	35	9.0	18	.95
16	2.4	6.9	2.2	25	7.0	10	.67	2.0	20	6.0	9.7	.85
17	1.6	5.3	2.5	10	7.5	5.0	.48	4.0	18	20	2.5	3.8
18	1.5	3.3	4.1	5.0	8.0	2.0	.68	1.5	25	3.0	1.6	3.5
19	1.5	2.5	6.7	5.0	4.0	3.0	.54	.75	7.0	2.0	1.2	1.6
20	2.5	18	7.5	15	5.0	9.0	.54	3.0	2.5	4.0	.55	1.2
21	3.1	6.1	2.5	10	4.0	5.0	.68	1.5	1.0	5.0	.95	.95
22	1.8	2.5	2.4	80	2.0	4.0	2.7	.90	10	20	.55	.85
23	8.3	1.9	2.4	25	3.0	2.0	2.2	.70	10	15	.55	.85
24	5.8	1.6	1.6	8.0	20	1.0	.85	.70	9.5	18	1.0	.95
25	4.7	2.9	1.5	5.0	30	.90	2.7	.65	18	3.0	1.2	3.7
26	8.1	5.0	2.4	4.0	6.0	.80	1.2	.60	40	3.0	1.0	1.8
27	3.7	4.7	2.2	3.0	9.0	.65	.61	.40	15	3.5	.55	6.9
28	2.1	5.5	2.1	5.0	8.0	.60	.54	.35	6.0	5.5	.55	4.1
29	1.8	2.7	2.0	4.0	---	.50	.76	.35	2.0	4.5	1.8	2.2
30	1.5	1.9	1.5	2.5	---	.45	2.2	.30	1.5	2.0	1.6	1.6
31	1.3	---	2.5	10	---	.40	---	.25	---	1.5	1.2	---
TOTAL	121.3	132.7	195.2	420.60	212.0	124.60	51.57	57.24	389.35	222.90	69.80	71.20
MEAN	3.91	4.42	6.30	13.6	7.57	4.02	1.72	1.85	13.0	7.19	2.90	2.37
MAX	18	18	57	80	30	30	8.1	10	40	20	18	7.3
MIN	1.3	1.2	1.2	.65	1.0	.40	.45	.25	.35	.60	.85	.85
AC-FT	241	263	387	834	421	247	102	114	772	442	178	141

CAL YR 1978 TOTAL 1737.01 MEAN 4.76 MAX 57 MIN .23 AC-FT 3450
WTR YR 1979 TOTAL 2088.46 MEAN 5.72 MAX 80 MIN .25 AC-FT 4140

NOTE.--No gage-height record Dec. 29 to Apr. 3, May 4 to Aug. 7.

16720500 UPPER HAMAKUA DITCH BELOW KAWAIKI STREAM, NEAR KAMUELA

LOCATION.--Lat 20°05'15", long 155°40'42", Hydrologic Unit 20010000, on right bank 800 ft (244 m) downstream from Kawaiki Stream intake and 4.4 mi (7.1 km) north of Kamuela.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 4,020 ft (1,225 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, which are fair. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--15 years, 7.91 ft^3/s (0.224 m^3/s), 5,730 acre-ft/yr (7.07 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 49 ft^3/s (1.39 m^3/s) Nov. 2, 1967; minimum daily, 0.05 ft^3/s (0.001 m^3/s) Oct. 4-6, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 17 ft^3/s (0.48 m^3/s) July 7; minimum daily, 0.40 ft^3/s (0.011 m^3/s) June 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	.94	2.0	4.5	3.1	3.8	.50	12	1.0	4.4	5.6	.70
2	5.0	.94	2.0	2.5	2.0	1.0	1.5	5.2	.90	3.2	13	7.0
3	2.6	1.5	1.5	2.0	1.6	.84	4.5	12	.90	15	16	9.0
4	9.3	1.1	1.0	1.5	1.4	.62	14	12	.70	16	16	5.0
5	11	.94	1.5	1.0	1.9	.50	11	4.0	.60	15	16	3.0
6	4.8	11	2.5	.95	6.8	.56	13	2.4	.50	16	8.4	1.5
7	5.8	5.2	8.0	.80	2.1	.45	12	3.8	.45	17	4.1	1.0
8	13	2.3	7.0	.70	1.6	.72	6.5	3.5	.40	16	2.9	6.0
9	12	1.4	15	.50	1.5	15	3.1	1.7	.80	14	2.1	9.0
10	8.6	1.0	10	.45	8.7	11	1.7	3.1	.90	5.8	1.8	4.0
11	6.6	3.3	8.0	7.4	9.0	1.8	1.1	2.4	5.0	4.3	1.7	2.5
12	5.8	14	10	14	7.8	.84	.84	1.9	15	2.5	1.4	1.0
13	2.9	14	15	15	12	1.6	.67	5.4	14	1.9	1.9	.95
14	1.9	11	15	15	11	4.4	.67	8.9	8.9	8.0	13	.90
15	1.4	14	10	14	13	6.6	2.6	14	4.8	16	16	.85
16	2.7	14	7.0	13	6.6	8.9	1.7	14	5.2	12	16	.80
17	1.4	11	7.0	11	8.6	3.1	1.1	12	7.7	11	10	1.5
18	1.2	8.9	8.0	4.8	8.6	.89	1.5	3.6	15	5.4	3.6	5.0
19	1.0	4.4	12	5.2	2.7	1.4	2.3	1.8	16	9.6	2.3	2.0
20	2.5	9.5	12	10	4.6	11	1.9	1.3	16	5.0	1.6	1.0
21	6.4	14	8.0	8.9	2.7	6.4	2.6	1.2	14	6.4	1.5	.90
22	2.3	6.0	5.0	14	1.5	1.9	2.7	1.0	16	16	1.0	.85
23	7.1	3.0	6.5	15	2.5	.89	9.4	5.0	16	16	1.0	.80
24	11	2.0	3.5	11	12	.62	3.1	3.0	15	14	.95	.75
25	9.2	5.5	2.5	5.9	14	.45	8.8	2.5	16	16	.90	2.5
26	12	8.0	3.5	3.5	6.6	1.0	8.0	2.0	16	15	.85	1.5
27	8.9	10	4.5	3.1	9.6	.80	2.3	2.5	16	16	.85	1.0
28	3.5	9.0	3.5	6.5	8.9	.70	1.3	2.0	16	14	.80	10
29	2.3	8.5	3.0	3.8	---	.60	1.1	1.5	16	12	.80	3.5
30	1.4	3.0	2.5	2.3	---	.50	2.9	1.0	11	5.8	.75	2.0
31	1.2	---	5.5	9.9	---	.45	---	1.0	---	4.4	.75	---
TOTAL	166.5	199.42	202.5	208.20	172.4	89.33	124.38	147.7	266.65	333.7	163.55	86.50
MEAN	5.37	6.65	6.53	6.72	6.16	2.88	4.15	4.76	8.89	10.8	5.28	2.88
MAX	13	14	15	15	14	15	14	14	16	17	16	10
MIN	1.0	.94	1.0	.45	1.4	.45	.50	1.0	.40	1.9	.75	.70
AC-FT	330	396	402	413	342	177	247	293	529	662	324	172

CAL YR 1978 TOTAL 2619.31 MEAN 7.18 MAX 16 MIN .50 AC-FT 5200
WTR YR 1979 TOTAL 2160.83 MEAN 5.92 MAX 17 MIN .40 AC-FT 4290

NOTE.--No gage-height record Nov. 22 to Jan. 9, Aug. 21 to Sept. 30.

16724800 UPPER HAMAKUA DITCH ABOVE ALAKAHI STREAM, NEAR KAMUELA

LOCATION.--Lat 20°04'31", long 155°40'26", Hydrologic Unit 20010000, on right bank 0.1 mi (0.2 km) upstream from Alakahi Stream and 3.6 mi (5.8 km) north of Kamuela.

PERIOD OF RECORD.--April 1968 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,890 ft (1,186 m), from topographic map.

REMARKS.--Records good. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this repaort.

AVERAGE DISCHARGE.--11 years, 5.70 ft^3/s (0.161 m^3/s), 4,130 acre-ft/yr (5.09 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 41 ft^3/s (1.16 m^3/s) Aug. 18, 1972; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 33 ft^3/s (0.93 m^3/s) Jan. 23; no flow for several days in January, June, and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.41	.16	1.1	1.5	3.9	3.3	.25	6.2	.23	3.5	7.2	.18
2	2.0	.09	.78	1.0	2.4	1.7	1.0	3.4	.12	2.9	5.2	4.7
3	1.1	.37	.49	1.0	1.8	1.2	3.0	7.6	.09	12	12	6.8
4	5.0	.18	.26	.75	1.4	.89	8.3	7.5	.06	13	13	3.2
5	7.4	.07	8.1	.60	5.7	.73	7.4	2.8	.01	13	14	1.4
6	2.7	6.3	18	.50	3.1	.59	8.5	1.7	.00	15	7.0	.78
7	2.7	3.0	4.6	.00	1.8	2.4	8.9	2.2	.00	21	3.4	.66
8	10	1.1	3.5	.00	1.5	21	4.9	2.3	.00	17	2.2	3.5
9	9.4	.52	9.7	.00	2.0	10	2.5	1.1	.00	12	1.5	6.1
10	6.1	.20	4.2	.00	14	2.4	1.3	1.7	1.0	5.2	1.2	2.2
11	4.2	2.1	4.2	5.9	13	1.3	.78	1.4	9.7	3.6	1.1	1.0
12	4.0	10	5.2	19	7.0	3.3	.49	1.3	13	2.2	.84	.56
13	1.9	11	10	24	12	3.1	.32	2.8	11	1.6	.85	.33
14	1.1	8.0	12	26	12	7.4	.28	5.8	6.1	4.7	7.3	.18
15	.60	12	5.0	30	10	8.1	1.2	9.7	3.4	12	15	.02
16	1.3	12	3.0	29	8.7	1.6	.91	9.5	3.5	9.2	15	.00
17	.56	8.4	3.0	20	9.3	1.0	.45	7.2	5.3	8.0	5.2	1.1
18	.37	5.7	5.0	8.9	4.5	7.7	.62	2.5	11	4.1	3.4	3.5
19	.26	2.8	7.0	6.6	2.9	5.7	.98	1.2	14	6.8	2.1	1.2
20	.78	7.4	7.0	14	5.3	3.4	.86	.75	12	4.0	1.5	.41
21	3.2	12	3.0	12	2.1	1.2	1.0	.48	12	3.5	1.1	.18
22	1.0	4.2	1.0	32	1.5	.78	1.2	3.8	14	12	.84	.01
23	3.2	2.0	1.5	33	8.7	.56	4.9	3.9	16	13	.72	.00
24	7.2	1.1	1.0	18	17	.38	2.1	1.7	13	11	.66	.00
25	6.8	2.2	.75	10	13	.23	4.4	1.5	16	13	.60	1.8
26	7.7	6.1	1.0	6.1	8.7	.13	4.7	4.5	18	12	.45	1.1
27	5.7	8.0	1.5	4.8	12	.05	1.4	1.7	15	12	.30	.84
28	2.1	5.7	1.0	6.6	8.6	.01	.73	.86	15	14	.22	7.0
29	1.1	5.2	1.0	5.1	---	.01	.59	.47	14	11	.72	2.3
30	.56	1.9	.75	2.9	---	.09	1.6	.59	9.3	5.0	.66	1.0
31	.33	---	2.0	9.0	---	.30	---	.47	---	3.5	.41	---
TOTAL	100.77	139.79	126.63	328.25	193.9	90.55	75.56	98.62	232.81	280.8	133.67	52.05
MEAN	3.25	4.66	4.08	10.6	6.93	2.92	2.52	3.18	7.76	9.06	4.31	1.74
MAX	10	12	18	33	17	21	8.9	9.7	18	21	15	7.0
MIN	.26	.07	.26	.00	1.4	.01	.25	.47	.00	1.6	.22	.00
AC-FT	200	277	251	651	385	180	150	196	462	557	265	103

CAL YR 1978 TOTAL 1868.63 MEAN 5.12 MAX 18 MIN .00 AC-FT 3710
WTR YR 1979 TOTAL 1853.40 MEAN 5.08 MAX 33 MIN .00 AC-FT 3680

16725000 ALAKAHI STREAM NEAR KAMUELA

LOCATION.--Lat 20°04'27", long 155°40'25", Hydrologic Unit 20010000, on right bank 25 ft (8 m) upstream from upper Hamakua ditch intake and 3.5 mi (5.6 km) north of Kamuela.

DRAINAGE AREA.--0.87 mi² (2.25 km²).

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,900 ft (1,189 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, which are fair. Parker Ranch pipeline diverts from tributary 0.4 mi (0.6 km) above station for ranch use in Kamuela area. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--15 years, 6.53 ft³/s (0.185 m³/s), 4,730 acre-ft/yr (5.83 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,420 ft³/s (40.2 m³/s) Jan. 11, 1967, gage height, 8.65 ft (2.637 m), from rating curve extended above 28 ft³/s (0.79 m³/s) on basis of computation of peak flow over dam; minimum, 0.03 ft³/s (0.001 m³/s) on several days in 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 120 ft³/s (3.40 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 14	2230	138	3.19	4.58	1.396
Jan. 23	1130	*234	6.63	*5.29	1.612

Minimum discharge, 1.0 ft³/s (0.028 m³/s) Nov. 2, Mar. 27-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	1.5	3.0	3.5	12	6.5	2.0	8.7	2.4	4.9	6.3	2.4
2	2.5	1.0	2.5	2.5	6.0	4.0	2.5	4.8	2.1	3.8	6.2	7.9
3	2.4	2.0	2.0	2.5	3.8	3.0	6.0	14	2.1	12	26	6.5
4	3.8	1.5	1.5	2.0	3.1	2.5	9.2	7.6	2.2	13	16	5.1
5	3.3	1.0	15	2.0	10	2.5	5.0	3.8	2.1	12	24	3.6
6	21	10	50	2.0	6.0	2.0	8.2	2.6	1.9	20	5.8	2.9
7	5.0	5.0	8.0	1.5	4.0	5.0	7.2	2.5	1.8	48	4.4	2.9
8	7.1	3.0	6.0	1.5	3.0	50	3.9	2.7	1.8	27	3.5	13
9	19	2.5	15	1.5	5.0	18	2.9	2.1	1.8	9.8	3.0	7.6
10	11	1.5	6.0	1.5	25	5.0	2.2	2.3	3.5	5.4	2.7	4.3
11	4.9	3.5	6.0	1.4	25	2.5	1.9	2.6	24	4.6	2.5	3.3
12	5.7	18	9.0	7.4	12	6.0	1.6	2.3	33	4.0	2.3	2.8
13	3.8	20	20	53	20	6.0	1.5	4.2	12	3.5	2.4	2.4
14	3.3	15	25	70	20	10	1.4	10	5.1	14	9.7	2.2
15	2.9	20	10	67	18	12	1.9	19	4.3	15	38	2.0
16	3.5	20	5.0	69	15	3.0	1.8	11	5.0	7.6	24	1.9
17	2.8	15	5.0	54	16	2.5	1.5	7.3	6.0	8.1	7.6	2.5
18	2.5	10	10	29	8.0	10	1.9	3.8	16	4.7	5.1	5.5
19	2.4	5.0	15	9.0	6.0	8.0	2.3	3.5	34	4.9	4.3	3.3
20	3.3	12	15	7.2	9.0	6.0	2.3	2.8	16	4.2	3.7	2.5
21	4.5	20	5.0	32	3.5	3.0	2.2	2.4	11	5.7	3.3	2.1
22	3.3	5.5	2.5	22	3.0	2.5	2.5	4.8	21	28	3.1	1.8
23	12	3.5	3.0	82	12	2.0	8.7	4.8	36	16	2.8	1.8
24	8.1	3.0	2.0	53	40	1.5	3.8	3.5	14	7.5	2.8	1.9
25	8.2	4.0	1.5	18	25	1.5	4.7	3.0	30	19	2.8	4.8
26	12	10	2.5	10	12	1.5	4.6	5.4	37	8.6	2.8	3.4
27	6.0	12	3.0	5.8	20	1.0	2.7	3.8	25	12	2.6	11
28	4.2	8.0	2.5	6.2	12	1.0	2.1	2.8	23	23	2.4	8.2
29	3.0	8.0	2.0	7.0	---	1.0	1.9	2.4	17	8.6	2.8	4.9
30	2.5	4.0	2.0	7.1	---	1.5	3.2	2.4	7.3	5.1	3.0	3.7
31	2.0	---	4.0	4.1	---	2.0	---	2.8	---	4.6	2.6	---
TOTAL	178.4	245.5	259.0	634.7	354.4	183.0	103.6	155.7	398.4	364.6	228.5	128.2
MEAN	5.75	8.18	8.35	20.5	12.7	5.90	3.45	5.02	13.3	11.8	7.37	4.27
MAX	21	20	50	82	40	50	9.2	19	37	48	38	13
MIN	2.0	1.0	1.5	1.4	3.0	1.0	1.4	2.1	1.8	3.5	2.3	1.8
AC-FT	354	487	514	1260	703	363	205	309	790	723	453	254

CAL YR 1978 TOTAL 2885.23 MEAN 7.90 MAX 50 MIN .96 AC-FT 5720
WTR YR 1979 TOTAL 3234.00 MEAN 8.86 MAX 82 MIN 1.0 AC-FT 6410

NOTE.--No gage-height record Oct. 29 to Jan. 9, Feb. 5 to Apr. 3.

16726000 UPPER HAMAKUA DITCH ABOVE WAIMEA RESERVOIR DIVERSION, NEAR KAMUELA

LOCATION.--Lat 20°03'31", long 155°37'40", Hydrologic Unit 20010000, on left bank 120 ft (37 m) upstream from diversion intake leading to Waimea Reservoir and 3.7 mi (6.0 km) northeast of Kamuela Post Office.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,020 ft (920 m), from topographic map.

REMARKS.--Records good. Ditch diverts from Kawainui, Kawaiki, and Alakahi Streams for use in vicinity of Kamuela. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--5 years, 10.4 ft^3/s (0.295 m^3/s), 7,530 acre-ft/yr (9.28 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 48 ft^3/s (1.36 m^3/s) Apr. 6, 1977, and Jan. 13, 1979; no flow Oct. 1-21, 1974 and July 18, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 48 ft^3/s (1.36 m^3/s) Jan. 13; no flow July 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.1	3.9	5.4	3.4	5.7	1.4	15	1.1	.12	.09	1.1
2	6.1	2.0	2.9	3.6	1.8	6.0	1.5	12	.84	.12	.10	11
3	4.3	2.6	2.2	2.7	1.3	6.7	3.7	18	.76	1.5	1.7	13
4	18	2.7	1.8	2.3	1.0	5.1	16	15	.74	2.3	.55	8.0
5	21	3.6	16	2.3	3.3	4.2	13	9.3	.68	1.8	1.4	3.4
6	9.0	22	46	2.0	11	4.0	15	6.4	.54	5.2	.14	2.1
7	6.8	14	19	1.7	5.5	3.4	16	4.5	.47	15	.10	1.9
8	24	5.8	14	1.5	3.6	3.1	11	4.7	.43	10	.12	15
9	23	3.0	22	1.3	3.3	37	7.2	2.4	.45	7.0	.09	14
10	18	2.1	20	1.5	16	28	4.3	3.3	1.3	5.0	.09	5.6
11	13	5.3	14	17	27	15	2.5	3.3	8.7	4.0	.08	2.8
12	16	28	21	44	22	8.7	1.7	2.1	9.9	3.5	.08	1.9
13	7.3	26	15	48	20	6.8	1.2	6.6	5.2	3.0	.39	1.4
14	4.5	26	24	42	20	14	1.1	11	2.0	10	5.6	1.2
15	3.3	28	19	12	21	13	1.8	18	2.9	15	22	.91
16	4.3	26	11	6.1	12	19	2.1	15	5.8	6.0	18	.74
17	3.0	22	8.8	5.1	11	15	1.3	13	7.0	1.0	6.7	.70
18	2.3	20	9.9	3.3	14	7.9	2.4	6.7	12	.00	1.1	3.0
19	2.0	12	16	2.4	5.1	6.8	3.9	3.4	18	.10	.94	1.5
20	2.8	17	22	9.7	7.3	23	2.1	2.2	8.8	.09	.16	1.0
21	9.9	25	17	9.6	5.9	19	2.0	1.7	7.1	.22	.08	.50
22	4.3	14	8.8	25	2.1	12	2.4	5.9	5.0	2.6	.07	.40
23	17	7.0	10	16	2.6	7.0	12	8.3	9.6	.25	.06	.30
24	25	4.3	6.3	3.7	25	4.9	7.4	4.2	4.0	.19	.05	.30
25	22	6.3	4.7	3.7	23	3.7	8.6	3.1	8.2	11	.09	2.5
26	28	15	6.8	4.7	2.2	2.9	9.4	8.0	11	14	.10	2.0
27	20	20	9.1	4.0	6.5	2.3	4.2	4.4	6.4	17	.50	1.5
28	8.7	13	5.7	3.8	12	2.0	2.4	2.3	6.8	22	1.1	8.0
29	5.4	15	4.8	4.0	---	1.9	2.2	1.5	3.4	15	1.6	3.5
30	3.5	6.1	3.8	2.1	---	1.6	4.9	1.4	1.1	4.1	2.1	2.0
31	2.7	---	5.2	4.6	---	1.4	---	1.5	---	.14	1.4	---
TOTAL	337.4	395.9	390.7	295.1	288.9	291.1	164.7	214.2	150.21	177.23	69.08	111.25
MEAN	10.9	13.2	12.6	9.52	10.3	9.39	5.49	6.91	5.01	5.72	2.23	3.71
MAX	28	28	46	48	27	37	16	18	18	22	22	15
MIN	2.0	2.0	1.8	1.3	1.0	1.4	1.1	1.4	.43	.00	.05	.30
AC-FT	669	785	775	585	573	577	327	425	298	352	137	221

CAL YR 1978 TOTAL 4762.38 MEAN 13.0 MAX 47 MIN .19 AC-FT 9450
WTR YR 1979 TOTAL 2885.77 MEAN 7.91 MAX 48 MIN .00 AC-FT 5720

16727000 UPPER HAMAKUA DITCH ABOVE PUUKAPU RESERVOIR, NEAR KAMUELA

LOCATION.--Lat 20°02'53", long 155°37'17", Hydrologic Unit 20010000, on right bank 25 ft (7.6 m) downstream from pipe railed bridge and 4.0 mi (6.4 km) northeast of Kamuela Post Office.

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,890 ft (881 m), from topographic map.

REMARKS.--Records good. Ditch diverts above into 60 mg Waimea Reservoir for use in vicinity of Kamuela. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 11 ft^3/s (0.28 m^3/s) Oct. 29, Nov. 2, 3, 1977, Mar. 19, 20, 1978; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 7.7 ft^3/s (0.22 m^3/s) Oct. 8, 9, Nov. 16; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.27	.04	.05	.04	.05	.00	3.5	.00	.10	.02	.00
2	.06	.02	.04	.05	.00	.05	.03	3.0	.00	.01	.02	.06
3	.03	.03	.00	.01	.00	.05	.08	3.0	.00	.00	.12	.06
4	.05	.03	.00	.00	.00	.05	.05	2.5	.00	.05	.10	.02
5	4.0	.04	.06	.02	.01	.05	.04	2.5	.00	.04	.10	.00
6	4.6	.06	1.7	.08	.06	.05	.04	2.0	.00	.02	.02	.00
7	4.2	.04	2.9	.10	.04	.05	.04	2.0	.00	.10	.00	.00
8	7.7	.04	4.0	.10	.05	.05	.04	1.5	.00	.04	.00	.00
9	7.7	.01	4.0	.10	.05	.15	.05	1.5	.00	.03	.00	.03
10	7.3	.00	4.0	.08	.05	.05	.04	1.4	.00	.01	.02	.03
11	5.3	.00	4.0	.12	.15	.05	.00	.70	.01	.00	.02	.02
12	6.9	.08	3.8	.50	.06	.54	.00	.00	2.0	.00	.01	.00
13	2.4	.05	3.8	.75	.05	2.2	.00	.05	3.2	.00	.01	.00
14	.08	.21	3.8	.40	.05	2.3	.00	.04	.77	.02	.02	.00
15	.08	4.8	3.6	.55	.05	2.4	.00	.04	.00	.05	2.5	.00
16	.08	7.7	3.4	.27	.04	2.8	.01	.04	.03	.04	4.8	.00
17	.03	7.5	3.0	.04	.04	2.6	.00	3.6	.03	.03	1.4	.00
18	.00	7.5	3.2	.04	.05	2.6	.01	3.0	.03	.00	.03	.04
19	.00	5.0	3.4	.03	.03	2.3	.03	1.5	4.7	.00	.02	.01
20	.00	4.6	3.4	.10	.05	2.6	.00	1.4	5.6	.00	.00	.00
21	.03	6.0	3.2	.04	.03	2.6	.00	1.1	5.2	.00	.02	.00
22	.01	2.2	3.2	1.0	.03	.79	.00	1.6	4.1	.04	.02	.00
23	.02	.03	3.2	.15	.02	.05	.04	2.6	7.3	.00	.00	.00
24	.03	.03	2.8	.03	.15	.05	1.6	1.4	4.6	.00	.00	.01
25	.03	.03	2.0	.03	.15	.04	3.4	.62	4.1	.02	.00	.04
26	.03	.04	2.2	.03	.03	.04	3.4	.10	7.3	.04	.00	.03
27	4.7	.05	3.0	.03	.05	.05	2.4	.10	4.8	3.1	.00	.02
28	3.8	.05	.90	.03	.05	.01	1.5	.01	4.8	6.0	.00	1.8
29	2.4	.05	.05	.04	---	.01	1.4	.00	4.1	7.3	.00	4.1
30	1.9	.04	.05	.02	---	.00	2.0	.00	1.9	2.6	.00	2.4
31	1.1	---	.05	.02	---	.00	---	.00	---	.02	.00	---
TOTAL	64.62	46.50	72.79	4.81	1.38	24.63	16.20	40.80	64.57	19.66	9.65	8.67
MEAN	2.08	1.55	2.35	.16	.049	.79	.54	1.32	2.15	.63	.31	.29
MAX	7.7	7.7	4.0	1.0	.15	2.8	3.4	3.6	7.3	7.3	4.8	4.1
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	128	92	144	9.5	2.7	49	32	81	128	39	19	17

CAL YR 1978 TOTAL 1018.51 MEAN 2.79 MAX 11 MIN .00 AC-FT 2020
WTR YR 1979 TOTAL 374.28 MEAN 1.03 MAX 7.7 MIN .00 AC-FT 742

16756000 KOHAKOHAU STREAM NEAR KAMUELA

LOCATION.--Lat 20°02'38", long 155°41'10", Hydrologic Unit 20010000, on left bank 0.6 mi (1.0 km) upstream from Oolamakapehu Gulch and 1.7 mi (2.7 km) northwest of Kamuela.

DRAINAGE AREA.--2.51 mi² (6.50 km²).

PERIOD OF RECORD.--March 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,273 ft (997.6 m) above mean sea level (by stadia survey by State Department of Land and Natural Resources). Prior to Jan. 11, 1967, at site 0.5 mi (0.8 km) upstream at different datums.

REMARKS.--Records good. Parker Ranch pipeline diverts above station at altitude 4,250 ft (1,295 m). Hawaii Division of Water and Land Development diverts by pipeline 0.3 mi (0.5 km) above station at altitude 3,400 ft (1,036 m) for domestic use in the Kamuela and Kawaihae areas since Aug. 20, 1973. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--23 years, 8.47 ft³/s (0.240 m³/s), 6,140 acre-ft/yr (7.57 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,880 ft³/s (110 m³/s) Aug. 7, 1958, gage height, 10.76 ft (3.280 m), site and datum then in use, from rating curve extended above 70 ft³/s (1.98 m³/s), by test of model of station site; no flow at times in 1968, 1971-79.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 310 ft³/s (8.78 m³/s) and maximum (*), from rating curve extended above 46 ft³/s (1.30 m³/s) on basis of computation of flow over dam at gage height 6.20 ft (1.890 m):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 6	0300	*1250	35.4	*5.60	1.707	Feb. 10	1415	555	15.7	4.85	1.478
Jan. 13	2245	484	13.7	4.74	1.445	Feb. 25	1700	1130	32.0	5.50	1.676
Jan. 22	1100	618	17.5	4.94	1.506						

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.47	.74	1.0	8.6	15	.03	1.8	.03	3.9	3.6	.00
2	.00	.16	.60	.90	3.3	5.3	.03	2.1	.01	2.8	4.1	.00
3	.00	.00	.56	.82	2.3	3.2	.03	9.9	.01	13	32	.00
4	2.8	.00	.17	.76	1.9	2.4	9.0	9.9	.01	12	27	.30
5	7.5	.00	7.6	.53	2.1	2.0	1.1	2.3	.00	18	42	1.3
6	.81	4.7	161	.02	26	1.8	5.3	1.5	.00	20	7.3	.61
7	.04	1.2	14	.00	4.4	1.7	8.7	1.3	.00	76	3.6	.01
8	23	1.2	5.8	.00	2.4	1.6	2.4	1.2	.00	42	2.6	2.7
9	13	.74	26	.00	2.7	85	1.6	.57	.00	15	2.1	5.5
10	4.3	.52	24	.00	92	56	1.2	.00	.00	5.3	1.8	2.1
11	1.1	.43	7.3	5.7	38	11	1.1	.00	12	3.6	1.6	1.4
12	1.5	1.4	21	82	34	4.0	.95	.00	43	2.5	1.4	1.1
13	.91	4.8	14	178	27	2.8	.51	.00	20	2.0	1.4	.52
14	.87	11	32	182	38	9.8	.05	2.4	3.2	12	2.6	.01
15	.78	21	18	187	47	17	.06	20	1.8	18	37	.00
16	.96	12	4.1	115	21	31	.07	10	1.4	6.8	34	.00
17	.64	4.4	2.7	54	19	16	.11	8.7	1.3	8.2	6.7	.00
18	.53	3.6	4.8	14	30	3.9	1.5	2.4	8.2	3.7	3.2	.00
19	.08	1.6	12	6.0	9.0	2.6	1.6	1.6	52	2.9	2.3	.00
20	.00	12	24	58	12	23	.37	1.2	24	2.3	1.7	.00
21	.00	26	12	43	11	15	.15	1.0	13	2.4	1.5	.00
22	.00	3.1	3.5	242	3.7	6.9	.17	.86	22	34	1.4	.00
23	.36	1.6	2.8	106	2.6	3.0	16	2.1	53	21	1.3	.00
24	3.5	1.1	2.0	37	48	2.2	3.2	1.3	24	8.1	.78	.00
25	2.4	.95	1.6	14	133	1.8	1.3	1.0	35	26	.02	.00
26	6.0	1.1	1.5	8.8	24	1.5	2.7	1.5	56	11	.00	.00
27	4.0	4.1	1.6	6.7	32	1.3	1.6	1.0	38	14	.00	.54
28	1.5	2.2	1.4	9.9	28	1.2	1.2	.11	32	31	.00	1.8
29	.88	2.1	1.3	13	---	1.2	1.1	.04	32	14	.00	.03
30	.67	1.2	1.1	4.2	---	1.0	.60	.08	9.5	4.4	.00	.00
31	.56	---	1.1	22	---	.14	---	.07	---	3.2	.00	---
TOTAL	78.69	124.67	410.27	1392.33	703.0	330.34	63.73	85.93	481.46	439.1	225.00	17.92
MEAN	2.54	4.16	13.2	44.9	25.1	10.7	2.12	2.77	16.0	14.2	7.26	.60
MAX	23	26	161	242	133	85	16	20	56	76	42	5.5
MIN	.00	.00	.17	.00	1.9	.14	.03	.00	.00	2.0	.00	.00
AC-FT	156	247	814	2760	1390	655	126	170	955	871	446	36

CAL YR 1978 TOTAL 2931.11 MEAN 8.03 MAX 161 MIN .00 AC-FT 5810
WTR YR 1979 TOTAL 4352.44 MEAN 11.9 MAX 242 MIN .00 AC-FT 8630

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA

LOCATION.--Lat 20°02'48", long 155°39'58", Hydrologic Unit 20010000, on right bank 160 ft (49 m) upstream from Marine Dam, 0.4 mi (0.6 km) east of Puu Ohu, and 1.6 mi (2.6 km) north of Kamuela.

DRAINAGE AREA.--1.18 mi² (3.06 km²).

PERIOD OF RECORD.--May 1947 to current year.

REVISED RECORDS.--WSP 1569: Drainage area. WSP 1937: 1948(M), 1949-51(P), 1952(M), 1954(M), 1955, 1956-57(P), 1958-60.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,460 ft (1,055 m), from topographic map.

REMARKS.--Records good. Diversion above station for livestock and domestic use. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--32 years, 8.67 ft³/s (0.246 m³/s), 6,280 acre-ft/yr (7.74 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,390 ft³/s (96.0 m³/s) Oct. 23, 1957, gage height, 6.99 ft (2.131 m), from rating curve extended above 120 ft³/s (3.40 m³/s) on basis of computations of flow over dam at gage heights 5.46 ft (1.664 m) and 5.96 ft (1.817 m); minimum, 0.59 ft³/s (0.017 m³/s) Oct. 3-6, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 180 ft³/s (5.10 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 6	0230	*1020	28.9	*5.00	1.524	Jan. 20	0745	428	12.1	4.07	1.241
Jan. 11	1330	637	18.0	4.47	1.362	Feb. 25	1700	480	13.6	4.18	1.274
Jan. 14	0100	220	6.23	3.46	1.055						

Minimum discharge, 1.8 ft³/s (0.051 m³/s) June 7-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	2.6	3.7	3.2	3.6	9.8	3.1	9.5	2.3	5.7	5.0	2.6
2	4.3	2.6	3.5	2.9	6.7	7.3	3.1	6.6	2.2	4.6	5.6	6.9
3	3.6	2.9	3.3	2.7	8.1	5.6	3.2	13	2.1	11	27	7.1
4	14	2.7	3.3	2.6	4.6	4.8	5.0	9.1	2.0	11	19	5.3
5	12	3.1	17	2.5	3.8	4.3	5.0	4.3	2.0	13	27	3.5
6	4.6	12	142	2.4	3.9	4.0	6.3	3.5	1.9	22	8.7	2.9
7	4.1	6.6	10	2.4	45	3.8	7.2	3.3	1.9	76	5.7	3.0
8	16	4.1	6.4	3.1	33	3.8	4.3	3.3	1.8	37	4.6	11
9	13	3.0	13	40	15	73	3.7	3.1	1.9	16	4.0	8.2
10	7.5	2.7	13	84	19	39	3.3	2.8	2.0	9.2	3.8	4.0
11	6.4	2.7	5.6	208	15	9.0	3.1	2.3	14	7.1	3.5	3.2
12	7.5	12	10	156	12	6.0	2.9	2.2	26	5.2	3.3	2.8
13	4.4	13	8.4	99	10	5.5	2.9	2.7	11	4.4	3.3	2.7
14	3.0	16	17	97	15	7.8	2.9	7.8	3.8	18	7.9	2.6
15	2.9	31	10	23	27	9.0	3.0	18	2.9	19	37	2.6
16	3.0	23	4.6	10	15	15	2.9	9.4	2.7	11	31	2.5
17	2.7	13	3.7	8.7	15	10	3.0	7.0	2.9	14	10	2.8
18	2.6	9.5	3.7	56	21	5.6	4.2	3.5	8.0	6.6	5.4	2.9
19	2.5	5.3	5.8	26	9.5	4.9	4.9	2.8	46	5.1	4.3	2.6
20	2.7	15	12	240	13	16	3.4	2.5	20	4.2	3.7	2.4
21	3.8	19	8.1	46	9.6	13	3.2	2.3	16	6.6	3.5	2.4
22	2.8	5.9	4.6	18	5.7	7.8	3.2	5.0	22	28	3.3	2.4
23	9.1	4.4	4.9	11	5.4	5.3	7.2	4.6	44	12	3.2	2.4
24	13	3.9	3.7	9.9	47	4.4	4.9	2.9	20	7.9	3.2	2.4
25	9.6	4.7	3.4	7.7	88	4.0	5.6	2.6	39	18	3.1	2.7
26	18	5.6	3.5	7.8	17	3.7	5.9	3.6	50	10	2.7	2.5
27	10	8.4	4.4	6.1	15	3.5	3.8	2.7	27	13	2.9	4.7
28	4.4	5.7	3.6	5.0	16	3.2	3.3	2.4	32	34	2.8	6.1
29	3.5	5.2	3.3	8.2	---	3.5	3.2	2.3	21	12	2.9	3.8
30	3.0	4.0	3.0	5.5	---	3.2	4.0	2.7	10	6.5	2.9	3.0
31	2.9	---	3.2	4.4	---	3.1	---	2.6	---	5.3	2.6	---
TOTAL	200.4	249.6	341.7	1199.1	498.9	298.9	121.7	150.4	438.4	453.4	252.9	114.0
MEAN	6.46	8.32	11.0	38.7	17.8	9.64	4.06	4.85	14.6	14.6	8.16	3.80
MAX	18	31	142	240	88	73	7.2	18	50	76	37	11
MIN	2.5	2.6	3.0	2.4	3.6	3.1	2.9	2.2	1.8	4.2	2.6	2.4
AC-FT	397	495	678	2380	990	593	241	298	870	899	502	226

CAL YR 1978 TOTAL 3232.8 MEAN 8.86 MAX 142 MIN 1.5 AC-FT 6410
WTR YR 1979 TOTAL 4319.4 MEAN 11.8 MAX 240 MIN 1.8 AC-FT 8570

16759000 HAUANI GULCH NEAR KAMUELA

LOCATION.--Lat 20°02'28", long 155°39'05", Hydrologic Unit 20010000, on left bank 800 ft (244 m) downstream from small tributary and 1.8 mi (2.9 km) northeast of Kamuela.

DRAINAGE AREA.--0.47 mi² (1.22 km²).

PERIOD OF RECORD.--March 1956 to current year. Prior to July 1960, published as Hauani Stream near Kamuela.

GAGE.--Water-stage recorder. Concrete control since Feb. 27, 1963. Datum of gage is 3,117.42 (950.190 m) above mean sea level (Hawaii County Board of Water Supply bench mark).

REMARKS.--Records good. Diversion above station for livestock and domestic use. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--23 years, 1.51 ft³/s (0.043 m³/s), 1,090 acre-ft/yr (1.34 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 590 ft³/s (16.7 m³/s) Oct. 20, 1974, gage height, 4.18 ft (1.274 m), from rating curve extended above 11 ft³/s (0.31 m³/s) on basis of slope-conveyance study; maximum gage height, 4.65 ft (1.417 m) Oct. 23, 1957; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 78 ft³/s (2.21 m³/s) and maximum (*), from rating curve extended above 54 ft³/s (1.53 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 6	0245	*500	14.2	*4.00	1.219	Jan. 22	1630	205	5.81	3.24	0.988
Jan. 13	2215	300	8.50	3.55	1.082	Feb. 25	1630	205	5.81	3.24	.988
Jan. 16	0915	126	3.57	2.88	.878	June 25	1830	98	2.78	2.72	.829

Minimum discharge, 0.07 ft³/s (0.020 m³/s) June 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.42	.30	.32	.32	.86	1.9	.66	.78	.13	.96	.61	.26
2	.57	.32	.28	.27	.67	1.0	.61	.50	.11	.78	.71	.52
3	.40	.35	.25	.24	.59	.86	.67	.52	.09	1.5	6.7	.62
4	2.1	.29	.24	.23	.54	.75	.74	1.4	.09	1.5	4.0	.50
5	1.4	.39	7.4	.21	.63	.69	.75	.51	.08	1.6	5.7	.28
6	.53	1.9	73	.20	2.5	.64	.96	.36	.08	8.7	1.1	.24
7	.47	.86	2.1	.21	.71	.59	.99	.33	.07	25	.76	.24
8	1.8	.48	.91	.23	.60	.62	.75	.29	.07	7.8	.60	1.2
9	2.2	.31	1.8	.23	.67	35	.69	.25	.08	2.7	.50	.71
10	.98	.26	1.5	.23	5.6	10	.65	.20	.08	1.3	.47	.30
11	.75	.76	.65	2.2	7.1	1.4	.61	.17	2.1	1.0	.43	.22
12	.75	3.3	1.2	29	4.6	.94	.59	.17	4.3	.76	.41	.19
13	.44	1.5	1.4	61	3.0	.95	.57	.22	1.3	.64	.43	.17
14	.37	3.5	3.0	53	3.8	1.1	.61	1.0	.31	3.5	1.8	.16
15	.39	3.9	1.3	53	6.2	1.1	.72	2.4	.20	2.7	7.4	.15
16	.51	3.9	.57	35	2.5	3.1	.61	1.2	.16	1.5	5.6	.14
17	.36	1.4	.44	8.0	2.3	1.4	.64	.77	.22	2.6	1.4	.18
18	.32	1.2	.44	2.2	4.5	.79	.85	.32	1.5	.93	.75	.20
19	.29	.61	.83	1.3	1.3	.76	.74	.24	12	.72	.61	.15
20	.35	3.1	2.2	8.1	2.2	2.6	.44	.20	4.8	.52	.50	.14
21	.51	3.3	1.5	4.9	1.4	1.7	.41	.18	3.8	1.5	.45	.12
22	.28	.70	.59	69	.87	1.0	.39	.37	5.6	7.9	.41	.12
23	1.9	.50	.69	23	.99	.73	.61	.30	12	1.9	.39	.12
24	2.1	.39	.43	4.8	17	.64	.49	.19	5.3	.97	.40	.12
25	1.2	1.0	.36	2.1	29	.56	.50	.17	14	2.6	.36	.20
26	2.8	1.0	.43	1.8	4.1	.53	.58	.29	12	1.2	.34	.12
27	1.4	.89	.50	1.4	2.4	.19	.33	.17	6.4	1.6	.32	.24
28	.60	.49	.35	1.1	3.0	.57	.25	.14	9.1	9.0	.30	.43
29	.43	.41	.32	.96	---	.67	.23	.15	4.5	1.8	.30	.18
30	.37	.34	.30	.79	---	.61	.27	.17	1.8	.89	.30	.12
31	.33	---	.33	1.1	---	.59	---	.16	---	.68	.27	---
TOTAL	27.32	37.65	105.63	366.12	109.63	73.98	17.91	14.12	102.27	96.75	44.32	8.34
MEAN	.88	1.26	3.41	11.8	3.92	2.39	.60	.46	3.41	3.12	1.43	.28
MAX	2.8	3.9	73	69	29	35	.99	2.4	14	25	7.4	1.2
MIN	.28	.26	.24	.20	.54	.19	.23	.14	.07	.52	.27	.12
AC-FT	54	75	210	726	217	147	36	28	203	192	88	17

CAL YR 1978 TOTAL 601.58 MEAN 1.65 MAX 73 MIN .08 AC-FT 1190
WTR YR 1979 TOTAL 1004.04 MEAN 2.75 MAX 73 MIN .07 AC-FT 1990

16759200 RIGHT BRANCH WAIAHA STREAM NEAR HOLUALOA

LOCATION.--Lat 19°38'41", long 155°54'55", Hydrologic Unit 20010000, on right bank 1,000 ft (305 m) upstream from reservoir, 1.0 mi (1.6 km) northeast of Holualoa Makai Camp, and 2.9 mi (4.7 km) northeast of Holualoa School.

DRAINAGE AREA.--1.89 mi² (4.90 km²).

PERIOD OF RECORD.--April 1960 to current year.

REVISED RECORDS.--WSP 2137: 1963-65(M).

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 3,280 ft (1,000 m), from topographic map.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station.

AVERAGE DISCHARGE.--19 years, 0.313 ft³/s (0.009 m³/s), 227 acre-ft/yr (280,000 m³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,630 ft³/s (46.2 m³/s) Oct. 3, 1968, gage height, 5.78 ft (1.762 m), from rating curve extended above 9.1 ft³/s (0.26 m³/s) on basis of slope-area measurements at gage heights 4.07 ft (1.241 m) and 5.78 ft (1.762 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 57 ft³/s (1.61 m³/s) Feb. 10, gage height, 3.10 ft (0.945 m), no peak above base of 115 ft³/s (3.26 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.04	.00	.00	.00	.04	.00	.00	.16	.00	.86	.02
2	.02	.17	.00	.00	.00	.02	.00	.00	.27	.03	.23	.02
3	.02	.36	.00	.00	.00	.01	.00	.00	.17	.09	.12	.11
4	.01	.16	.00	.00	.00	.02	.00	.00	.08	.16	.10	2.0
5	.01	.10	.00	.00	.00	.01	.19	.00	.06	.16	.10	2.0
6	.01	1.4	.00	.00	.10	.01	.11	.00	.11	.30	.07	.77
7	.01	.30	.00	.00	.02	.00	.04	.00	.11	.86	.04	.25
8	.01	.09	.00	.00	.06	.00	.02	.00	.10	.27	.02	.12
9	.01	.04	.00	.00	.21	.00	.01	.00	.11	.10	.02	.16
10	.02	.01	.00	.00	6.3	.00	.02	.03	.09	.08	.01	.16
11	.01	.01	.00	.00	.63	.00	.01	.17	.09	.04	.01	.45
12	.01	.07	.00	.00	.11	.00	.00	.25	.11	.03	.01	.16
13	.00	.16	.00	.00	.05	.00	.01	.19	.25	.03	.00	.09
14	.00	.14	.00	.00	.04	.00	.04	.12	.21	.03	.00	.07
15	.00	.05	.00	.00	.02	.00	2.3	.09	.09	.03	.00	.05
16	.00	.02	.00	.00	.01	.00	.17	.08	.04	.08	.11	.04
17	.00	.01	.00	.00	.02	.00	.40	.02	.05	.08	.07	.05
18	.45	.01	.00	.00	.14	.00	.39	.01	.16	.10	.19	.04
19	.19	.00	.00	.00	.07	.00	.25	.01	.08	.09	.55	.03
20	.09	.00	.00	.00	.19	.00	.45	.01	.04	.08	.33	.04
21	.05	.00	.00	.00	.19	.00	7.4	.00	.02	.07	.27	.03
22	.02	.00	.00	.00	.07	.00	.30	.00	.01	.09	.33	.02
23	.01	.00	.00	.04	.05	.00	.10	.01	.01	.16	.25	.01
24	.07	.00	.00	.01	1.1	.00	.03	.01	.00	.16	.17	.01
25	.04	.00	.00	.00	.36	.00	.04	.08	.00	.09	.30	1.5
26	.02	.00	.00	.00	.10	.00	.07	.11	.01	.11	.25	.45
27	.07	.00	.00	.00	.05	.00	.02	.69	.01	.25	.16	.12
28	.09	.00	.00	.00	.03	.00	.01	.72	.01	.25	.11	.06
29	.04	.00	.00	.00	---	.00	.00	1.4	.00	.11	.06	.04
30	.02	.00	.00	.00	---	.00	.00	.39	.00	.08	.04	.10
31	.01	---	.00	.00	---	.00	---	.27	---	1.8	.02	---
TOTAL	1.33	3.14	.00	.05	9.92	.11	12.38	4.66	2.45	5.81	4.80	8.97
MEAN	.043	.10	.000	.002	.35	.004	.41	.15	.082	.19	.15	.30
MAX	.45	1.4	.00	.04	6.3	.04	7.4	1.4	.27	1.8	.86	2.0
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
AC-FT	2.6	6.2	.00	.10	20	.2	25	9.2	4.9	12	9.5	18

CAL YR 1978 TOTAL 23.96 MEAN .066 MAX 2.4 MIN .00 AC-FT 48
WTR YR 1979 TOTAL 53.62 MEAN .15 MAX 7.4 MIN .00 AC-FT 106

16759800 KIILAE STREAM NEAR HONAUNAU

LOCATION.--Lat 19°24'52", long 155°50'56", Hydrologic Unit 20010000, on right bank 2.4 mi (3.9 km) northeast of Kealia and 3.0 mi (4.8 km) southeast of Honaunau Post Office.

DRAINAGE AREA.--0.67 mi² (1.74 km²).

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,898 ft (883.3 m) above mean sea level (by stadia traverse).

REMARKS.--Records good. No diversion above station. Banks overflow at high stage and part of overflow is lost in lava. Recording rain gage located at station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--21 years, 0.208 ft³/s (0.006 m³/s), 151 acre-ft/yr (186,000 m³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 104 ft³/s (2.95 m³/s) Jan. 13, 1959, gage height, 2.32 ft (0.707 m), from rating curve extended above 5.7 ft³/s (0.161 m³/s); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 25 ft³/s (0.71 m³/s) and maximum (*), from rating curve extended above 17 ft³/s (0.48 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 27	1530	25	0.71	1.58	0.482	Feb. 10	1600	28	0.79	1.61	0.491
Nov. 6	1430	26	.74	1.59	.485	Feb. 24	1600	*40	1.13	*1.72	.524
Nov. 13	1530	27	.76	1.60	.488	Apr. 15	Unknown	37	1.05	1.70	.518

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.04	.00	.00	.00	.78	.00	.15	1.3	.00	2.2	.00
2	.06	.56	.00	.00	.00	.16	.34	.10	.48	2.2	.22	.13
3	.18	1.1	.03	.00	.00	.04	.30	.05	.22	.52	.05	.14
4	.03	.10	.01	.00	.00	.02	.90	.05	.18	.34	1.4	.01
5	.00	1.2	.00	.00	.82	.00	.26	.00	.04	.16	.52	.50
6	.15	5.2	.00	.00	.08	.00	.10	.00	.04	.40	.10	3.1
7	.04	.26	.00	.00	.05	.00	.07	.00	.05	.26	.02	.92
8	.00	.05	.00	.00	.07	.00	.04	.00	.04	.04	.01	.26
9	.01	.02	.00	.00	.07	.01	.02	.00	.05	.05	.01	.14
10	.02	.00	.00	.00	6.4	.00	.07	.06	.04	.15	.06	.15
11	.00	.00	.19	.00	.61	.00	.04	.11	.06	.10	.02	1.0
12	.00	.99	.03	.13	.07	.00	.00	.04	.06	.20	.01	.30
13	.00	2.6	.02	.09	.10	.00	.73	.11	1.4	.15	.01	.20
14	.00	.22	.02	.00	.07	.00	.16	.78	.40	.10	.01	.15
15	.00	1.7	.47	.00	.07	.00	3.0	.44	.11	.35	.00	.10
16	.00	.24	.06	.39	.02	.00	.50	.11	.49	.20	.29	.10
17	.00	.04	.00	.60	.00	.00	.75	.04	.28	.25	1.6	.05
18	.00	.01	.01	.40	.04	.00	.70	.02	.10	.30	.16	.05
19	.10	.00	1.3	.04	.01	.01	.60	.04	.02	.61	.07	.05
20	.20	.00	.11	.02	.08	.00	.80	.02	.00	.11	.26	.05
21	.13	.01	.02	.00	.04	.00	6.0	.00	.00	.04	.11	.00
22	.06	.00	.00	.00	.18	.00	1.0	.00	.00	.59	.92	.00
23	.00	.00	.00	.00	.22	.00	.80	.01	.00	.61	.44	.00
24	.04	.00	.00	.00	5.2	.00	.75	.04	.73	.40	.52	.00
25	.00	.00	.00	.00	.61	.00	.70	.05	1.0	1.3	.78	3.0
26	.00	.00	.00	.00	1.7	.00	.60	.29	.16	.40	.20	.50
27	1.8	.00	.00	.00	.26	.00	.50	.55	.02	1.9	.14	.30
28	.48	.00	.00	.00	.54	.00	.40	.22	.03	.18	.16	.20
29	.22	.00	.00	.00	---	.00	.30	.44	.02	.03	.01	.15
30	1.8	.00	.00	.01	---	.00	.20	.40	.01	.07	.00	.20
31	.31	---	.00	.00	---	.00	---	1.9	---	.98	.00	---
TOTAL	5.63	14.34	2.27	1.68	17.31	1.02	20.63	6.02	7.33	12.99	10.70	11.75
MEAN	.18	.48	.073	.054	.62	.033	.69	.19	.24	.42	.35	.39
MAX	1.8	5.2	1.3	.60	6.4	.78	6.0	1.9	1.4	2.2	2.2	3.1
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	11	28	4.5	3.3	34	2.0	41	12	15	26	21	23

CAL YR 1978 TOTAL 84.38 PEAK .23 MAX 5.2 MIN .00 AC-FT 167
WTR YR 1979 TOTAL 111.67 PEAK .31 MAX 6.4 MIN .00 AC-FT 221

16764000 HILBA GULCH TRIBUTARY NEAR HONUAPO

LOCATION.--Lat 19°10'27", long 155°35'58", Hydrologic Unit 20010000, on right bank 0.5 mi (0.8 km) upstream from mouth, 6.6 mi (10.6 km) northwest of Honuapo, and 6.7 mi (10.8 km) west of Punaluu.

DRAINAGE AREA.--9.17 mi² (23.75 km²).

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,940 ft (896 m), from topographic map.

REMARKS.--Records good. No diversion above station. Recording rain gage located at station.

AVERAGE DISCHARGE.--13 years, 8.70 ft³/s (0.264 m³/s), 6,300 acre-ft/yr (7.77 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,290 ft³/s (36.5 m³/s) Apr. 15, 1979, gage height, 6.46 ft (1.969 m), from rating curve extended above 75 ft³/s (2.12 m³/s); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*), from rating curve extended as explained above:

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 25	1800	730	20.7	5.30	1.615	Feb. 5	0530	1200	34.0	6.31	1.923
Nov. 6	1630	650	18.4	5.10	1.554	Feb. 20	0430	1280	36.2	6.45	1.966
Nov. 12	1300	940	26.6	5.80	1.768	Apr. 15	0530	*1290	36.5	*6.46	1.969

Minimum discharge, no flow for part of Mar. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	19	34	.60	.69	30	6.1	10	47	.10	.39	.07
2	13	70	11	.57	.50	8.7	28	2.5	22	.07	.15	1.9
3	1.9	19	18	.56	2.9	3.0	5.6	2.0	2.9	.10	.10	24
4	61	2.5	8.0	.46	14	1.4	11	1.5	.66	8.1	.06	10
5	7.4	17	49	.46	360	1.2	16	1.0	.21	5.2	1.8	57
6	6.1	90	32	.42	11	1.2	34	.90	.35	.35	.25	5.5
7	12	4.7	5.2	.40	5.6	.87	12	.80	.94	.35	.06	13
8	44	1.4	3.0	.18	2.6	.80	1.3	.70	1.1	9.3	.07	9.5
9	4.2	1.0	102	.34	3.7	.80	.12	.60	1.0	.72	.06	2.0
10	1.1	.76	18	.38	21	.80	.09	.50	.61	.12	.07	3.0
11	3.3	3.9	3.7	.82	231	.76	.08	.50	8.4	.07	.07	1.8
12	4.5	81	2.3	.49	575	7.2	.12	10	14	.04	7.8	19
13	.62	16	1.9	.29	.58	1.4	.36	12	6.6	.04	.39	1.2
14	.80	4.3	1.8	.29	.53	1.2	.12	15	2.6	3.6	.15	.35
15	27	3.6	1.7	.44	26	7.2	200	75	2.6	.94	17	.40
16	17	2.7	1.5	.43	8.0	1.5	6.9	50	19	.16	5.0	28
17	19	2.3	1.4	.28	12	.72	1.6	10	6.4	.15	1.6	18
18	25	13	1.5	.22	21	.72	3.7	6.0	2.0	5.8	.28	4.5
19	3.5	13	1.4	.19	231	1.5	32	12	13	25	.53	5.8
20	3.9	43	1.3	.17	575	.40	9.3	5.0	1.8	2.6	4.3	2.4
21	7.2	52	1.2	.09	12	9.7	8.9	1.5	.40	.48	5.2	.68
22	2.5	5.7	1.1	.11	4.4	3.5	2.0	20	43	4.8	2.5	.38
23	1.2	2.7	.95	22	5.1	.49	.56	3.2	45	.42	44	3.4
24	.94	2.5	.93	3.4	45	.13	.47	2.4	5.4	3.7	1.2	14
25	84	3.2	.90	5.6	15	.10	6.3	.69	.72	1.6	.67	1.0
26	31	3.7	.83	2.4	8.7	.05	2.3	.93	9.0	22	.30	.72
27	4.3	3.2	.80	.77	38	.03	.60	1.0	2.8	28	.21	.40
28	8.6	2.3	.45	12	33	.02	.40	2.9	.60	2.9	21	10
29	22	1.9	.69	8.2	---	.02	5.5	1.5	.40	.31	10	2.0
30	8.0	9.9	.61	1.3	---	.02	5.0	19	.18	8.5	.23	4.4
31	24	---	.63	1.0	---	.01	---	22	---	5.7	.10	---
TOTAL	453.26	495.26	307.79	64.86	2263.30	85.44	400.42	291.12	260.77	141.22	133.54	244.40
MEAN	14.6	16.5	9.93	2.09	80.8	2.76	13.3	9.39	8.69	4.56	4.31	8.15
MAX	84	90	102	22	575	30	200	75	47	28	44	57
MIN	.62	.76	.45	.09	.50	.01	.08	.50	.18	.04	.06	.07
AC-FT	899	982	611	129	4490	169	794	577	517	280	265	485

CAL YR 1978 TOTAL 3338.11 MEAN 9.15 MAX 102 MIN .00 AC-FT 6620
WTR YR 1979 TOTAL 5141.38 MEAN 14.1 MAX 575 MIN .01 AC-FT 10200

16765000 HILBA GULCH TRIBUTARY NO. 2 NEAR HONUAPO

LOCATION.--Lat 19°10'17", long 155°36'05", Hydrologic Unit 20010000, on right bank 0.5 mi (0.8 km) upstream from mouth, 6.3 mi (10.1 km) northwest of Honuapo, and 6.6 mi (10.6 km) west of Punaluu.

DRAINAGE AREA.--1.86 mi² (4.82 km²).

PERIOD OF RECORD.--February 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,880 ft (878 m), from topographic map.

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the year are published elsewhere in this report.

AVERAGE DISCHARGE.--13 years, 3.00 ft³/s (0.085 m³/s), 2,170 acre-ft/yr (2.68 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 551 ft³/s (15.6 m³/s) Apr. 15, 1979, gage height, 7.30 ft (2.225 m), from rating curve extended above 41 ft³/s (1.16 m³/s); no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 310 ft³/s (8.78 m³/s) and maximum (*), from rating curve extended above 41 ft³/s (1.16 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 5	0930	335	9.49	6.10	1.859
Feb. 20	0430	496	14.0	7.02	2.140
Apr. 15	0600	*551	15.6	*7.30	2.225

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	5.2	2.6	.00	.00	8.6	.55	.40	12	.00	.07	.00
2	1.7	19	.60	.00	.00	2.0	10	1.2	5.0	.00	.00	.65
3	.05	6.3	.40	.00	.00	.16	4.4	.22	.60	.00	.00	9.8
4	17	.22	.06	.00	2.2	.00	6.7	.22	.00	1.5	.00	.60
5	1.9	5.4	1.5	.00	124	.00	4.9	.03	.00	2.8	.80	28
6	.27	27	.48	.00	3.9	.00	18	.00	.00	.40	.02	2.0
7	2.3	1.0	.16	.00	1.5	.00	7.2	.00	.00	.00	.00	9.2
8	14	.00	.00	.00	.09	.00	.60	.00	.10	1.8	.00	4.6
9	.60	.00	13	.00	.52	.00	.00	.00	.05	1.0	.00	.32
10	.00	.00	2.4	.00	18	.00	.00	.00	.00	.00	.00	.48
11	.00	1.1	.03	.00	1.2	.00	.00	3.1	1.0	.00	.00	.36
12	.13	12	.00	.00	.09	.00	.00	3.2	2.0	.00	1.5	7.0
13	.00	2.0	.00	.00	.00	.00	.00	5.0	.50	.00	.03	.22
14	.00	.07	.00	.00	.00	.00	.00	6.4	.40	.87	.00	.00
15	3.7	.00	.00	.00	8.7	2.4	109	24	.20	.32	2.0	.00
16	4.1	.00	.00	.00	1.5	.30	2.0	15	5.0	.01	.50	9.7
17	4.9	.00	.00	.00	3.2	.00	.04	1.2	1.0	.06	.00	5.1
18	10	.05	.00	.00	10	.00	.16	.63	.50	1.5	.00	.76
19	.19	.71	.00	.00	128	.00	8.5	2.2	4.0	10	.05	2.1
20	.09	13	.00	.00	264	.26	2.4	.40	.50	1.2	.50	.40
21	.80	18	.00	.00	3.0	1.6	1.5	.12	10	.16	.75	.04
22	.06	.32	.00	.00	.40	.72	.16	8.9	11	.97	.50	.00
23	.00	.00	.00	3.4	.80	.06	.00	.80	23	.09	5.0	.50
24	.00	.00	.00	.01	20	.00	.00	.60	10	1.7	.60	2.5
25	12	.00	.00	.03	4.4	.00	.54	.00	.19	.60	.02	.05
26	9.5	.00	.00	.02	2.4	.00	.22	.00	4.5	8.7	.00	.05
27	.60	.00	.00	.00	17	.00	.00	.00	1.4	12	.00	.00
28	1.7	.00	.00	3.6	12	.00	.00	.10	.52	1.2	5.0	1.5
29	5.1	.00	.00	1.1	---	.00	.00	.05	.00	.07	1.0	.10
30	1.2	.93	.00	.01	---	.00	.47	5.0	.00	2.1	.00	.50
31	5.5	---	.00	.00	---	.00	---	5.5	---	1.0	.00	---
TOTAL	97.89	112.30	21.23	8.17	626.90	16.10	177.34	84.27	93.46	50.05	18.74	86.53
MEAN	3.16	3.74	.68	.26	22.4	.52	5.91	2.72	3.12	1.61	.60	2.88
MAX	17	27	13	3.6	264	8.6	109	24	23	12	5.0	28
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	194	223	42	16	1240	32	352	167	185	99	37	172

CAL YR 1978 TOTAL 627.04 MEAN 1.72 MAX 27 MIN .00 AC-FT 1240
WTR YR 1979 TOTAL 1392.98 MEAN 3.82 MAX 264 MIN .00 AC-FT 2760

16767000 NINOLE GULCH NEAR PUNALUU

LOCATION.--Lat 19°10'44", long 155°33'46", Hydrologic Unit 20010000, on right bank 300 ft (91 m) downstream from forest-reserve boundary, 4.6 mi (7.4 km) northwest of Punaluu, and 6.0 mi (9.6 km) north of Honuapo.

DRAINAGE AREA.--15.5 mi² (40.1 km²).

PERIOD OF RECORD.--March 1966 to current year.

GAGE.--Water-stage recorder and sharp-crested weir. Altitude of gage is 2,080 ft (634 m), from topographic map.

REMARKS.--Records good except those for period of no gage-height record and those above 60 cfs, which are fair. No diversion above station.

AVERAGE DISCHARGE.--13 years, 3.91 ft³/s (0.111 m³/s), 2,830 acre-ft/yr (3.49 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,610 ft³/s (73.9 m³/s) June 1, 1979, gage height, 6.74 ft (2.054 m), from rating curve extended above 30 ft³/s (0.85 m³/s); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*), from rating curve extended above 30 ft³/s (0.85 m³/s):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 5	0500	1650	46.7	6.10	1.859	Apr. 15	0515	1230	34.8	5.79	1.765
Feb. 20	0230	2250	63.7	6.50	1.981	June 1	1645	*2610	73.9	*6.74	2.054

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.0	15	.00	.00	7.1	.00	.07	292	.00	.00	.00
2	.00	30	1.0	.00	.00	.14	6.3	.00	20	.00	.00	.00
3	.00	1.5	1.5	.00	.00	.00	.00	.00	.01	.00	.00	11
4	18	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.97
5	.26	2.0	25	.00	368	.00	1.4	.00	.00	.00	.00	48
6	.00	50	10	.00	1.1	.00	11	.00	.00	.00	.00	.55
7	.00	.50	.50	.00	.10	.00	.48	.00	.00	.00	.00	9.6
8	10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.2
9	.00	.00	65	.00	.00	.00	.00	.00	.00	.00	.00	.11
10	.00	.00	5.0	.00	4.0	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.50	.00	.98	.00	.00	.25	.00	.00	.00	.00
12	.00	40	.00	.00	.00	.00	.00	1.0	.00	.00	.00	1.6
13	.00	5.0	.00	.00	.00	.00	.00	1.5	.00	.00	.00	.12
14	.00	.00	.00	.00	.00	.00	.00	1.5	.00	.00	.00	.00
15	5.0	.00	.00	.00	3.2	.00	170	40	.00	.00	.00	.00
16	2.0	.00	.00	.00	.01	.00	.00	20	.00	.00	.00	4.2
17	.00	.00	.00	.00	.26	.00	.00	1.0	.00	.00	.00	2.7
18	.00	1.0	.00	.00	.64	.00	.00	.00	.00	.00	.00	.56
19	2.0	.50	.00	.00	263	.00	51	1.0	.00	4.7	.00	.00
20	.00	20	.00	.00	854	.00	2.8	.00	.00	2.0	.00	.00
21	.00	25	.00	.00	.52	.00	3.5	.00	.00	.22	.00	.00
22	.00	1.0	.00	.00	.00	.00	.02	5.0	.00	.14	.00	.00
23	.00	.00	.00	5.0	.01	.00	.00	.04	154	.00	43	.00
24	.00	.00	.00	.00	37	.00	.00	.00	.23	.00	.00	.00
25	35	.00	.00	.00	.53	.00	2.1	.00	.00	.35	.00	.00
26	5.0	.00	.00	.00	.01	.00	.05	.00	.00	3.0	.00	.00
27	.00	.00	.00	.00	13	.00	.00	.00	.00	15	.00	.00
28	.00	.00	.00	.50	12	.00	.00	.00	.00	2.2	3.8	.00
29	2.0	.00	.00	.00	---	.00	.00	.00	.00	.72	.52	.00
30	.00	.50	.00	.00	---	.00	1.7	3.9	.00	.23	.00	.00
31	2.5	---	.00	.00	---	.00	---	3.4	---	.06	.00	---
TOTAL	81.76	178.00	123.50	5.50	1558.50	7.24	250.35	78.66	466.24	28.62	47.72	80.61
MEAN	2.64	5.93	3.98	.18	55.7	.23	8.35	2.54	15.5	.92	1.54	2.69
MAX	35	50	65	5.0	854	7.1	170	40	292	15	43	48
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	162	353	245	11	3090	14	497	156	925	57	95	160

CAL YR 1978 TOTAL 638.63 MEAN 1.75 MAX 65 MIN .00 AC-FT 1270
WTR YR 1979 TOTAL 2906.70 MEAN 7.96 MAX 854 MIN .00 AC-FT 5770

NOTE.--No gage-height record Oct. 10 to Dec. 22.

16770500 PAAUAU GULCH AT PAHALA

LOCATION.--Lat 19°12'39", long 155°28'48", Hydrologic Unit 20010000, on right bank 100 ft (30 m) downstream from bridge on Wood Valley Road and 0.7 mi (1.1 km) north of Pahala.

DRAINAGE AREA.--1.74 mi² (4.51 km²).

PERIOD OF RECORD.--May 1962 to January 1979 (destroyed by flood of February 20, 1979).

REVISED RECORDS.--WSP 1937: 1963(P), 1965-66(P). WSP 2137: 1966-70(P). WRD Hawaii: 1971-74(P). WDR HI-75 to 77-1: 1975-77(P).

GAGE.--Water-stage recorder. Datum of gage is 972 ft (296.3 m) above mean sea level (by stadia survey).

REMARKS.--Records good. No diversion above station. Observations of specific conductance, pH, and water temperature made during the period are published elsewehere in this report.

AVERAGE DISCHARGE.--16 years, 0.759 ft³/s (0.021 m³/s), 550 acre-ft/yr (678,000 m³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,800 ft³/s (79 m³/s) Feb. 20, 1979, gage height, 9.67 ft (2.947 m), from rating curve extended above 360 ft³/s (10.2 m³/s) on basis of slope-area measurements at gage height 5.7 ft (1.737 m) and 9.67 ft (2.947 m); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges during period October to February above base of 180 ft³/s (5.10 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 6	0930	760	21.5	5.90	1.798
Feb. 5	0500	848	24.0	6.12	1.865
Feb. 20	a0400	*2800	79.3	*9.67	2.947

No flow most of time.

a About.

REVISIONS.--The peak discharges and annual maximum (*) for water years 1963, 1965-77, have been revised, superseding figures published in WSP 1937 and 2137 and for water years 1971-77 published in the annual reports for 1971-77. The revised figures are as follows:

Water Year	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
1963	Oct. 18, 1962	2200	*442	12.5	a*4.87	1.484
1963	Mar. 28, 1963	1500	325	9.20	4.40	1.341
1963	Apr. 15, 1963	0900	228	6.46	4.01	1.222
1963	May 17, 1963	1900	173	4.90	3.74	1.140
1965	Nov. 14, 1964	1800	*179	5.07	*3.77	1.149
1965	May 3, 1965	2400	177	5.01	3.76	1.146
1966	Nov. 9, 1965	2130	193	5.47	3.84	1.170
1966	Nov. 14, 1965	0300	*250	7.08	*4.10	1.250
1966	Feb. 9, 1966	1800	b195	5.52	c5.45	1.661
1967	Oct. 9, 1966	1730	159	4.50	3.67	1.119
1967	Nov. 5, 1966	1500	*495	14.0	*5.05	1.539
1967	May 15, 1967	0400	232	6.57	4.03	1.228
1968	Nov. 26, 1967	0415	272	7.70	4.19	1.277
1968	Jan. 27, 1968	2200	*624	17.7	*5.48	1.670
1968	Feb. 3, 1968	0900	262	7.42	4.15	1.265
1968	Feb. 28, 1968	2000	203	5.75	3.89	1.186
1968	Apr. 8, 1968	1700	201	5.69	3.88	1.183
1968	Apr. 17, 1968	2015	207	5.86	3.91	1.192
1968	Apr. 23, 1968	2100	157	4.45	3.66	1.116
1969	Oct. 3, 1968	1900	732	20.7	5.83	1.777
1969	Jan. 5, 1969	0800	*760	21.5	*5.90	1.798
1970	Aug. 26, 1970	0230	*129	3.65	*3.52	1.073
1971	Jan. 9, 1971	0900	175	4.96	3.75	1.143
1971	Jan. 27, 1971	2000	*185	5.24	*3.80	1.158
1971	Jan. 30, 1971	1700	159	4.50	3.67	1.119
1972	Nov. 25, 1971	0930	*579	16.4	*5.33	1.625
1972	Jan. 24, 1972	0800	197	5.58	3.86	1.177
1973	Oct. 6, 1972	1900	167	4.73	3.71	1.131
1973	Oct. 15, 1972	2000	*302	8.55	*4.31	1.314
1974	Nov. 20, 1973	0400	161	4.56	3.68	1.122
1974	Dec. 1, 1973	1300	*405	11.5	*4.72	1.439
1975	Dec. 22, 1974	0900	205	5.81	3.90	1.189
1975	Jan. 8, 1975	1300	*760	21.5	*5.90	1.798
1975	Jan. 30, 1975	0630	370	10.5	4.58	1.396
1976	Nov. 24, 1975	2230	392	11.1	4.67	1.423
1976	Nov. 27, 1975	2130	169	4.79	3.72	1.134
1976	Jan. 5, 1976	2130	*705	20.0	*5.75	1.753
1976	Feb. 5, 1976	0030	561	15.9	5.27	1.606
1977	Aug. 12, 1977	1500	*398	11.3	*4.69	1.430

a From floodmark.
b About.
c Affected by backwater.

16770500 PAAUAU GULCH AT PAHALA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER 1978 TO JANUARY 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.35	.00	.00								
2	.00	11	.00	.00								
3	.00	3.4	.00	.00								
4	.00	.02	.00	.00								
5	.00	9.0	4.5	.00								
6	.00	66	.64	.00								
7	.00	1.9	.00	.00								
8	.00	.00	.00	.00								
9	.00	.00	.00	.00								
10	.00	.00	.00	.00								
11	.00	3.3	.00	.00								
12	.00	.06	.00	.00								
13	.00	.00	.00	.00								
14	.06	.00	.00	.00								
15	6.2	1.4	.00	.00								
16	8.0	.01	.00	.00								
17	4.5	.00	.00	.00								
18	2.0	.91	.00	.00								
19	.00	.01	.00	.00								
20	.00	.00	.00	.00								
21	.00	.00	.00	.00								
22	.00	.03	.00	.00								
23	.00	.00	.00	.00								
24	.00	.00	.00	.00								
25	.00	.00	.00	.00								
26	.00	.00	.00	.00								
27	.00	.00	.00	.00								
28	.00	.00	.00	.00								
29	.00	.00	.00	.00								
30	.00	.00	.00	.00								
31	.00	---	.00	.00								
TOTAL	20.76	97.36	5.14	.00								
MEAN	.67	3.25	.17	.000								
MAX	8.0	66	4.5	.00								
MIN	.00	.00	.00	.00								
AC-FT	41	193	10	.00								

CAL YR 1978 TOTAL 190.95 MEAN .52 MAX 66 MIN .00 AC-FT 379

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1979

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Kauai				
16011000	Waiakoali Stream near Waimea	Lat 22°07'42", long 159°37'27", 0.3 mi (0.5 km) upstream from mouth and 12 mi (19 km) northeast of Waimea	1.58 (4.09)	1909-13≠, 1914-17, 1919-25≠, 1961-62, 1964, 1966-70, 1972-79	4- 6-79 5-11-79 8- 8-79	5.07 3.70 1.09
16012000	Kauaikinana Stream near Waimea	Lat 22°08'12", long 159°37'58", 0.6 mi (1.0 km) upstream from mouth and 12 mi (19 km) northeast of Waimea.	.84 (2.18)	1911-13, 1915-17, 1919-25≠, 1961-62, 1964, 1966-79	4- 6-79 5-11-79 8- 8-79	1.82 1.37 .51
16029500	Mokihana Stream near Waimea	Lat 21°59'38", long 159°40'07", 500 ft (152 m) upstream from mouth and 2.5 mi (4.0 km) north of Waimea.	4.83 (12.51)	1962, 1964-79	3- 5-79 6- 4-79 7-26-79	4.32 .33 No flow
16030000	Peekauai ditch near Waimea	Lat 21°58'43",long 159°39'37", on right bank, 0.8 mi (1.3 km) upstream from Makaweli River and 1.6 mi (2.6 km) north of Waimea.	-	1978-79	6-21-79 7-26-79 8- 6-79 8-17-79	2.34 3.34 2.17 3.73
16058500	South Fork Wailua River near rock Quarry	Lat 22°01'44", long 159°25'03", 7.5 mi (12.1 km) upstream from mouth and 4.6 mi (7.4 km) northwest of Lihue	20.2 (52.3)	1974-79	1- 3-79 4- 3-79 5- 1-79	3.23 3.32 3.17
16102000	China ditch near Hanalei	Lat 22°11'10", long 159°28'00", on left bank just below intake and 3.0 mi (4.8 km) southeast of Hanalei.	-	1913-19≠, 1977-79	3- 8-79 3-13-79 7- 6-79	15 10 12
		Hawaii, Island of Oahu				
16201000	Right Branch of North Fork Kaukonahua Stream near Wahiawa	Lat 21°31'11", long 157°56'53", 200 ft (61 m) above confluence with Left Branch and 4.5 mi (7.2 km) east of Leilehua High School in Wahiawa.	1.17 (3.03)	1913-53≠, 1960-62, 1966, 1968-79	10-16-78 4-18-79 8-21-79	2.3 1.0 2.9
16214000	Pearl Harbor Springs at Waiawa, near Pearl City	Lat 21°23'36", long 157°59'11", 0.7 mi (1.1 km) west of Pearl City and 1.5 mi (2.4 km) east of Waipahu Post Office.	-	1931-34≠, 1937-64≠, 1967-68, 1970-79	4-12-79 9- 5-79	15 12
16224000	Pearl Harbor Springs at Kalauao, near Aiea	Lat 21°23'05", long 157°56'46", 300 ft (91 m) downstream from Highway 90 and 0.8 mi (1.3 km) west of Aiea Post Office.	-	1931-62≠, 1964-65≠, 1966-68, 1970-79	4-12-79 9- 5-79	16 14
16264100	Kahanaiki Stream at Highway 61, near Kailua	Lat 21°22'49", long 157°46'06", at bridge on Highway 61 and 1.9 mi (3.1 km) southwest of Kailua Post Office.	1.45 (3.76)	1960-63, 1965-66, 1971-79	5-14-79 9-26-79	1.3 .47

≠ Operated as a continuous-record gaging station.

Discharge measurements made at low-flow partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Oahu--Continued				
16283400	Kahaluu Stream near Kahaluu	Lat 21°27'14", long 157°50'17", 600 ft (183 m) above Ahuimanu Stream and 0.6 mi (1.0 km) south of Kahaluu.	1.29 (3.34)	1962-63, 1966, 1972-79	5-14-79 9-12-79	1.3 1.2
16295995	Kahana Stream at Mauka trail crossing, near Kahana	Lat 21°32'17", long 157°53'29", 1.8 mi (2.9 km) upstream from main bridge on Kamehameha Highway and 2.8 mi (4.5 km) southwest of Kaaawa School.	3.18 (8.24)	1960-62, 1966, 1971-72, 1974-79	5-17-79 9-25-79	16 11
16297000	Kawa Stream near Kahana	Lat 21°32'33", long 157°53'00", 0.1 mi (0.2 km) above confluence with Kahana Stream and 1.0 mi (1.6 km) south of Kahana.	2.09 (5.41)	1914-17≠, 1958a, 1961-62, 1966, 1971-72, 1974-79	5-15-79 9-25-79	1.8 .90
		Hawaii, Island of Molokai				
16403400	Kapuhi Stream at altitude 1,000 ft (305 m), near Pelekunu	Lat 21°07'50", long 156°53'02", 500 ft (152 m) upstream from Kawailena Stream, 2.2 mi (3.5 km) south of former village of Pelekunu, and 5.4 mi (8.7 km) north of Kamalo.	.51 (1.32)	1968-79	10-26-78 2- 1-79 3-22-79 5-17-79 7- 5-79	1.56 3.01 1.80 1.48 .94
16403500	Kawailena Stream near Pelekunu	Lat 20°07'52", long 156°53'05", 800 ft (244 m) upstream from mouth, 2.2 mi (3.5 km) south of former village of Pelekunu, and 5.5 mi (8.8 km) north of Kamalo.	.65 (1.68)	1968-79	10-26-78 2- 1-79 3-22-79 5-17-79 7- 5-79	1.21 3.80 2.70 1.99 1.39
16403600	Kapuhi Stream near Pelekunu	Lat 21°07'57", long 156°52'56", on left bank 400 ft (122 m) downstream from Kawailena Stream, 2.1 mi (3.4 km) south of former village of Pelekunu, and 5.6 mi (9.0 km) north of Kamalo.	1.20 (3.11)	1968-70≠, 1974-79	10-26-78 2- 1-79 3-22-79 5-17-79 7- 5-79	2.93 6.71 5.32 3.37 2.40
16403700	Kawainui Stream at altitude 1,000 ft (305 m) near Pelekunu	Lat 20°07'46", long 156°52'31", 400 ft (122 m) upstream from Kawaipoko Stream, 2.4 mi (3.9 km) south of former village of Pelekunu, and 5.4 mi (8.7 km) north of Kamalo.	.79 (2.05)	1968-79	10-26-78 2- 2-79 3-23-79 5-17-79 7- 5-79	3.25 3.98 3.13 3.09 2.51
16403800	Kawaipoko Stream near Pelekunu	Lat 21°07'48", long 156°52'30", 300 ft (91 m) upstream from mouth, 2.4 mi (3.9 km) south of former village of Pelekunu, and 5.4 mi (8.7 km) north of Kamalo.	.26 (.67)	1968-79	10-26-78 2- 2-79 3-23-79 5-17-79 7- 5-79	1.02 1.13 .97 1.09 .71

≠ Operated as a continuous-record gaging station.
a Previously published with discharge measurements at miscellaneous sites.

Crest-stage partial-record stations

Prior to 1973, crest-stage partial-record station records for the State of Hawaii were published in an annual progress report entitled "An Investigation of Floods in Hawaii." The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements or peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1979

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Kauai					
16038000	Waimea River at Waimea	Lat 21°57'23", long 159°39'59", 150 ft (46 m) upstream from highway bridge at Waimea and 0.2 mi (0.3 km) upstream from mouth.	86.5 (224.0)	1944-79b	10-31-78	5.89	-
16052000	Hanapepe River at Hanapepe	Lat 21°54'47", long 159°35'33", 400 ft (122 m) upstream from bridge on Highway 50 and 0.5 mi (0.8 km) upstream from mouth.	26.6 (68.9)	1950-79b	8-16-79	4.33	-
16052500	Lawai Stream near Koloa	Lat 21°54'11", long 159°30'21", on right bank at private road bridge, 0.9 mi (1.4 km) upstream from mouth and 2.4 mi (3.9 km) southwest of Koloa.	6.62 (17.15)	1962-63, 1964-72≠, 1973-79	11-31-78	3.74	a800
16055000	Huleia Stream near Lihue	Lat 21°57'20", long 159°25'23", at highway bridge, 3.7 mi (6.0 km) southwest of Lihue, and 4.5 mi (7.2 km) upstream from mouth.	17.6 (45.6)	1912-15≠, 1962-67, 1968-70≠, 1971-79	10-31-78	13.40	6,440
16071800	Wailua River near Kapaa	Lat 22°03'00", long 159°20'26", at State Park 600 ft (183 m) upstream from highway bridge, 850 ft (259 m) upstream from mouth, and 2.5 mi (4.0 km) southwest of Kapaa.	52.6 (136.2)	1962-79b	2- 9-79	6.10	-
16073500	Konohiki Stream near Kapaa	Lat 22°04'01", long 159°20'21", at culvert on private road, 1.8 mi (2.9 km) upstream from mouth and 2.4 mi (3.9 km) southwest of Kapaa High School.	3.38 (8.75)	1964-67, 1970-79	10-31-78	6.62	310
16081200	Akulikuli Stream near Kapaa	Lat 22°06'25", long 159°22'07", at Kahuna road crossing, 800 ft (244 m) upstream from mouth and 3.5 mi (5.6 km) northwest of Kapaa armory.	.40 (1.04)	1964-79	10-31-78	5.02	275
16084500	Kapaa Stream at old highway crossing, near Kealia	Lat 22°06'28", long 159°19'52", at abutment of old highway bridge, 100 ft (30 m) upstream from road crossing, 1.4 mi (2.2 km) northwest of Kealia and 2.1 mi (3.4 km) upstream from mouth.	14.0 (36.3)	1962-79	10-31-78	12.41	7,250
16085000	Homaikawaa Stream near Kealia	Lat 22°07'23", long 159°18'12", at culvert on Highway 56, 1.6 mi (2.6 km) southeast of Anahola School and 1.6 mi (2.6 km) north of Kealia.	.85 (2.20)	1964-79	2- 9-79	5.45	290
16097900	Puukumu Stream near Kilauea	Lat 22°13'01", long 159°25'18", at culvert on Highway 56, 0.8 mi (1.3 (km) northwest of Kilauea School and 0.9 mi (1.4 km) upstream from mouth.	.91 (2.36)	1964-68, 1971-79	10-31-78	3.92	72

≠ Operated as a continuous-record gaging station.
a Estimated.
b Gage height only.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Kauai--Continued					
16104200	Hanalei River at Highway 56 Bridge near Hanalei	Lat 22°12'50", long 159°28'43", at highway bridge, 1.6 mi (2.6 km) northeast of Hanalei and 2.4 mi (3.9 km) upstream from mouth.	21.0 (54.4)	1963-79b	10-31-78	9.11	-
16130000	Nahomalu Valley near Mana	Lat 22°02'41", long 159°45'17", on left bank 1.1 mi (1.8 km) northeast of Mana and 5.3 mi (8.5 km) northwest of Kekaha School.	3.81 (9.87)	1962-63, 1964-71≠, 1972-79	2 -9-79	3.88	403
		Hawaii, Island of Oahu					
16210500	Kaukonahua Stream at Waialua	Lat 21°33'56", long 158°07'26", 0.2 mi (0.3 km) upstream from Highway 99, 0.4 mi (0.6 km) southeast of Waialua High School and 1.3 mi (2.1 km) southwest of Weed Circle.	38.7 (100.2)	1963, 1968-79	2-10-79	22.11	a3,500
16211200	Poamoho Stream at Waialua	Lat 21°34'00", long 158°06'40", at culvert crossing of Kaheaka Road, 0.2 mi (0.3 km) upstream from Highway 83 and 1.1 mi (1.8 km) east of Waialua High School.	10.9 (28.2)	1967-79	2-10-79	23.65	a2,000
16211300	Makaleha Stream near Waialua	Lat 21°33'49", long 158°09'21", 1.0 mi (1.6 km) southwest of Dillingham Ranch and 1.9 mi (3.1 km) southwest of sugar mill at Waialua.	4.15 (10.75)	1958-63, 1964-65≠, 1966-79	2-10-79	6.99	1,120
16211400	Manini Gulch at Kaena	Lat 21°34'50", long 158°15'12", 180 ft (55 m) upstream from Highway 99, 1.7 mi (2.7 km) west of Camp Erdman and 2.0 mi (3.2 km) east of Kaena Point.	1.08 (2.80)	1974-79	2-10-79	13.49	a360
16211500	Makua Stream at Makua	Lat 21°31'59", long 158°13'49", on left bank, 20 ft (6 m) upstream from old concrete highway ford, 140 ft (43 m) downstream from Farrington Highway box culvert, 0.1 mi (0.2 km) north of Makua cemetery, and 4.5 mi (7.2 km) southeast of Kaena Point lighthouse.	4.28 (11.09)	1958-79	2-10-79	7.49	a1,200
16211700	Makaha Stream at Makaha	Lat 21°28'47", long 158°12'31", 0.9 mi (1.4 km) upstream from Farrington Highway and 1.1 mi (1.8 km) north of junction of Farrington Highway and Makaha Valley Road.	5.25 (13.60)	1966-79	2-10-79	9.76	a1,200
16211800	Kaupuni Stream at altitude 374 ft (114 m), near Waianae	Lat 21°28'20", long 158°09'26", at abandoned diversion dam, 2.6 mi (4.2 km) northeast of Waianae cemetery and 2.8 mi (4.5 km) northeast of junction of Waianae Valley Road and Farrington Highway.	3.58 (9.27)	1961-72≠, 1973-79	2-10-79	6.36	a1,100
16212200	Mailiilii Stream near Waianae	Lat 21°27'34", long 158°08'05", at bridge at Lualualei Naval Reservation and 3.4 mi (5.5 km) east of cemetery near Waianae.	1.51 (3.91)	1958-79	2-10-79	3.42	a800
16212300	Nanakuli Stream at Nanakuli	Lat 21°23'08", long 158°08'11", 0.7 mi (1.1 km) upstream from Highway 90 and 0.6 mi (1.0 km) northeast of Nanakuli Post Office.	3.98 (10.31)	1968-79	10-31-78	24.35	a1,300

≠ Operated as a continous-record gaging station.
a Estimated.
b Gage height only.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Oahu--Continued					
16212450	Kaloi Gulch tributary near Honouliuli	Lat 21°22'41", long 158°03'45", at culvert on private road, 1.8 mi (2.9 km) west of Honouliuli and 2.8 mi (4.5 km) northwest of Ewa Post Office.	1.70 (4.40)	1968-79	10-31-78	6.54	562
16212500	Honouliuli Stream near Waipahu	Lat 21°22'40", long 158°02'10", at bridge on Farrington Highway and 1.8 mi (2.9 km) west of Waipahu Post Office.	11.0 (28.5)	1956-79	2-10-79	5.78	1,640
16212601	Waikele Stream at Wheeler Field	Lat 21°28'44", long 158°03'07", at culvert 0.3 mi (0.5 km) west of east-west runway at Wheeler Field, and 1.9 mi (3.1 km) southwest of Wahiawa Post Office.	6.35 (16.45)	1958, 1960-79	2-10-79	7.94	480
16212700	Waikakalaua Stream near Wahiawa	Lat 21°27'50", long 158°01'38", 0.2 mi (0.3 km) downstream from Kamehameha Highway and 2.4 mi (3.9 km) south of Wahiawa Post Office.	7.49 (19.40)	1958-79	2-10-79	10.47	1,090
16212750	Huliwai Gulch near Kunia Camp	Lat 21°26'43", long 158°03'47", 200 ft (61 m) upstream from Highway 75 and 1.2 mi (1.9 km) south of Kunia Camp.	.84 (2.18)	1974-79	2-10-79	8.63	a600
16223000	Waimalu Stream near Aiea	Lat 21°23'48", long 157°56'56", 1,300 ft (400 m) upstream from bridge on Moanalua Road and 1.2 mi (1.9 km) northwest of Aiea High School.	5.97 (15.46)	1952-70≠, 1973-79	2-10-79	3.12	1,550
16227000	Halawa Stream at Aiea	Lat 21°22'26", long 157°55'42", 0.7 mi (1.1 km) southeast of Aiea Post Office and 6.2 mi (10.0 km) northwest of Honolulu Post Office.	8.78 (22.74)	1954-62, 1966-72, 1977-79	10-30-78	6.17	a1,800
**16228200	Moanalua Stream near Aiea	Lat 21°22'37", long 157°53'03", on right bank 1.1 mi (1.8 km) northeast of Tripler Hospital and 2.9 mi (4.7 km) east of Aiea sugar refinery.	3.34 (8.65)	1969-79	2-10-79	4.97	a950
**16228600	Moanalua Stream at Tripler Hospital	Lat 21°21'52", long 157°54'05", on right bank 0.5 mi (0.8 km) west of Tripler Hospital and 1.6 mi (2.6 km) northeast of Aliamanu School.	4.44 (11.50)	1971-79	2-10-79	14.79	a1,000
16228900	Kalihi Stream near Kaneohe	Lat 21°22'35", long 157°49'32", on right bank 800 ft (244 m) downstream from Likelike Highway, and 2.8 mi (4.5 km) southwest of Castle High School in Kaneohe.	.60 (1.55)	1967-71≠, 1972-79	1-13-79	2.82	246
16235400	Waolani Stream at Honolulu	Lat 21°20'00", long 157°51'04", at Wyllie Street bridge and 1.8 mi (2.9 km) northeast of Honolulu Post Office.	1.28 (3.32)	1958-79	2- 3-79	1.87	361
16237500	Pauoa Stream at Honolulu	Lat 21°19'18", long 157°51'03", at Lusitana Street bridge and 1.1 mi (1.8 km) northeast of Honolulu Post Office.	1.43 (3.70)	1958-79	2- 3-79	1.55	920
16247100	Manoa-Palolo Drainage Canal at Moiliili	Lat 21°17'24", long 157°49'17", on left bank at Kaimuki High School, 0.3 mi (0.5 km) downstream from confluence of Manoa and Palolo Stream and 0.6 mi (1.0 km) upstream from point of discharge into Ala Wai Canal.	9.35 (24.22)	1968-79	2- 4-79	9.30	5,220

** Also a water-quality partial-record station.
≠ Operated as a continuous-record gaging station.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Oahu--Continued					
16247500	Wailupe Gulch at Aina Haina	Lat 21°17'46", long 157°45'29", at Ani Street bridge and 1.0 mi (1.6 km) upstream from Kalanianaole Highway in Aina Haina.	2.35 (6.09)	1958-79	10-31-78	2.26	676
16247900	Kuliouou Valley at Kuliouou	Lat 21°17'50", long 157°43'35", at Kuliouou, 300 ft (91 m) downstream of single-lane wooden bridge and 0.6 mi (1.0 km) upstream from Highway 72.	1.18 (3.06)	1958-59, 1970-79	10-31-78	-	420
16248800	Inoaole Stream at Waimanalo	Lat 21°29'31", long 157°42'40", 30 ft (9 m) upstream from culvert on Hihimanu Street and 0.8 mi (1.3 km) northwest of Waimanalo Post Office.	1.21 (3.13)	1958-79	2-21-79	5.46	a400
16249000	Waimanalo Stream at Waimanalo	Lat 21°21'12", long 157°43'52", on right bank 40 ft (12 m) upstream from Highway 72 and 2.3 mi (3.7 km) northwest of Waimanalo Post Office.	2.16 (5.59)	1967-70≠, 1971-79	2-21-79	4.80	a950
16249100	Kaelepulu Stream tributary at Kailua	Lat 21°21'44", long 157°44'22", 30 ft (9 m) upstream from Kalanianaole Highway, 1.6 mi (2.6 km) northwest of Waimanalo School and 2.4 mi (3.9 km) south of Kailua Post Office.	.16 (.41)	1963-79	2-21-79	4.26	183
16260500	Maunawili Stream at Highway 61, near Kailua	Lat 21°22'51", long 157°45'48", on right bank at downstream side of bridge on Highway 61, 0.6 mi (1.0 km) west of Maunawili School and 1.6 mi (2.6 km) southwest of Kailua Post Office.	5.34 (13.83)	1958-67, 1968-71≠, 1972-79	2- 4-79	11.53	3,380
16264800	Kawainui Canal at Kailua	Lat 21°24'15", long 157°45'28", at head of canal and 1.2 mi (1.9 km) northwest of Kailua Post Office.	11.0 (28.5)	1957-60, 1963-64, 1967-79b	2-20-79	5.68	-
16265000	Kawa Stream at Kaneohe	Lat 21°24'32", long 157°47'36", 50 ft (15 m) upstream from bridge on Kaneohe Bay Drive at Kaneohe, 0.2 mi (0.3 km) northeast of Castle High School, and 0.6 mi (1.0 km) upstream from mouth.	1.19 (3.08)	1965, 1968-74, 1977-79	10-30-78	6.08	a450
16270900	Luluku Stream at altitude 220 ft (67 m), near Kaneohe	Lat 21°23'42", long 157°48'46", on left bank 0.5 mi (0.8 km) upstream stream from mouth, 1.4 mi (2.2 km) southwest of Castle High School, and 1.9 mi (3.1 km) south of Kaneohe Post Office.	.44 (1.14)	1967-71≠, 1972-75, 1977-79	10-30-78	3.40	81
*16274499	Keaahala Stream at Kamehameha Highway, at Kaneohe	Lat 21°25'12", long 157°48'15", 35 ft (11 m) upstream from bridge on Kamehameha Highway in Kaneohe.	.62 (1.61)	1959-79	2-10-79	3.90	a1,100
16279500	Heeia Stream at Kaneohe	Lat 21°25'17", long 157°49'01", 60 ft (18 m) downstream from culvert on Kahekili Highway, 0.7 mi (1.1 km) west of Kaneohe Post Office and 0.8 mi (1.3 km) southwest of Heeia.	1.80 (4.66)	1965-66, 1968-79	2-10-79	5.89	1,490
*16283480	Ahuimanu Stream near Kahaluu	Lat 21°27'04", long 157°50'13", at bridge on Ahuimanu Road and 0.8 mi (1.3 km) south of Kahaluu.	2.31 (5.98)	1963-79	2-10-79	9.22	a1,720

* Also a low-flow partial-record station.
≠ Operated as a continuous-record gaging station.
a Estimated.
b Gage height only.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Oahu--Continued					
16304500	Kaluanui Stream at Hauula	Lat 21°35'57", long 157°54'24", on left downstream wingwall of concrete bridge, 1.2 mi (1.9 km) southeast of cemetery in Hauula and 1.4 mi (2.2 km) northeast of Sacred Falls.	2.12 (5.49)	1958-79	10-31-78	4.60	a1,200
16310501	Malaekahana Stream at altitude 30 ft (9 m), near Kahuku	Lat 21°39'47", long 157°57'11", at abandoned plantation railroad bridge, 1.1 mi (1.8 km) southwest of junction of plantation road and Highway 83, and 1.2 mi (1.9 km) south of Kahuku Hospital.	4.05 (10.49)	1958-79	2-10-79	8.45	a1,300
16311000	Oio Stream near Kahuku	Lat 21°41'32", long 157°59'48", 0.6 mi (1.0 km) southwest of junction of Plantation Road and Highway 83 and 2.7 mi (4.3 km) west of Kahuku Hospital.	2.13 (5.52)	1958-79	10-31-78	7.62	a100
16317800	Kaunala Gulch near Sunset Beach	Lat 21°40'59", long 158°02'12", on downstream left bank wingwall of road bridge on Highway 83 near Sunset Beach and 2.9 mi (4.7 km) northeast of Waimea.	1.98 (5.13)	1973-79	2-10-79	3.11	a100
16318000	Paumalu Gulch at Sunset Beach	Lat 21°40'19", long 158°02'28", 0.4 mi (0.6 km) upstream from Highway 83 at Sunset Beach and 2.2 mi (3.5 km) northeast of Waimea.	2.59 (6.71)	1968-79	2-10-79	3.52	a180
16331000	Waimea Gulch near Kawailoa Camp	Lat 21°37'29", long 158°04'58", at culvert on Ashley Road, 0.1 mi (0.2 km) upstream from Highway 83 and 1.1 mi (1.8 km) north of Kawailoa Camp.	2.23 (5.78)	1968-79	2-10-79	1.76	a40
16340000	Anahulu River near Haleiwa	Lat 21°35'28", long 158°04'45", 1.7 mi (2.7 km) southeast of junction of Emerson Road and Kamehameha Highway and 2.5 mi (4.0 km) east of Waialua School at Haleiwa.	13.5 (35.0)	1958-79	2-10-79	6.54	2,220
16350000	Opaeula Stream near Haleiwa	Lat 21°35'09", long 158°06'01", 0.6 mi (1.0 km) upstream from Kamehameha Highway and 2.1 mi (3.4 km) northeast of Waialua.	5.96 (15.44)	1956-79	2-10-79	11.53	762
		Hawaii, Island of Molokai					
16411300	Kakaako Gulch Highway 46, near Mauna Loa	Lat 21°08'49", long 157°11'36", at Highway 46, 1.6 mi (2.6 km) northeast of Mauna Loa, and 1.8 mi (2.9 km) upstream from Kamakahi Gulch.	.55 (1.42)	1964-79	2- 4-79	.79	4
16411320	Kakaako Gulch above Kamakahi Gulch, near Mauna Loa	Lat 21°10'11", long 157°11'56", 0.1 mi (0.2 km) upstream from Kamakahi Gulch, 1.7 mi (2.7 km) downstream from Highway 46, and 2.5 mi (4.0 km) northeast of Mauna Loa.	1.40 (3.63)	1964-79	2- 4-79	-	a3
16411400	Kakaako Gulch near Mauna Loa	Lat 21°10'39", long 157°12'31", on left bank 1.0 mi (2.0 km) downstream from Kamakahi Gulch and 3.0 mi (4.8 km) north of Mauna Loa School.	5.34 (13.83)	1963-72≠, 1973-79	2- 4-79	3.89	394

≠ Operated as a continuous-record gaging station.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Molokai--Continued					
16411600	Kaunala Gulch near Mauna Loa	Lat 21°07'01", long 157°15'43", at Sand Haul Road, 3.2 mi (5.2 km) east of Laau Point lighthouse, and 3.3 mi (5.3 km) southwest of Mauna Loa.	.28 (.73)	1964-79	10-31-78	1.99	44
16411640	Halena Gulch near Mauna Loa	Lat 21°05'53", long 157°13'47", 2.7 mi (4.3 km) southwest of Mauna Loa and 5.5 mi (8.8 km) east of Laau Point.	2.07 (5.36)	1965-79	2- 4-79	6.62	2,130
16411800	Kaluapeelua Gulch at Hoolehua	Lat 21°09'55", long 157°04'22", 0.4 mi (0.6 km) south of Hoolehua and 2.1 mi (3.4 km) west of Kualapuu.	1.46 (3.78)	1964-79	2-11-79	-	a1
16411900	Kaluapeelua Gulch tributary near Molokai Airport	Lat 21°08'57", long 157°07'12", 1.7 mi (2.7 km) southwest of Molokai Airport and 5.1 mi (8.2 km) west of Kualapuu.	1.56 (4.04)	1964-79	2-11-79	8.90	278
16413500	Manawainui Gulch near Kualapuu	Lat 21°07'42", long 157°03'25", at bridge on Highway 46, 0.5 mi (0.8 km) south of Holomua School and 2.3 mi (3.7 km) southwest of Kualapuu.	10.4 (26.9)	1965-79	11-14-78	8.59	1,260
16415400	Wawaia Gulch at Kamalo	Lat 21°03'25", long 156°52'20", at Highway 45, 0.3 mi (0.5 km) upstream from mouth, and 0.5 mi (0.8 km) northeast of Kamalo.	2.12 (5.49)	1964-79	2-21-79	1.54	506
16419000	Pohakupili Gulch near Halawa	Lat 21°07'59", long 156°44'15", at Highway 45, 0.5 mi (0.8 km) upstream from mouth and 1.9 mi (3.1 km) south of Halawa.	.48 (1.24)	1964-79	10-31-78	7.32	352
		Hawaii, Island of Maui					
16500100	Kepuni Gulch near Kahikinui House	Lat 20°37'21", long 156°15'16", on right bank 120 ft (37 m) upstream from bridge on Highway 31, 400 ft (122 m) upstream from Kamole Gulch, 1.1 mi (1.8 km) east of Kahikinui House, and 8.5 mi (13.7 km) west of Kaupo.	1.19 (4.95)	1963-72≠, 1973-79	10-16-78	6.40	519
16500300	Hawelewele Gulch near Kaupo	Lat 20°38'01", long 156°11'08", 700 ft (213 m) upstream from Pillani Highway 31 and 3.9 mi (6.3 km) west of Kaupo.	11.3 (29.3)	1967-79	2- 5-79	9.33	7,100
16500800	Kukuiula Gulch near Kipahulu	Lat 20°39'18", long 156°04'44", at Highway 31, 1.3 mi (2.1 km) west of Kipahulu and 3.2 mi (5.2 km) east of Kaupo.	.76 (1.97)	1963-68≠, 1969-79	2-20-79	5.08	1,810
16502400	Pukuilua Gulch near Hana	Lat 20°42'00", long 156°00'14", at Highway 31, 0.4 mi (0.6 km) southwest of Puuiki, and 4.0 mi (6.4 km) south of Hana.	.48 (1.24)	1963-79	2-20-79	4.59	253
16502800	Moomoonui Gulch at Hana	Lat 20°44'37", long 155°59'18", at Highway 31 just downstream from Moomooiki Gulch and 1.0 mi (1.6 km) south of Hana.	.90 (2.33)	1963-79	2-20-79	13.62	1,190
16502900	Kawaipapa Gulch at Hana	Lat 20°46'08", long 156°00'04", 1,000 ft (305 m) upstream from Highway 36 and 0.3 mi (0.5 km) northwest of Hana Hospital.	5.83 (15.10)	1965-79	2-20-79	9.27	9,040

≠ Operated as a continous-record gaging station.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (Feet)	Discharge (Ft³/s)
		Hawaii, Island of Maui--Continued					
166033D0	Unnamed gulch at Maliko Bay	Lat 20°56'26", long 156°21'04", at Hana Highway, 0.5 mi (0.8 km) west of Maliko Bay, and 1.3 mi (2.1 km) north of Hamakuapoko.	.43 (1.11)	1963-79	3-27-79	17.28	171
1660370D	Kalialinui Gulch tributary near Pukalani	Lat 20°49'02", long 156°19'44", at Lower Kula Road and 1.4 mi (2.3 (km) south of Pukalani.	1.17 (3.03)	1967-79	12- 5-78	3.76	103
16603800	Kaluapulani Gulch tributary near Pukalani	Lat 20°48'52", long 156°18'32", at Haleakala Highway, 1.5 mi (2.4 km) west of Olinda Prison Camp, and 2.3 mi (3.7 km) southeast of Pukalani.	.45 (1.17)	1963-79	1-21-79	2.37	58
16603850	Kalialinui Gulch near Kahului	Lat 20°52'47", long 156°26'06", 600 ft (183 m) upstream from Hansen Road, 0.5 mi (0.8 km) northeast of Puunene Hospital, and 2.5 mi (4.0 km) southeast of Kahului Post Office.	17.9 (46.4)	1967-79	1-21-79	4.40	81
**16607000	Iao Stream at Wailuku	Lat 20°53'38", long 156°30'27", 560 ft (171 m) upstream from Market Street bridge at Wailuku and 1.9 mi (3.1 km) upstream from mouth.	8.24 (21.4)	1951≠, 1952-79	11-12-78	5.74	4,660
16616500	Unnamed gulch at Maluhia Camp	Lat 20°57'26", long 156°31'41", at Kahekili Highway, 0.6 mi (1.0 km) east of Maluhia Camp and 1.8 mi (2.9 km) northwest of Waihee.	.12 (.31)	1964-79	11-12-78	-	93
16619700	Poelua Gulch near Kahakuloa	Lat 21°00'58", long 156°34'58", at Highway 30 (bypass), 1.3 mi (2.1 km) southeast of Nakalele Point lighthouse, and 2.2 mi (3.5 km) northwest of Kahakuloa.	1.18 (3.06)	1965-79	2-10-79	10.15	391
16623400	Honokeana Gulch near Honokahua	Lat 20°59'39", long 156°40'13", at Honoapiilani Highway, 1.1 mi (1.8 km) southwest of Honokahua and 1.1 mi (1.8 km) south of Hawea Point.	.59 (1.53)	1964-79	2-10-79	4.86	136
16630200	Honokowai Stream at Honokowai	Lat 20°56'58", long 156°41'07", 0.5 mi (0.8 km) southeast of Honokowai and 1.1 mi (1.8 km) northwest of Puukolii.	5.59 (14.48)	1962-63, 1965-79	1-13-79	5.37	831
166433D0	Kauaula Stream near mouth, near Lahaina	Lat 20°52'09", long 156°39'43", 0.7 mi (1.1 km) upstream from Honoapiilani Highway (bypass) and 1.3 mi (2.1 km) southeast of Lahaina lighthouse.	4.12 (10.67)	1960, 1962, 1964-79	2-10-79	4.53	547
16646200	Olowalu Stream at Olowalu	Lat 20°49'23", long 156°37'15", on downstream side of center pier of plantation road bridge, 0.6 mi (1.0 km) northeast of Olowalu, and 5.5 mi (8.8 km) southeast of Lahaina.	4.08 (10.57)	1962-72≠, 1973-79	2-10-79	5.28	1,230
16647500	Malalowaiaole Gulch near Maalaea	Lat 20°46'56", long 156°31'32", at Honoapiilani Highway, 200 ft (61 m) upstream from mouth, 0.2 mi (0.3 km) north of McGregor Point, and 1.2 mi (1.9 km) southwest of Maalaea.	.64 (1.66)	1964-79	2-10-79	5.80	85

** Also a water-quality partial-record station.
≠ Operated as a continuous-record gaging station.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Maui--Continued					
16650500	Waikapu Stream near Kihei	Lat 20°49'02", long 156°29'00", at railroad bridge beside Lower Maalaea Road, 2.5 mi (4.0 km) northeast of Maalaea, and 2.5 mi (4.0 km) northwest of Kihei.	6.97 (18.05)	1963-79	2-10-79	7.80	1,080
16658500	Waiakoa Gulch tributary near Waiakoa	Lat 20°44'56", long 156°19'22", at Upper Kula Road, 1.0 mi (1.6 km) southeast of Waiakoa and 1.0 mi (1.6 km) northeast of junction of Lower and Upper Kula Roads.	.98 (2.54)	1964-79	2-10-79	2.83	72
16659000	Waiakoa Gulch at Kihei	Lat 20°47'14", long 156°27'41", 0.3 mi (0.5 km) northeast of Kihei and 0.4 mi (0.6 km) upstream from mouth.	10.1 (26.2)	1963-79	2-10-79	6.56	240
16660000	Kulanihakoi Gulch near Kihei	Lat 20°46'06", long 156°27'03", on right bank 0.5 mi (0.8 km) northeast of Lihue Cemetery, 0.8 mi (1.3 km) upstream from mouth and 1.3 mi (2.1 km) southeast of Kihei.	14.4 (37.3)	1963-70≠, 1971-79	2-10-79	.42	200
16663500	Kamaole Gulch at Kamaole	Lat 20°43'36", long 156°27'02", at Kihei Road, 350 ft (107 m) upstream from mouth, and 0.2 mi (0.3 km) south of Kamaole.	4.28 (11.09)	1972-79	2-10-79	-	a5
16664000	Liilioholo Gulch at Kamaole	Lat 20°43'04", long 156°26'55", on upstream side of Kihei Road, 300 ft (91 m) upstream from mouth, and 0.8 mi (1.3 km) south of Kamaole.	4.12 (10.67)	1972-79	2-10-79	8.72	107
		Hawaii, Island of Hawaii					
16701300	Waiakea Stream at Hilo	Lat 19°42'38", long 155°05'02", 0.3 mi (0.5 km) upstream from Kinoole Street bridge and 1.3 mi (2.1 km) southeast of Hilo Post Office.	35.8 (92.7)	1968-79	2-20-79	9.07	2,590
16701400	Palai Stream at Hilo	Lat 19°40'56", long 155°04'04", at Highway 11, 300 ft (91 m) south of Palai Street intersection and 3.5 mi (5.6 km) southeast of Hilo Post Office.	5.08 (13.16)	1965-79	2-20-79	8.1	1,260
16717400	Kalaoa Mauka Stream near Hilo	Lat 19°48'07", long 155°06'03", at culvert on Highway 19, 1.0 mi (1.6 km) north of Papaikou and 5.1 mi (8.2 km) north of Hilo Post Office.	.24 (.62)	1963-79	2-20-79	20	a400
16717600	Alia Stream near Hilo	Lat 19°50'38", long 155°06'21", on left bank 10 ft (3.0 m) downstream from culvert on Highway 19 at Pepeekeo, 2.0 mi (3.2 km) south of Honomu, and 8.0 mi (12.9 km) north of Hilo.	.58 (1.50)	1962-72≠, 1973-79	2-20-79	17.1	2,850
16717650	Kapehu Stream near Pepeekeo	Lat 19°51'52", long 155°06'11", at culvert on Highway 19, 1.0 mi (1.6 km) southeast of Honomu, 2.2 mi (3.5 km) north of Pepeekeo, and 9.4 mi (15.1 km) north of Hilo.	1.09 (2.82)	1963-79	2-20-79	29.93	3,320
16717850	Keehia Gulch near Ookala	Lat 20°01'08", long 155°18'45", at culvert on Highway 19, 1.7 mi (2.7 km) west of Ookala, and 4.1 mi (6.6 km) southeast of Paauilo.	.62 (1.61)	1963-79	1-14-79	8.20	415

≠ Operated as a continuous-record gaging station.
a Estimated.

Annual maximum discharge at crest-stage partial-record stations during water year 1979--Continued

Station No.	Station name	Location	Drainage area mi² (km²)	Period of record	Annual maximum Date	Gage height (feet)	Discharge (ft³/s)
		Hawaii, Island of Hawaii--Coninued					
16717920	Ahualoa Gulch at Honokaa	Lat 20°05'12", long 155°29'17", at Highway 24, 1.1 mi (1.8 km) northwest of Honokaa Hospital, and 1.5 mi (2.4 km) upstream from mouth.	2.27 (5.88)	1963-79	1-14-79	11.5	760
16717950	Honokaia Gulch tributary near Honokaa	Lat 20°02'58", long 155°32'19", at culvert, 4.8 mi (7.7 km) southwest of Honokaa Hospital, and 5.5 mi (8.8 km) southeast of Kukuihaele.	2.42 (6.27)	1963-79	1-14-79	7.65	385
16752600	Hapahapai Gulch at Kapaau	Lat 20°14'00", long 155°48'00", at Highway 27, 300 ft (91 m) east of Kapaau Post Office.	1.52 (3.94)	1963-79	1-14-79	8.39	245
16755800	Luahine Gulch near Waimea	Lat 20°03'11", long 155°44'35", at culvert 5.1 mi (8.2 km) northwest of Waimea and 5.7 mi (9.2 km) east of Kawaihae.	.32 (.83)	1963-79	1-14-79	3.41	136
16756500	Keanuiomano Stream near Kamuela	Lat 20°01'48", long 155°42'05", on left bank 150 ft (46 m) upstream from Highway 25 at Waiaka and 2.0 mi (3.2 km) west of Kamuela.	4.30 (11.14)	1964-72≠, 1973-79	12- 6-78	7.00	1,640
16759040	Paiakuli Reservoir tributary near Waimea	Lat 20°02'16", long 155°38'08", at Highway 19, 2.1 mi (3.4 km) west of Puukapu Reservoir, and 2.6 mi (4.2 km) northeast of Waimea.	.27 (.70)	1963-79	1-14-79	5.46	303
16759060	Kamakoa Gulch near Waimea	Lat 19°57'32", long 155°41'02", at bridge, 1.4 mi (2.2 km) north of Saddle Road Junction and 4.5 mi (7.2 km) south of Waimea.	50.6 (131.1)	1963-79	1-14-79	6.62	1,150
16759080	Popoo Gulch near Waikii	Lat 19°52'11", long 155°43'51", at bridge on Highway 19, 2.0 mi (3.2 km) north of Keamuku and 5.2 mi (8.4 km) west of Waikii.	33.1 (85.7)	1963-79	1-14-79	5.03	940
16759180	Keopu Stream near Kailua	Lat 19°38'54", long 155°58'15", at county road bridge, 1.9 mi (3.1 km) east of Kailua, and 2.3 mi (3.7 km) northwest of Holualoa Post Office.	2.61 (6.76)	1962, 1965-79	-	-	No flow
16759300	Waiaha Stream at Luawai, near Holualoa	Lat 19°38'12", long 155°55'45", on right bank at Luawai, 1.8 mi (2.9 km) northeast of Holualoa School, and 4.2 mi (6.8 km) southeast of Honokohau School.	8.74 (22.64)	1961-79	9- 4-79	3.26	120
16762000	Alapai Gulch at Naalehu	Lat 19°04'00", long 155°35'19", at debris catchment outlet of Naalehu Watershed Protection Project and 0.2 mi (0.3 km) upstream from Highway 11 at Naalehu.	2.87 (7.43)	1963-79	2-20-79	6.23	962
16770000	Hionamoa Gulch at Pahala	Lat 19°11'45", long 155°29'11", at bridge, 0.6 mi (1.0 km) southwest of Pahala, and 4.1 mi (6.6 km) north of Punaluu.	9.41 (24.37)	1963-79	2-20-79	-	10,400

≠ Operated as a continuous-record gaging station.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1979

Stream	Tributary to	Location	Drainage area mi² (km²)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft³/s)
		Hawaii, Island of Maui				
Waiehu	Pacific Ocean	Lat 20°55'17", long 156°29'53", 500 ft upstream from Waiehu Beach road bridge and 1,000 ft upstream from the mouth.	4.52	1965	11-12-78	3,330
Waihee	Pacific Ocean	Lat 20°56'52", long 156°31'03", 100 ft downstream from new Waihee River bridge, 600 ft downstream from old bridge and 0.45 mile upstream from the mouth.	6.18	-	11-12-78	4,320
		Hawaii, Island of Hawaii				
Alenaoi	Wailoa River	Lat 19°42'49", long 155°05'57", 0.8 mi south of Hilo High School and 1.2 mi southeast of Hilo Hospital.	8.07	1966	2-20-79	1,280
Kaalaala	Pacific Ocean	Lat 19°13'25", long 155°27'55", 1.8 mi northeast of Pahala, 1.8 mi east of Meyer Camp and 200 ft upstream of State Highway 11 bridge crossing.	2.22	-	2-20-79	6,460
Keaiwa	Pacific Ocean	Lat 19°12'58", long 155°28'05", 1.3 mi northeast of Pahala, 1.7 mi east of Meyer Camp and 200 ft downstream of State Highway 11 bridge crossing.	3.39	-	2-20-79	7,360
Piikea	Pacific Ocean	Lat 19°13'34", long 155°27'42", 2.0 mi northeast of Pahala, 2.1 mi east of Meyer Camp and 1,000 ft downstream of State Highway 11 bridge crossing.	7.83	-	2-20-79	6,920

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systematically over a period of years for use in hydrologic analyses. The data are collected usually less than quarterly.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI

16103000 HANALEI RIVER NEAR HANALEI (LAT 22°11'31" LONG 159°27'57")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT					
06...	1030	77	105	7.8	21.5
NOV					
28...	1010	91	100	7.2	19.0
JAN					
15...	1045	2030	71	7.3	17.5
MAR					
08...	1110	212	90	7.1	18.0
13...	1010	93	93	8.0	22.0
21...	1015	92	--	--	18.5
APR					
25...	1040	88	55	7.0	18.5
27...	1025	67	--	--	19.0
JUN					
12...	1045	139	80	7.3	19.0
JUL					
16...	1000	65	100	7.2	22.0
SEP					
06...	1010	48	92	7.5	22.0

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT
MAR											
13...	1010	93	--	--	--	35	3	5.3	5.2	6.3	28
14...	1030	--	--	K24	140	--	--	--	--	--	--
21...	1015	92	52CC	--	--	--	--	--	--	--	--

DATE	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)
MAR											
13...	.5	.4	32	4.0	8.2	.1	19	68	.09	17.1	.00
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAR										
13...	.01	.01	.06	.07	.07	.31	.01	.00	70	10
14...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--

K Results based on colony count outside the acceptable range (non-ideal colony count).

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU

16228200 MOANALUA STREAM NEAR AIEA (LAT 21°22'37" LONG 157°52'58")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
OCT				
30...	1145	156	681	287
30...	1155	153	491	203
30...	1315	166	301	135
30...	1415	480	438	568
30...	1445	405	346	378
30...	1520	405	261	285
30...	1620	405	156	171
30...	1720	335	124	112
30...	1820	390	86	91
30...	1920	371	87	87
30...	2020	380	70	72
30...	2120	366	67	66
30...	2220	371	62	62
30...	2320	304	57	47
31...	0020	262	53	37
31...	0120	212	65	37
31...	0220	176	43	20
31...	0320	143	38	15
31...	0945	79	17	3.6
31...	1900	143	409	158
31...	2000	460	146	181
31...	2100	353	144	137
31...	2200	220	76	45
31...	2300	169	47	21
NOV				
14...	2150	160	324	140
DEC				
07...	1240	183	179	88
JAN				
11...	1210	250	214	144
11...	1310	600	182	295
11...	1410	540	1030	1500
11...	1510	480	430	557
11...	1610	358	222	215
11...	1710	286	145	112
11...	1810	239	117	76
11...	1910	201	93	50
11...	2010	173	86	40
11...	2110	156	69	29
11...	2210	146	61	24

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
JAN				
13...	0300	415	234	262
13...	0800	582	54	85
13...	0900	492	49	65
13...	1010	371	110	110
13...	1020	358	74	72
13...	1100	304	73	60
13...	1215	262	67	47
13...	1315	223	53	32
13...	1415	187	45	23
13...	1515	169	42	19
13...	1615	176	43	20
13...	1715	166	47	21
13...	1815	143	33	13
14...	0100	212	329	188
14...	0200	430	259	301
14...	0300	231	145	90
14...	0400	176	45	21
14...	1000	137	11	4.1
15...	0900	81	24	5.2
15...	1210	89	27	6.5
FEB				
03...	2330	405	1470	1610
04...	0030	187	764	386
04...	0130	156	471	158
10...	0530	160	655	283
10...	0630	1100	1780	5290
10...	0730	380	675	693
10...	0830	223	326	156
10...	0930	156	180	76
11...	1430	187	181	91
11...	1530	183	153	76
19...	1025	89	43	10
20...	2120	194	717	376
20...	2220	430	727	894
20...	2320	358	641	620
21...	0130	153	368	152
21...	0330	169	152	69
21...	0930	570	845	1300
21...	0940	498	859	1160
21...	1030	312	706	595

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
FEB				
21...	1130	201	333	181
21...	1230	176	150	71
21...	1330	194	139	73
21...	1430	212	257	147
21...	1530	163	264	116
24...	1230	212	403	231
26...	0530	430	682	792
26...	0630	231	756	472

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

16273900 KAMOOALII STREAM AT KANEOHE (LAT 21°24'51" LONG 157°48'13")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT					
02...	1155	6.1	290	7.2	25.0
31...	1135	66	180	7.0	22.0
NOV					
21...	1430	12	225	7.8	25.0
JAN					
08...	1120	8.4	220	7.9	23.0
FEB					
16...	1250	19	120	7.5	22.0
APR					
04...	1810	13	230	7.1	24.5
JUN					
26...	0950	8.6	215	8.2	23.5
SEP					
26...	1135	5.8	220	8.6	29.0

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
OCT				
02...	1130	6.9	10	.19
30...	1300	264	692	493
30...	1400	250	1170	790
31...	1130	65	253	44
NOV				
13...	1640	81	112	24
14...	0900	29	31	2.4
21...	1400	14	15	.57
JAN				
08...	1040	8.9	15	.36
16...	1430	19	25	1.3
FEB				
07...	1710	22	123	7.3
10...	0930	152	332	136
16...	1030	19	19	.97
20...	1350	46	148	18
22...	1230	29	62	4.9
MAR				
19...	0945	18	41	2.0
MAR				
26...	1720	16	50	2.2
APR				
04...	1715	14	41	1.5
MAY				
02...	1450	14	19	.72
08...	1100	15	43	1.7
18...	1310	10	13	.35
24...	1330	9.3	14	.35
JUN				
25...	1600	8.9	19	.46
JUL				
31...	1520	6.0	10	.16
AUG				
09...	1430	215	3800	2210
09...	1450	301	3420	2780
09...	1505	170	2360	1080
09...	1515	108	1570	458
09...	1525	66	1540	274

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

16284500 WAIHEE STREAM AT KAHALUU (LAT 21°17'32" LONG 157°50'26")

DATE	TIME	TEMPERATURE (DEG C)	TURBIDITY (NTU)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
OCT							
18...	1050	23.0	21	.27	.22	--	.69
DEC							
28...	0935	21.0	6.3	.30	.04	--	.24
FEB							
14...	0950	20.0	3.9	.15	.07	--	.10
MAR							
16...	1050	21.5	2.7	.06	.07	--	.10
APR							
25...	1015	21.0	8.9	.17	.09	.11	.23
JUN							
27...	0945	22.5	9.2	.14	.07	.08	.20
AUG							
09...	1115	25.0	4.6	.23	.15	.18	.21
SEP							
24...	1130	24.5	7.8	.25	.07	.08	.56

DATE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS TOTAL (MG/L AS PO4)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHATE, TOTAL (MG/L AS PO4)	SEDIMENT, SUSPENDED (MG/L)
OCT							
18...	.91	1.2	5.2	--	.30	--	645
DEC							
28...	.28	.58	2.6	--	.16	--	20
FEB							
14...	.17	.32	1.4	--	.06	--	7
MAR							
16...	.17	.23	1.0	--	.03	--	13
APR							
25...	.32	.49	2.2	.12	.04	.12	23
JUN							
27...	.27	.41	1.8	.37	.12	.37	26
AUG							
09...	.36	.59	2.6	.49	.16	--	17
SEP							
24...	.63	.88	3.9	.52	.17	--	27

NOTE.--Water-quality samples collected by Soil Conservation Service.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

212732157502200 KAHALUU STREAM AT ALTITUDE 10 FT AT KAHALUU (LAT 21°27'32" LONG 157°50'22")

DATE	TIME	TEMPERATURE (DEG C)	TURBIDITY (NTU)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
OCT							
18...	1100	24.0	2.0	.68	.78	--	.32
DEC							
28...	0930	22.0	3.0	.89	.03	--	.39
FEB							
14...	1010	21.0	4.1	.95	.15	--	.20
MAR							
16...	1015	22.0	2.1	.90	.13	--	.34
APR							
25...	1000	22.5	5.2	1.1	.03	.04	.37
JUN							
27...	1022	23.5	7.0	.89	.09	.11	.17
AUG							
09...	1100	24.5	1.9	.51	.01	.01	.14
SEP							
24...	1115	--	1.5	.74	.01	.01	1.5

DATE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHATE, TOTAL (MG/L AS PO4)	PHOSPHORUS TOTAL (MG/L AS PO4)	SEDIMENT, SUSPENDED (MG/L)
OCT							
18...	1.1	1.8	7.9	.77	--	--	9
DEC							
28...	.42	1.3	5.8	.17	--	--	7
FEB							
14...	.35	1.3	5.8	.14	--	--	7
MAR							
16...	.47	1.4	6.1	.33	--	--	8
APR							
25...	.40	1.5	6.6	.51	1.6	1.6	12
JUN							
27...	.26	1.2	5.1	.63	1.9	1.9	14
AUG							
09...	.15	.66	2.9	.47	--	1.4	20
SEP							
24...	1.5	2.2	9.9	.50	--	1.5	4

NOTE.--Water-quality samples collected by Soil Conservation Service.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

212742157503200 KAHALUU STREAM AT HIGHWAY 83 AT KAHALUU (LAT 21°27'42" LONG 157°50'32")

DATE	TIME	TEMPER-ATURE (DEG C)	TUR-BID-ITY (NTU)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)
OCT							
18...	1110	28.0	4.4	.11	.07	--	.46
DEC							
28...	0910	21.0	2.5	.05	.04	--	.31
FEB							
14...	1030	20.0	12	.52	.12	--	.34
MAR							
16...	0950	23.0	2.5	.04	.07	--	.23
APR							
25...	0930	23.0	10	.06	.06	.07	.37
JUN							
27...	1005	24.0	10	.07	.03	.04	.00
AUG							
09...	0945	30.0	2.2	.03	.06	.07	.29
SEP							
24...	1100	28.0	6.0	.01	.08	.10	.46

DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHATE, TOTAL (MG/L AS PO4)	PHOS-PHORUS TOTAL (MG/L AS PO4)	SEDI-MENT, SUS-PENDED (MG/L)
OCT							
18...	.53	.64	2.8	.09	--	--	59
DEC							
28...	.35	.40	1.8	.07	--	--	11
FEB							
14...	.46	.98	4.3	.07	--	--	31
MAR							
16...	.30	.34	1.5	.05	--	--	35
APR							
25...	.43	.49	2.2	.06	.18	.18	23
JUN							
27...	.00	.07	.31	.07	.21	.21	22
AUG							
09...	.35	.38	1.7	.04	--	.12	43
SEP							
24...	.54	.55	2.4	.01	--	.03	25

NOTE.--Water-quality samples collected by Soil Conservation Service.

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI

16010000 - KAWAIKOI STREAM NR WAIMEA, KAUAI, HI (LAT 22 08 09 LONG 159 37 22)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
17...	1240	2.8	29	6.5	19.5
DEC					
12...	1050	34	25	7.1	14.5
FEB , 1979					
09...	1145	28	31	6.6	16.5
APR					
06...	1215	14	35	6.3	16.0
MAY , 1979					
11...	0950	11	26	4.7	17.0
JUN					
20...	1230	35	40	5.8	18.0
AUG					
08...	1015	4.5	30	5.0	19.0
SEP					
19...	1315	2.1	32	5.8	20.0

16014000 - KOKEE DITCH NR WAIMEA,KAUAI, HI (LAT 22 06 42 LONG 159 40 43)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
17...	1450	4.3	39	6.5	16.5
DEC					
12...	1320	55	26	7.2	14.5
FEB , 1979					
09...	1320	74	38	7.2	14.5
APR					
06...	1420	28	40	6.6	16.0
MAY , 1979					
22...	1005	12	36	6.0	17.0
JUN					
26...	1010	14	32	5.8	16.5
AUG					
09...	1010	3.5	36	5.3	18.0
SEP					
19...	1400	2.8	42	6.3	18.5

16036000 - MAKAWELI RIVER NR WAIMEA, KAUAI, HI (LAT 21 58 31 LONG 159 38 55)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
16...	1445	10	150	7.5	23.5
DEC					
08...	1245	47	70	7.3	19.5
FEB , 1979					
08...	1350	37	108	6.1	18.5
APR					
05...	1000	168	65	6.8	18.5
MAY , 1979					
08...	1415	45	88	7.3	22.0
JUN					
21...	1345	29	92	7.4	23.0
AUG					
03...	1050	26	140	7.1	24.0
SEP					
18...	1000	10	150	7.3	22.0

16049000 - HANAPEPE RIVER BL MANUAHI STR NR ELEELE,KAUAI,HI (LAT 21 57 29 LONG 159 33 13)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
16...	1030	17	110	7.7	21.0
DEC					
08...	0955	28	120	7.2	18.5
FEB , 1979					
08...	1010	30	115	7.5	18.0
MAR					
23...	1130	25	55	7.2	19.0
MAY , 1979					
08...	1035	62	90	6.5	19.0
JUN					
21...	1010	41	88	7.1	20.0
AUG					
07...	1120	16	110	7.7	22.5
SEP					
17...	1030	18	110	7.0	22.0

16060000 - SF WAILUA RIVER NR LIHUE,KAUAI, HI (LAT 22 02 24 LONG 159 22 58)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
04...	1410	6.9	130	7.3	25.5
NOV					
03...	1005	273	87	6.4	22.0
DEC					
05...	1440	50	85	6.8	21.0
JAN , 1979					
03...	1305	7.5	160	7.3	18.5
31...	1330	34	110	7.1	--
FEB					
28...	1320	285	82	7.1	19.0
APR , 1979					
03...	1315	7.9	140	7.1	23.5
MAY					
01...	1420	5.9	130	7.3	23.5
30...	1500	6.6	115	7.2	26.0
JUN					
28...	1415	333	92	6.5	21.0
AUG					
02...	1345	5.6	120	6.7	28.0
28...	1405	6.0	125	7.0	26.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI--Continued

16061000 - NORTH WAILUA DITCH NR LIHUE, KAUAI, HI (LAT 22 03 56 LONG 159 28 14)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
20...	1110	18	62	7.1	20.0
DEC					
01...	1255	19	42	7.2	19.5
19...	1340	18	68	7.0	18.0
JAN , 1979					
22...	1320	18	50	8.3	17.0
FEB					
16...	1300	24	39	8.0	17.0
MAR					
20...	1305	21	50	7.0	18.5
MAY , 1979					
02...	1230	19	66	7.4	18.0
31...	1310	19	71	7.4	18.5
JUN					
29...	1245	18	56	7.1	19.5
AUG					
01...	1440	16	68	7.5	20.5
28...	1410	18	73	7.9	22.0

16061200 - N WAILUA DITCH BL WAIKOKO STR NR LIHUE,KAUAI,HI (LAT 22 03 34 LONG 159 28 00)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
20...	0955	23	62	7.0	20.0
NOV					
17...	1110	22	72	7.0	18.5
DEC					
19...	1110	20	70	7.0	18.0
JAN , 1979					
22...	1115	21	63	7.8	16.5
FEB					
16...	1100	27	55	7.8	16.5
MAR					
20...	1110	21	45	7.1	18.5
APR , 1979					
23...	1130	17	75	7.1	18.5
MAY					
21...	1110	22	72	7.5	18.5
JUN					
18...	1105	25	56	6.7	19.5
JUL					
20...	1110	18	70	7.2	20.5
AUG					
20...	1100	20	75	7.3	20.0
SEP					
21...	1110	20	72	6.8	20.5

16062000 - STABLE STORM DITCH NR LIHUE, KAUAI, HI (LAT 22 04 09 LONG 159 26 46)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
20...	0845	34	67	7.0	20.0
NOV					
17...	0920	.03	130	7.1	20.0
DEC					
19...	1000	.29	75	7.1	18.5
JAN , 1979					
22...	0930	.39	75	7.7	17.5
FEB					
16...	0915	.08	122	6.9	18.5
MAR					
20...	0900	.03	60	7.2	18.5
APR , 1979					
23...	0945	19	87	7.4	18.5
MAY					
21...	0940	15	90	7.1	19.5
JUN					
18...	0925	.49	65	6.7	20.5
JUL					
20...	0925	36	85	7.1	20.5
AUG					
20...	0920	.21	85	6.5	21.0
SEP					
21...	0925	30	85	6.2	20.0

16063000 - NF WAILUA R AT ALT 650 FT NR LIHUE, KAUAI, HI (LAT 22 04 02 LONG 159 26 21)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1030	93	56	7.1	19.5
31...	1400	3330	24	5.7	19.0
DEC					
01...	1000	94	87	7.3	19.0
JAN , 1979					
03...	0945	28	100	7.3	16.5
FEB					
01...	1025	42	88	6.9	17.5
28...	1105	125	80	7.0	18.5
APR , 1979					
03...	1035	9.6	85	7.5	19.5
MAY					
02...	1030	4.5	85	6.9	19.5
31...	1020	1.2	95	7.7	21.5
JUN					
29...	1010	91	75	6.8	19.5
AUG					
02...	1010	2.6	85	6.8	21.5
29...	1035	3.8	92	7.4	21.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
16068000 - EB OF NF WAILUA RIVER NR LIHUE, KAUAI, HI (LAT 22 08 19 LONG 159 25 05)					
OCT , 1978					
25...	0910	18	102	7.3	19.5
NOV					
22...	1015	35	88	7.1	20.0
DEC					
21...	1110	32	80	7.1	18.0
JAN , 1979					
25...	1000	41	86	6.8	18.5
FEB					
22...	1030	74	45	7.2	18.0
MAR					
26...	1030	21	100	6.6	17.5
APR , 1979					
24...	1000	15	110	6.8	18.5
MAY					
24...	0935	26	96	7.2	20.0
JUN					
25...	0955	38	90	6.8	20.5
JUL					
25...	0950	20	96	7.2	21.5
AUG					
27...	1030	15	105	6.5	22.0
SEP					
24...	0950	13	105	6.8	22.0
16069000 - WAILUA DITCH NR KAPAA, KAUAI, HI (LAT 22 04 34 LONG 159 24 04)					
OCT , 1978					
20...	1335	32	93	7.3	24.5
DEC					
19...	1520	21	90	7.2	18.5
JAN , 1979					
22...	1515	29	87	7.5	20.5
MAR					
20...	1500	20	80	7.4	19.0
APR					
23...	1445	28	97	6.9	22.5
MAY , 1979					
21...	1440	24	85	6.7	25.5
JUN					
18...	1425	28	80	6.6	24.5
JUL					
20...	1440	24	90	7.1	27.5
AUG					
20...	1450	30	78	6.9	27.0
SEP					
21...	1440	15	100	6.5	30.0
16071000 - NF WAILUA RIVER NR KAPAA, KAUAI, HI (LAT 22 03 08 LONG 159 22 22)					
OCT , 1978					
11...	0905	24	120	7.6	22.5
DEC					
06...	0930	85	95	7.2	19.0
JAN , 1979					
17...	0935	143	98	7.5	18.5
MAR					
22...	1025	65	75	7.2	18.5
APR , 1979					
30...	0920	8.8	120	7.1	22.0
JUL					
17...	1035	8.9	125	8.1	24.0
SEP					
07...	1055	5.8	115	7.1	25.0
16071500 - LEFT BRANCH OFAEKAA STREAM NR KAPAA, KAUAI, HI (LAT 22 09 44 LONG 159 23 55)					
OCT , 1978					
11...	1200	1.0	105	6.7	22.5
DEC					
06...	1050	1.9	94	7.2	19.5
JAN , 1979					
17...	1120	2.2	92	8.0	19.0
MAR					
22...	1240	2.6	95	7.3	19.0
APR , 1979					
30...	1100	1.2	85	7.2	21.5
JUN					
05...	1345	1.3	95	6.6	21.5
JUL					
17...	1400	1.3	100	7.2	24.0
SEP					
07...	1420	.81	102	6.2	25.0
16077000 - MAKALEHA DITCH NR KEALIA, KAUAI, HI (LAT 22 07 06 LONG 159 22 04)					
OCT , 1978					
23...	1305	1.1	90	7.5	19.5
NOV					
17...	1330	.20	70	6.9	20.0
DEC					
18...	1250	.85	70	6.9	18.5
JAN , 1979					
22...	1310	20	68	7.0	18.5
FEB					
16...	1305	1.2	65	7.0	18.5
MAR					
19...	1320	2.0	60	7.0	19.5
APR , 1979					
23...	1235	17	60	7.1	18.5
MAY					
21...	1300	13	65	6.6	20.0
JUN					
18...	1350	11	65	7.0	20.5
JUL					
20...	1340	8.2	70	6.0	20.0
AUG					
20...	1320	6.0	60	7.1	20.0
SEP					
21...	1310	7.4	48	7.0	20.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI--Continued

16079000 - KAPAHI DITCH NR KEALIA, KAUAI, HI (LAT 22 06 09 LONG 159 22 28)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
23...	1425	.43	97	7.2	20.0
NOV					
17...	1520	18	65	6.8	20.0
DEC					
18...	1430	11	75	6.9	18.5
JAN , 1979					
22...	1505	4.5	70	6.9	19.0
FEB					
16...	1450	.23	75	7.2	19.0
MAR					
19...	1500	.54	55	7.0	20.0
APR , 1979					
23...	1420	3.9	55	7.2	19.0
MAY					
21...	1520	4.5	75	7.0	21.0
JUN					
19...	0915	.95	60	7.2	19.5
JUL					
20...	1510	3.1	70	7.2	21.0
AUG					
20...	1455	5.6	70	7.2	21.0
SEP					
21...	1510	2.9	65	7.1	21.0

16080000 - KAPAA STR AT KAPAHI DITCH INTK NR KAPAA,KAUAI,HI (LAT 22 06 15 LONG 159 22 29)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
NOV , 1978					
03...	1000	760	43	6.2	19.0
FEB , 1979					
02...	0855	8.5	85	7.3	18.5
27...	1415	32	100	7.3	18.0
JUN , 1979					
01...	0925	5.1	112	7.1	19.0
29...	0915	10	60	6.9	19.0

16087000 - AKAHOLA DITCH WASTEWAY NR KEALIA, KAUAI, HI (LAT 22 08 16 LONG 159 22 28)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
23...	0935	.05	72	6.6	19.0
NOV					
30...	0935	.39	84	6.8	18.5
JAN , 1979					
05...	0935	.04	85	7.1	16.5
FEB					
02...	1010	.17	100	6.8	18.5
MAR					
01...	1010	10	85	7.0	18.5
APR					
04...	1035	.24	80	7.0	21.0
MAY , 1979					
02...	1000	.10	85	7.2	20.0
31...	1010	.09	98	7.0	21.0
JUN					
29...	1220	.04	85	6.8	19.0
JUL					
31...	0950	.17	70	6.8	22.5
AUG					
29...	1130	.04	100	7.1	21.0

16088000 - AKAHOLA DITCH AB KANEHA RES NR KEALIA,KAUAI,HI (LAT 22 08 10 LONG 159 22 28)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
23...	0845	7.0	75	6.7	20.0
NOV					
17...	0925	.05	70	7.1	20.0
DEC					
18...	0955	.13	70	7.1	18.5
JAN , 1979					
22...	0940	.25	75	7.2	18.5
FEB					
16...	0905	.12	85	7.0	18.5
MAR					
19...	1010	2.8	80	7.2	18.5
APR , 1979					
23...	0910	1.6	70	6.9	18.5
MAY					
21...	0935	3.9	60	7.2	19.5
JUN					
18...	0950	3.6	70	7.2	21.0
JUL					
20...	0920	2.5	75	7.0	20.0
AUG					
20...	0940	3.0	65	7.0	21.0
SEP					
21...	0930	5.5	60	7.0	20.0

16089000 - AKAHOLA STREAM NR KEALIA, KAUAI, HI (LAT 22 09 05 LONG 159 21 17)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	0955	6.2	120	7.9	22.0
NOV					
02...	1020	78	74	6.1	19.0
30...	1045	8.7	112	7.1	19.0
JAN , 1979					
05...	1020	6.2	110	7.6	16.5
FEB					
02...	1115	7.3	120	7.6	18.5
MAR					
01...	1050	25	110	7.3	19.0
APR , 1979					
04...	1240	18	90	7.2	--
MAY					
02...	1155	6.4	70	7.1	21.0
31...	1300	7.4	110	7.1	21.0
JUN					
29...	1510	8.5	85	6.8	20.0
JUL					
31...	1155	3.5	115	7.6	23.5
AUG					
29...	1310	3.6	120	7.3	22.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI--Continued

16091000 - LOWER ANAHOLA DITCH NR KEALIA, KAUAI, HI (LAT 22 08 14 LONG 159 19 31)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
23...	1020	2.8	112	7.0	20.5
DEC					
18...	1100	.05	--	--	18.5
JAN , 1979					
22...	1105	.03	120	7.2	19.0
FEB					
16...	1100	.03	125	7.1	18.5
MAR					
19...	1120	--	110	7.3	20.5
APR					
23...	1110	.20	95	7.2	20.0
27...	1335	4.0	--	--	20.0
MAY , 1979					
21...	1140	.11	95	7.2	21.5
JUN					
18...	1140	1.0	110	7.2	21.5
JUL					
20...	1110	3.0	90	7.3	21.0
AUG					
20...	1155	3.2	80	7.4	22.0
SEP					
21...	1150	2.5	95	7.3	20.5

16093200 - ANAHOLA STREAM AT ANAHOLA, KAUAI, HI (LAT 22 08 42 LONG 159 18 59)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	1315	7.9	138	7.3	22.0
NOV					
02...	1425	113	90	6.3	21.5
30...	1325	13	150	7.1	19.5
JAN , 1979					
05...	1345	11	120	7.0	18.0
FEB					
02...	1400	9.3	140	7.5	19.5
MAR					
01...	1305	50	130	7.2	19.0
APR , 1979					
04...	1435	19	120	7.3	21.0
MAY					
02...	1455	9.6	150	7.2	21.5
31...	1525	9.8	195	7.3	21.5
JUL					
03...	0935	10	130	6.7	21.0
31...	1450	4.1	155	7.7	26.0
SEP					
10...	1010	4.1	150	7.3	22.0

16097500 - HALAULANI STR AT ALT 400 FT NR KILAUE, KAUAI, HI (LAT 22 10 54 LONG 159 25 17)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
10...	0945	6.8	102	7.4	20.0
NOV					
29...	1005	7.3	102	7.7	18.0
JAN , 1979					
16...	1015	9.9	92	--	18.0
MAR					
16...	1000	6.2	70	7.3	19.0
APR , 1979					
26...	1035	4.4	60	7.1	19.0
JUN					
13...	1020	13	86	6.9	20.5
JUL					
17...	1010	5.5	85	7.2	20.0
SEP					
07...	1010	4.6	85	7.1	22.0

16100000 - HANALEI TUNNEL OUTLET NR LIHUE, KAUAI, HI (LAT 22 05 02 LONG 159 27 50)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
04...	1030	24	80	7.6	18.5
NOV					
06...	0945	30	80	6.9	16.0
DEC					
05...	1030	22	78	7.2	17.0
JAN , 1979					
04...	1010	17	85	7.5	15.5
31...	1020	28	71	7.6	16.5
FEB					
27...	1020	35	70	7.2	17.0
MAR , 1979					
30...	1130	14	75	6.6	17.0
MAY					
01...	1030	19	60	6.9	17.0
30...	1125	.24	120	7.0	20.0
JUN					
28...	1010	64	49	6.9	18.0
AUG					
01...	1055	27	75	7.3	19.0
28...	1045	26	80	7.2	18.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI--Continued

16103000 - HANALEI RIVER NR HANALEI, KAUAI, HI (LAT 22 11 31 LONG 159 27 57)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
06...	1030	77	105	7.8	21.5
NOV					
28...	1010	91	100	7.2	19.0
JAN , 1979					
15...	1045	2030	71	7.3	17.5
MAR					
08...	1110	212	90	7.1	18.0
13...	1010	93	93	8.0	22.0
21...	1015	92	--	--	18.5
APR , 1979					
25...	1040	88	55	7.0	18.5
27...	1025	67	--	--	19.0
JUN					
12...	1045	139	80	7.3	19.0
JUL					
16...	1000	65	100	7.2	22.0
SEP					
06...	1010	48	92	7.5	22.0

16108000 - WAINIHA RIVER NEAR HANALEI, KAUAI, HI (LAT 22 08 20 LONG 159 33 38)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
18...	1210	43	68	7.8	18.0
JAN , 1979					
02...	1245	52	67	7.7	16.0
MAR					
07...	1250	54	60	7.1	19.0
MAY , 1979					
18...	1230	64	56	7.1	19.5
JUL					
02...	1215	540	30	6.7	18.0
AUG					
23...	1230	47	68	7.8	20.0

HAWAII, ISLAND OF OAHU

16200000 - NF KAUKONAHUA STR AB RB NR WAHIAWA, OAHU, HI (LAT 21 31 09 LONG 157 56 53)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
16...	1240	3.2	53	6.8	21.5
DEC					
01...	1420	4.0	51	7.0	20.0
JAN , 1979					
23...	1340	5.5	58	7.0	18.0
FEB					
28...	1340	15	56	6.9	20.0
APR , 1979					
18...	1310	1.8	55	7.1	22.0
JUL					
03...	1350	5.3	52	7.3	23.0
AUG					
21...	1530	4.3	49	6.9	25.0
SEP					
28...	1230	9.3	34	6.4	22.0

16208000 - S F KAUKONAHUA STR AT E PUMP NR WAHIAWA,OAHU,HI (LAT 21 29 32 LONG 157 59 54)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
17...	1545	4.0	63	6.8	22.0
JAN , 1979					
24...	1720	14	68	6.8	18.5
MAR					
06...	1730	11	61	7.0	19.0
APR					
16...	1650	3.1	69	7.0	22.0
MAY , 1979					
29...	1630	3.8	64	6.8	24.0
JUL					
09...	1700	6.6	52	6.7	24.0
AUG					
22...	1430	2.3	47	6.4	25.5
SEP					
28...	1600	2.8	56	6.0	24.0

16210900 - POAMOHO TUNNEL NR WAHIAWA, OAHU, HI (LAT 21 31 12 LONG 157 58 51)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
23...	1610	4.1	--	--	21.0
DEC					
12...	1155	3.8	--	--	19.0
JAN , 1979					
27...	1155	19	--	--	18.0
MAR					
06...	1220	6.3	--	--	18.5
APR , 1979					
17...	1455	.82	--	--	20.5
JUN					
02...	1350	.52	--	--	23.0
JUL					
12...	1400	1.2	--	--	22.0
AUG					
22...	1050	.66	--	--	23.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

16211600 - MAKAHA STREAM NR MAKAHA, OAHU, HI (LAT 21 30 16 LONG 158 10 59)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
18...	1510	.82	95	7.5	21.5
NOV					
30...	1445	.81	120	7.1	20.0
JAN , 1979					
16...	1515	6.8	115	7.5	18.5
APR					
19...	1545	.54	118	7.6	19.5
JUN , 1979					
01...	1700	.30	118	7.1	20.0
JUL					
11...	1445	.17	140	7.5	20.5
AUG					
23...	1620	.04	158	7.0	21.0

16216000 - WAIAWA STREAM NR PEARL CITY, OAHU, HI (LAT 21 23 57 LONG 157 58 51)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
26...	1300	2.4	1500	7.2	23.5
NOV					
01...	1300	143	510	7.1	21.5
DEC					
20...	1240	31	330	7.2	20.5
FEB , 1979					
01...	1155	7.1	875	7.1	21.5
MAR					
16...	1150	4.0	900	7.2	23.0
APR , 1979					
25...	1350	4.3	1550	7.2	24.5
JUN					
15...	1440	4.9	1500	7.0	24.5
JUL					
23...	1135	4.6	1800	7.0	24.5
AUG					
30...	1350	3.2	1200	7.1	26.0

16224500 - KALAUAO STREAM AT MOANALUA RD,AT AIEA,OAHU, HI (LAT 21 23 07 LONG 157 56 22)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
FEB , 1979					
20...	1110	50	110	7.3	20.5
APR , 1979					
13...	1450	.19	620	--	24.5

16226000 - NORTH HALAWA STREAM NR AIEA, OAHU, HI (LAT 21 23 46 LONG 157 53 37)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
NOV , 1978					
03...	1045	13	145	7.2	21.5
DEC					
18...	1100	1.2	150	7.3	20.0
JAN , 1979					
31...	1140	.69	130	7.2	19.0

16232000 - NUUANU STR BL RES 2 WSTEWY NR HONOLULU, OAHU, HI (LAT 21 20 57 LONG 157 49 40)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
25...	1515	2.4	125	7.5	22.5
DEC					
18...	1545	6.0	135	7.5	20.0
FEB , 1979					
01...	1550	6.1	140	7.6	19.5
MAR					
19...	1400	6.4	125	7.6	21.5
APR , 1979					
23...	1515	2.9	140	7.7	22.5
JUN					
14...	1440	1.3	125	7.6	22.5
JUL					
23...	1525	1.4	125	7.2	24.0
SEP					
04...	1440	2.5	120	7.6	24.0

16238500 - WAIHI STREAM AT HONOLULU, OAHU, HI (LAT 21 19 55 LONG 157 48 12)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1030	1.5	140	7.1	22.0
25...	1200	.84	145	7.4	21.5
DEC					
15...	1410	4.1	145	7.4	20.0
JAN , 1979					
29...	1000	2.0	150	7.4	20.0
MAR					
09...	1450	2.4	150	7.5	20.5
APR , 1979					
23...	0930	.45	165	7.2	20.0
JUN					
11...	1520	.55	150	6.7	21.5
JUL					
18...	1200	1.3	140	7.0	22.0
AUG					
31...	1230	.41	140	7.3	23.5

16240500 - WAIAKEAKUA STREAM AT HONOLULU, OAHU, HI (LAT 21 19 53 LONG 157 48 08)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1200	2.9	140	7.4	21.5
25...	1015	2.5	140	7.4	20.5
DEC					
15...	1210	5.7	125	7.4	20.0
JAN , 1979					
29...	1225	4.0	135	7.5	20.0
MAR					
09...	1200	5.4	135	7.6	20.5
APR , 1979					
23...	1150	3.4	140	7.9	20.5
JUN					
11...	1130	3.0	140	8.0	21.0
JUL					
18...	1020	3.4	125	7.5	21.0
AUG					
31...	1030	2.1	135	7.6	22.5

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

16244000 - PUKELE STREAM NEAR HONOLULU, OAHU, HI (LAT 21 18 36 LONG 157 47 27)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1330	.56	220	6.5	22.5
27...	1310	.50	225	6.2	22.5
DEC					
19...	1010	3.2	205	6.9	20.5
JAN , 1979					
30...	1545	1.6	240	6.9	22.0
FEB					
21...	1430	15	165	7.4	21.5
MAR					
14...	1425	1.5	240	7.0	22.0
APR , 1979					
24...	1400	.51	250	6.6	22.5
JUN					
13...	1150	.39	220	6.5	22.5
JUL					
19...	1315	.48	220	6.5	23.0
SEP					
06...	1405	.35	220	6.6	22.5

16247000 - PALOLO STREAM NEAR HONOLULU, OAHU, HI (LAT 21 17 34 LONG 157 48 24)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
27...	1100	.64	300	9.4	24.5
DEC					
19...	1300	7.8	240	9.3	22.0
JAN , 1979					
30...	1210	2.1	360	10.3	24.0
MAR					
14...	1115	2.5	340	9.5	23.0
APR , 1979					
24...	1100	.86	340	9.7	24.0
JUN					
13...	1400	2.0	325	9.6	32.0
JUL					
19...	1030	.84	315	9.3	28.0
SEP					
06...	1120	1.6	200	9.6	29.0

16254000 - MAKAWAO STREAM NEAR KAILUA, OAHU, HI (LAT 21 21 49 LONG 157 46 02)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
09...	1015	1.4	220	7.6	23.0
NOV					
22...	1040	6.4	230	7.6	22.5
JAN , 1979					
08...	1530	3.6	220	7.8	21.5
FEB					
13...	1500	17	200	7.6	22.0
APR					
03...	1515	4.5	220	7.4	22.0
MAY , 1979					
10...	1000	4.5	200	7.6	23.0
JUN					
26...	1300	1.9	200	7.6	23.0
AUG					
09...	1245	1.6	200	7.4	23.0
SEP					
17...	1605	1.1	200	7.5	24.0

16283600 - SF WAIHEE STR NR HEEIA, OAHU, HI (LAT 21 26 47 LONG 157 52 12)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	0945	.63	150	7.1	20.0
NOV					
15...	1420	.90	140	7.7	19.5
JAN , 1979					
04...	1505	.69	140	7.4	19.5
FEB					
08...	1515	.83	130	7.1	19.5
MAR					
27...	1530	--	140	7.4	20.0
28...	1530	.93	120	7.0	19.5
APR , 1979					
04...	0835	1.0	120	7.6	19.0
MAY					
09...	0950	1.1	118	7.8	20.0
JUN					
19...	1015	.97	130	7.6	20.5
AUG					
08...	1030	1.0	130	7.8	20.0
SEP					
21...	1055	1.0	120	7.6	20.0

16283700 - NF WAIHEE STREAM NR HEEIA, OAHU, HI (LAT 21 26 48 LONG 157 52 18)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1125	.90	120	7.0	19.5
NOV					
15...	1545	1.1	130	7.5	19.5
JAN , 1979					
04...	1545	1.2	130	7.3	19.0
FEB					
08...	1630	1.4	120	7.1	19.0
APR					
04...	1200	1.4	120	7.4	19.0
MAY , 1979					
09...	1205	1.5	110	7.7	19.5
JUN					
20...	1240	1.4	120	7.8	19.5
AUG					
08...	1155	1.5	120	7.6	19.5
SEP					
21...	1205	1.5	120	7.7	19.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

16284000 - WAIHEE STREAM NR HEEIA, OAHU, HI (LAT 21 27 01 LONG 157 51 38)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1400	1.6	140	7.1	21.0
NOV					
15...	1230	5.8	150	7.4	21.5
JAN , 1979					
04...	1330	2.0	140	7.1	19.5
FEB					
08...	1315	3.3	140	7.2	20.0
MAR					
27...	1525	3.0	140	7.1	20.0
MAY , 1979					
09...	1515	3.1	130	7.5	21.5
JUN					
19...	1540	2.8	140	7.3	21.0
AUG					
08...	1400	2.7	130	7.3	21.5
SEP					
21...	1535	2.4	130	7.4	21.5

16284200 - WAIHEE STREAM NR KAHALUU,OAHU,HI (LAT 21 27 04 LONG 157 51 36)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1530	4.7	150	7.0	21.0
NOV					
15...	0930	11	160	7.4	21.0
JAN , 1979					
04...	1130	5.6	140	7.6	20.0
FEB					
08...	1110	6.9	150	7.6	20.5
MAR					
27...	1050	6.8	150	7.2	20.5
MAY , 1979					
09...	1635	6.8	145	7.8	21.0
JUN					
20...	1530	6.2	150	7.4	21.5
AUG					
08...	1610	4.7	145	7.4	21.0
SEP					
21...	1650	5.3	150	7.5	21.5

16294900 - WAIKANE STREAM AT ALT 75 FT AT WAIKANE,OAHU,HI (LAT 21 30 00 LONG 157 51 54)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
04...	1310	3.0	190	6.8	23.0
31...	1420	48	150	7.3	22.5
NOV					
21...	1130	9.0	180	7.0	22.0
JAN , 1979					
03...	1315	3.6	180	7.9	21.0
FEB					
15...	1320	13	160	7.4	20.5
MAR , 1979					
28...	1330	3.6	170	7.5	22.0
MAY					
17...	1600	2.8	190	7.2	22.5
JUN					
27...	1200	2.8	165	7.4	21.5
SEP					
24...	1705	1.5	180	7.2	23.0

16296500 - KAHANA STR AT ALT 30 FT NR KAHANA, OAHU, HI (LAT 21 32 37 LONG 157 53 07)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
NOV , 1978					
20...	1500	33	130	6.7	21.5
JAN , 1979					
02...	1420	19	160	7.0	20.0
FEB					
15...	1640	66	100	6.9	19.5
MAR					
29...	1500	22	130	7.0	21.0
MAY , 1979					
15...	1200	18	135	7.2	21.0
JUN					
22...	1400	28	90	6.9	22.0
AUG					
01...	1430	16	140	6.9	22.0
SEP					
25...	1400	14	135	6.9	22.5

16302000 - PUNALUU DITCH NR PUNALUU, OAHU, HI (LAT 21 33 41 LONG 157 54 10)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	1025	4.1	--	--	21.0
NOV					
16...	0950	.22	--	--	20.5
JAN , 1979					
03...	1205	.03	--	--	19.0
FEB , 1979					
14...	0945	.09	--	--	20.0
SEP					
13...	1040	6.1	--	--	21.5

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

16303000 - PUNALUU STREAM NR PUNALUU, OAHU, HI (LAT 21 33 33 LONG 157 54 06)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	1510	10	140	7.8	22.0
NOV					
16...	1445	24	100	7.6	21.5
JAN , 1979					
03...	1250	17	140	7.7	19.5
FEB					
14...	1445	26	120	7.6	19.5
APR					
02...	1450	19	130	7.4	22.0
MAY , 1979					
16...	1510	18	120	7.8	20.5
JUN					
27...	1645	17	120	7.5	21.5
AUG					
02...	1255	14	120	7.8	22.0
SEP					
13...	1515	7.8	120	7.7	22.0

16304200 - KALUANUI STREAM NR PUNALUU, OAHU, HI (LAT 21 35 22 LONG 157 54 38)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
04...	0935	.58	75	7.1	23.0
NOV					
20...	1045	2.7	75	6.7	21.5
JAN , 1979					
02...	1050	.31	110	6.8	19.0
FEB					
12...	1420	3.5	80	7.1	18.5
MAR					
29...	1025	.24	85	6.8	19.5
MAY , 1979					
16...	0920	1.9	65	7.2	21.0
JUN					
21...	1115	1.0	70	7.1	22.0
AUG					
01...	1100	.27	70	7.2	23.0
28...	1320	.30	65	6.8	26.0
SEP					
24...	1050	.08	65	6.9	24.5

16325000 - KAMANANUI STR AT PUPUKEA MIL RD NR MAUNAWAI,OAHU (LAT 21 37 25 LONG 158 01 04)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
19...	1150	8.2	65	7.1	23.0
NOV					
29...	1200	5.3	85	7.1	21.0
JAN , 1979					
19...	1215	5.9	81	7.3	19.5
FEB					
23...	1100	9.6	70	6.8	19.5
APR					
11...	1150	3.3	85	7.2	20.5
MAY , 1979					
30...	1055	1.2	67	7.1	24.0
JUL					
02...	1020	1.3	69	7.0	23.0
AUG					
17...	1235	7.4	56	6.6	24.0
SEP					
26...	1330	1.0	71	6.5	25.5

16330000 - KAMANANUI STREAM AT MAUNAWAI, OAHU, HI (LAT 21 38 20 LONG 158 03 27)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
11...	1450	2.0	90	6.7	24.5
NOV					
28...	1340	5.4	95	7.1	22.5
JAN , 1979					
18...	1600	16	105	7.2	20.0
FEB					
22...	1035	37	100	7.1	20.5
APR					
10...	1105	2.8	100	7.3	22.0
MAY , 1979					
23...	1445	.33	118	7.2	27.0
JUL					
02...	1330	1.7	91	7.2	25.0
AUG					
16...	1100	41	66	6.9	24.0
SEP					
26...	1630	1.2	85	6.1	25.0

16343000 - HELEMANO STREAM AT HALEIWA, OAHU, HI (LAT 21 34 40 LONG 158 06 12)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
17...	1155	.03	1750	7.1	23.0
NOV					
27...	1630	.13	510	6.8	23.0
JAN , 1979					
15...	1155	25	82	7.0	18.5
APR					
17...	1140	.07	555	7.0	22.0
MAY , 1979					
25...	1555	.01	950	6.7	24.0
JUL					
05...	1050	.02	760	7.0	23.0
AUG					
27...	1645	.02	770	6.9	23.5

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF OAHU--Continued

16395000 - OPAEULA STREAM NR WAHIAWA, OAHU, HI (LAT 21 33 55 LONG 158 00 10)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
11...	1045	2.2	46	6.8	23.5
NOV					
27...	1320	4.8	46	6.9	21.5
JAN , 1979					
17...	1600	9.0	64	6.8	18.5
FEB					
20...	1225	25	27	6.8	18.5
APR					
10...	1555	30	63	6.7	20.0
MAY , 1979					
25...	1200	.59	58	7.0	24.5
JUL					
05...	1500	19	46	6.7	23.5
AUG					
15...	1620	.81	46	6.9	28.0
SEP					
25...	1430	.16	43	6.0	26.5

ISLAND OF MOLOKAI

16403900 - KAWAINUI STREAM NR PELEKUNU, MOLOKAI, HI (LAT 21 07 59 LONG 156 52 38)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
26...	1145	6.0	132	7.9	20.5
DEC					
07...	1105	69	96	7.7	19.5
FEB , 1979					
02...	1130	6.2	128	7.8	17.0
MAR					
23...	1035	4.6	122	7.4	18.5
MAY , 1979					
17...	1115	5.5	116	7.7	20.0
JUL					
05...	1125	3.9	124	7.5	21.0
AUG					
30...	0950	1.9	144	7.5	21.0

16404000 - PELEKUNU STREAM NR PELEKUNU, MOLOKAI, HI (LAT 21 08 11 LONG 156 52 43)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
27...	0830	8.3	138	8.0	20.5
DEC					
07...	1450	84	106	7.8	20.0
FEB , 1979					
01...	1725	14	126	7.8	17.5
MAR					
22...	1800	9.1	123	7.6	19.0
MAY , 1979					
18...	1015	7.5	124	7.9	20.0
JUL					
06...	1215	20	110	7.9	20.5
AUG					
29...	1610	3.8	134	8.1	23.0

16404200 - PILIPILILAU STREAM NR PELEKUNU, MOLOKAI, HI (LAT 21 08 08 LONG 156 53 09)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
26...	1200	.59	158	8.0	21.5
DEC					
07...	1600	5.8	132	7.8	21.0
FEB , 1979					
01...	1150	2.3	146	7.9	18.5
MAR					
22...	1220	1.6	148	7.7	19.5
MAY , 1979					
17...	1315	.98	140	8.1	21.0
JUL					
05...	1230	.71	140	8.2	20.5
AUG					
29...	1230	.59	150	8.1	22.0

16405100 - MOLOKAI TUNNEL AT EAST PORTAL, MOLOKAI, HI (LAT 21 08 38 LONG 156 55 17)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
19...	1120	4.4	--	--	20.0
DEC					
12...	1345	1.3	--	--	17.5
FEB , 1979					
08...	1650	.33	--	--	18.0
APR					
04...	1750	4.4	--	--	19.0
MAY , 1979					
31...	1550	2.1	--	--	19.0
JUL					
11...	1805	1.9	--	--	20.0
SEP					
06...	1530	1.6	--	--	20.5

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF MOLOKAI--Continued

16405300 - MOLOKAI TUNNEL AT WEST PORTAL, MOLOKAI, HI (LAT 21 07 28 LONG 156 59 42)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
18...	0850	16	61	7.3	18.5
DEC					
12...	1700	5.5	87	7.6	17.5
FEB , 1979					
08...	1830	3.3	112	7.5	18.0
APR					
04...	1945	7.8	87	7.4	18.0
MAY , 1979					
31...	0815	5.0	108	7.9	18.5
JUL					
11...	0745	4.8	106	7.9	18.5
SEP					
06...	1815	4.1	108	8.0	20.0

16405500 - WAIKOLU STR AT ALT 900 FT NR KALAUPAPA, MOLO,HI (LAT 21 08 45 LONG 156 55 18)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
DEC , 1978					
12...	1600	5.2	64	7.2	18.5
FEB , 1979					
08...	1510	5.9	75	7.0	18.5
APR					
04...	1720	3.3	78	7.3	20.5
MAY , 1979					
31...	1355	1.6	104	7.5	19.5
JUL					
11...	1710	1.6	106	7.6	19.5
SEP					
06...	1430	1.1	108	8.1	20.0

16408000 - WAIKOLU STR BL PIPE CROSS NR KALALPAPA,MOLO,HI (LAT 21 09 45 LONG 156 55 59)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
19...	1125	7.1	120	7.7	21.5
DEC					
12...	1200	15	95	7.5	19.5
FEB , 1979					
08...	1230	17	104	7.2	19.5
APR					
04...	1315	16	102	7.6	20.0
MAY , 1979					
31...	1220	11	114	7.9	20.5
JUL					
11...	1245	8.9	112	8.2	22.0
SEP					
06...	1100	7.7	118	8.1	21.0

16419500 - PAPIO GULCH AT HALAWA, MOLOKAI, HI (LAT 21 08 56 LONG 156 44 16)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
16...	1720	.07	85	6.7	21.5
DEC					
11...	1640	.30	126	6.8	20.0
FEB , 1979					
07...	1630	1.3	128	6.7	20.0
MAR					
06...	1420	1.1	142	7.0	20.5
APR					
02...	1735	1.7	134	6.9	21.5
30...	1430	.46	135	6.9	20.5
MAY , 1979					
29...	1615	.21	142	6.8	22.0
JUL					
09...	1725	.07	150	6.6	22.0
AUG					
06...	1430	.30	146	7.3	22.0
SEP					
04...	1600	.06	146	6.7	23.0

HAWAII, ISLAND OF MAUI

16501000 - PALIKEA STREAM BL DIV DAM NR KIPAHULU, MAUI, HI (LAT 20 41 03 LONG 156 04 10)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
04...	1040	389	18	7.1	20.5
NOV					
21...	1010	167	16	6.7	18.5
JAN , 1979					
11...	1100	1.1	43	7.2	19.0
FEB					
28...	1045	34	22	6.9	17.5
APR , 1979					
18...	1040	2.5	31	7.1	19.5
JUN					
13...	1030	67	19	7.2	19.0
AUG					
08...	1110	.03	35	7.5	22.5

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF MAUI--Continued

16508000 - HANAWI STREAM NEAR NAHIKU, MAUI, HI (LAT 20 48 37 LONG 156 07 00)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	0935	9.0	32	7.6	19.0
NOV					
22...	0950	33	29	7.4	19.5
JAN , 1979					
12...	1040	188	15	6.7	14.5
MAR					
01...	0900	13	38	6.9	18.5
APR , 1979					
17...	1520	4.1	32	7.3	18.5
JUN					
14...	0900	3.5	39	7.1	19.0
AUG					
07...	1445	4.1	42	7.8	19.5

16512000 - KOOLAU DITCH AT NAHIKU WEIR NR NAHIKU, MAUI, HI (LAT 20 48 56 LONG 156 07 15)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	1525	19	49	8.0	21.0
NOV					
20...	1415	87	18	7.1	19.5
JAN , 1979					
10...	1430	18	49	7.9	19.0
APR , 1979					
17...	1400	23	42	7.4	19.5
JUN					
12...	1500	35	41	7.5	19.5
AUG					
07...	1330	22	46	8.2	19.5

16518000 - WEST WAILUAIKI STREAM NEAR KEANAE, MAUI, HI (LAT 20 49 16 LONG 156 08 37)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	1325	5.3	45	7.5	21.0
NOV					
22...	1325	20	27	7.2	19.5
JAN , 1979					
10...	1300	5.0	48	7.7	17.5
FEB					
27...	1400	24	29	7.3	19.5
APR , 1979					
17...	1230	8.5	32	7.2	19.0
JUN					
12...	1320	38	38	7.1	19.0
AUG					
07...	1200	5.6	40	7.8	19.5

16523000 - KOOLAU DITCH NR KEANAE, MAUI, HI (LAT 20 49 53 LONG 156 10 30)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	1045	61	50	7.8	20.5
NOV					
20...	1345	213	22	7.2	19.5
JAN , 1979					
10...	1045	52	53	7.5	18.0
APR , 1979					
19...	1000	89	39	7.4	19.0
JUN					
12...	1110	211	40	7.3	18.5
AUG					
07...	1015	68	44	7.9	19.0

16531000 - KULA DIV FROM HAIPUAENA STR NR OLINDA,MAUI,HI (LAT 20 48 24 LONG 156 13 27)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
11...	1230	.38	14	5.4	15.5
DEC					
01...	1115	.12	15	6.5	14.5
JAN , 1979					
17...	1215	2.8	13	5.0	11.5
FEB					
21...	1300	1.5	14	5.1	13.0
MAR , 1979					
09...	1340	2.8	14	4.9	12.5
APR					
25...	1105	6.2	19	4.4	13.0
JUN					
22...	1330	1.9	17	5.2	14.5
AUG					
15...	1125	10	22	4.9	16.5

16538000 - SPRECKELS DI AT HAIPUAENA W NR HUELA, MAUI, HI (LAT 20 51 15 LONG 156 11 25)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
02...	1245	10	39	7.9	21.0
NOV					
27...	1300	14	36	7.5	19.5
JAN , 1979					
18...	1315	43	27	6.7	17.5
MAR					
02...	1210	28	33	6.7	18.5
APR , 1979					
20...	1015	11	37	7.3	19.0
JUN					
18...	1230	73	29	7.2	20.0
AUG					
08...	1330	13	35	7.4	21.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF MAUI--Continued

16541000 - KOOLAU DITCH AT HAIPUAENA NR HUELO, MAUI, HI (LAT 20 51 17 LONG 156 11 19)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
02...	1130	64	50	7.6	20.5
NOV					
27...	1030	94	44	7.6	19.0
JAN , 1979					
18...	1210	170	33	6.8	16.5
MAR					
07...	1430	60	41	6.8	18.5
APR , 1979					
20...	1415	61	41	7.2	19.0
JUN					
18...	1430	182	37	7.1	20.5
AUG					
08...	1200	61	46	7.6	19.5

16541500 - MANUEL LUIS DI AT PUOHOKAMOA GL NR HUELO,MAUI (LAT 20 51 48 LONG 156 10 59)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1245	3.9	50	7.4	21.5
NOV					
27...	1420	1.5	99	7.1	21.0
JAN , 1979					
12...	1345	80	27	6.9	17.5
18...	1535	5.0	55	6.5	19.5
MAR					
01...	1230	2.2	62	6.5	20.5
APR , 1979					
19...	1255	1.0	52	7.0	21.0
JUN					
14...	1210	.48	57	6.9	21.0
AUG					
09...	1040	.73	40	7.1	21.0

16587000 - HONOPOU STREAM NR HUELO, MAUI, HI (LAT 20 53 20 LONG 156 15 20)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
06...	1340	2.4	54	7.6	22.5
NOV					
24...	1245	5.4	51	7.1	19.5
JAN , 1979					
16...	1110	30	41	6.5	18.0
MAR					
06...	1500	3.5	53	6.8	21.5
APR , 1979					
24...	1525	1.6	51	6.7	21.5
JUN					
19...	1430	1.6	44	6.5	22.0
AUG					
09...	1230	1.3	53	7.7	23.0

16588000 - WAILOA DITCH AT HONOPOU NR HUELO, MAUI, HI (LAT 20 53 20 LONG 156 15 19)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
06...	1235	197	40	7.8	21.0
NOV					
24...	1145	220	39	7.0	18.5
JAN , 1979					
16...	1015	194	26	6.0	16.5
MAR					
06...	1400	157	45	6.7	19.5
APR , 1979					
24...	1400	133	42	6.8	20.5
JUN					
19...	1300	268	34	7.0	19.0
AUG					
09...	1330	150	38	7.4	20.0

16589000 - NEW HAMAKUA DITCH AT HONOPOU NR HUELO, MAUI, HI (LAT 20 53 28 LONG 156 15 22)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
06...	1025	4.0	59	7.2	21.0
NOV					
24...	1415	5.3	57	6.5	20.0
MAR , 1979					
06...	1130	3.5	62	6.3	19.5
APR , 1979					
24...	1245	1.6	59	6.5	21.5
JUN					
19...	1120	134	32	6.8	19.5
AUG					
09...	1050	2.2	39	6.5	21.5

16592000 - LOWRIE DITCH AT HONOPOU GULCH NR HUELO, MAUI, HI (LAT 20 54 57 LONG 156 15 08)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
11...	1330	25	62	7.4	22.5
NOV					
29...	1145	31	72	7.1	22.0
JAN , 1979					
15...	1205	13	64	6.6	19.5
MAR					
07...	1330	24	75	6.8	21.0
APR , 1979					
23...	1300	9.9	74	7.6	23.0
JUN					
20...	1040	30	40	6.7	21.0
AUG					
09...	1350	9.5	52	7.7	25.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF MAUI

16594000 - HAIKU DITCH AT HONOPOU GULCH NR KAILLA,MAUI,HI (LAT 20 55 07 LONG 156 14 58)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
05...	1500	3.9	83	7.0	22.5
NOV					
24...	1600	7.3	93	6.8	22.0
MAR , 1979					
07...	1145	4.5	96	6.6	21.5
APR , 1979					
23...	1015	1.7	102	7.1	22.0
JUN					
20...	1330	2.8	58	6.6	21.5
AUG					
09...	1310	.80	100	7.5	24.5

16599500 - OPAAA TUNNEL NR KAILIILI, MAUI, HI (LAT 20 51 04 LONG 156 16 17)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
DEC , 1978					
01...	1415	2.6	48	7.0	19.0
JAN , 1979					
17...	1530	8.1	32	6.3	17.0
MAR					
09...	0930	9.2	26	6.4	15.5
APR , 1979					
25...	1525	7.3	23	5.8	17.0
JUN					
22...	1015	6.3	25	6.9	17.0
AUG					
15...	1415	5.8	35	6.9	21.0

16607000 - IAO STREAM AT WAILUKU, MAUI, HI (LAT 20 53 38 LONG 156 30 27)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
NOV , 1978					
13...	0940	1490	33	7.4	21.5
14...	1455	1000	99	7.7	21.5
JAN , 1979					
17...	1110	586	94	7.4	19.5
FEB , 1979					
10...	1100	1750	48	6.9	20.0

16620000 - HONOKOHAU STREAM NR HONOKOHAU, MAUI, HI (LAT 20 57 48 LONG 156 35 22)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
13...	1230	19	68	8.0	20.0
NOV					
16...	1500	30	96	7.5	20.5
28...	1645	25	70	7.6	19.5
JAN , 1979					
19...	1300	29	66	7.5	17.5
MAR					
08...	1315	109	44	7.2	18.0
APR , 1979					
26...	1100	23	69	7.5	18.5
JUN					
21...	1215	20	66	7.7	19.0
AUG					
17...	1100	22	57	7.8	19.5

16638500 - KAHOMA STREAM AT LAHAINA, MAUI, HI (LAT 20 53 10 LONG 156 40 36)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
JAN , 1979					
23...	1605	2.1	77	7.2	19.5
FEB					
05...	1420	7.7	64	7.5	19.5
FEB , 1979					
10...	1350	64	34	6.8	20.0

HAWAII, ISLAND OF HAWAII

16700000 - WAIAKEA STREAM NR MOUNTAIN VIEW, HAWAII, HI (LAT 19 38 30 LONG 155 10 28)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
24...	1150	6.7	42	7.1	17.0
NOV					
27...	0900	19	41	7.1	18.0
DEC					
26...	0915	18	42	7.8	17.0
JAN , 1979					
25...	1200	68	38	7.3	17.0
FEB					
22...	1030	72	39	7.2	17.0
MAR					
26...	1055	9.6	39	7.1	16.0
APR , 1979					
24...	1220	12	41	7.3	17.0
MAY					
24...	0930	7.1	41	7.0	17.0
JUN					
25...	1300	17	38	7.1	16.0
JUL					
26...	0900	7.2	42	7.2	17.0
AUG					
28...	0900	3.7	42	7.5	17.0
SEP					
24...	1400	.52	37	7.7	17.0

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF HAWAII--Continued

16700900 - OLAA FLUME SPRING NR KAUMANA,HI (LAT 19 41 59 LONG 155 11 13)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
02...	1515	3.6	37	6.6	17.5
NOV					
17...	1055	4.7	36	6.7	17.5
JAN , 1979					
18...	1540	18	27	6.8	17.5
APR					
10...	1155	6.0	32	6.8	17.0
MAY , 1979					
25...	1215	4.3	38	6.7	17.0
JUL					
09...	1050	10	32	6.8	16.5
AUG					
03...	1030	3.8	38	6.8	17.0
SEP					
21...	0840	2.4	41	7.1	17.0

16701750 - WAILUKU RIVER NR HUMULA, HAWAII, HI (LAT 19 42 55 LONG 155 18 36)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
NOV , 1978					
28...	1300	.76	35	6.3	16.0
APR , 1979					
30...	1215	.36	33	6.8	16.0

16701800 - WAILUKU RIVER NR KAUMANA, HAWAII, HI (LAT 19 43 15 LONG 155 16 08)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
02...	1035	.91	28	6.5	18.5
NOV					
17...	0930	4.3	25	6.4	16.0
JAN , 1979					
26...	1015	33	30	6.8	16.0
APR					
26...	1010	6.8	28	6.4	16.0
JUN , 1979					
20...	1000	3.8	33	6.5	16.0
JUL					
24...	1100	1.4	35	6.4	16.0
SEP					
21...	1200	.15	39	6.5	17.0

16717800 - POHAKUPUKA STREAM NEAR PAPAALOA, HAWAII, HI (LAT 19 57 20 LONG 155 11 20)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
03...	1050	4.3	135	7.4	19.0
NOV					
10...	1425	5.2	105	7.9	18.0
JAN , 1979					
09...	1100	4.0	100	7.6	14.0
FEB					
22...	1135	2.4	140	7.1	13.0
APR					
05...	1245	10	52	7.2	18.0
MAY , 1979					
26...	1010	12	58	7.4	18.0
JUL					
10...	1155	15	60	7.1	18.0
AUG					
23...	1455	25	56	7.0	19.0
SEP					
13...	1235	2.4	130	7.9	19.0

16720000 - KAWAINUI STREAM NR KAMUELA, HAWAII, HI (LAT 20 05 18 LONG 155 40 58)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
12...	1110	5.1	22	5.4	16.0
JAN , 1979					
09...	1120	.60	28	6.4	13.0
APR , 1979					
03...	1055	3.8	26	6.5	13.0
AUG					
07...	1135	3.0	23	5.5	15.0

16720300 - KAWAIKI STREAM NEAR KAMUELA, HAWAII, HI (LAT 20 05 13 LONG 155 40 59)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
12...	1310	2.7	22	5.3	16.5
JAN , 1979					
09...	1025	.68	27	6.3	14.0
APR , 1979					
03...	1035	2.7	25	6.4	14.0
AUG					
07...	1035	1.6	23	5.6	15.0

16720500 - UPPER HAMAKUA DITCH BL KAWAIKI STR NR KAMUELA HI (LAT 20 05 15 LONG 155 40 42)

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
OCT , 1978					
12...	1330	5.0	22	5.3	16.0
JAN , 1979					
09...	1030	.45	28	6.3	15.0
APR					
03...	1130	4.7	25	6.3	13.0
JUN , 1979					
12...	1200	16	22	5.8	12.0
AUG					
07...	1200	4.0	24	5.5	15.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF HAWAII--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
16724800 - UPPER HAMAKUA DITCH AB ALAKAHI STR NR KAMUELA (LAT 20 04 31 LONG 155 40 26)											
OCT , 1978						JUN , 1979					
12...	1600	3.4	25	6.3	17.0	12...	1340	12	23	5.9	14.0
APR , 1979						AUG					
03...	1305	1.6	25	6.0	13.0	07...	1030	3.2	24	5.6	15.0
16725000 - ALAKAHI STREAM NEAR KAMUELA, HAWAII, HI (LAT 20 04 27 LONG 155 40 25)											
OCT , 1978						JUN , 1979					
12...	1645	5.2	22	5.4	16.5	12...	1355	19	22	5.8	14.0
JAN , 1979						AUG					
09...	1215	1.2	27	6.0	13.0	07...	1045	4.4	25	5.6	15.0
APR											
03...	1240	3.0	25	5.9	14.0						
16726000 - UPPER HAMAKUA D AB WAIMEA RES DIV NR KAMUELA HI (LAT 20 03 31 LONG 155 37 40)											
OCT , 1978						FEB , 1979					
11...	1335	9.0	30	6.4	13.0	14...	1100	20	24	6.0	15.0
DEC						MAY					
06...	1120	54	25	6.5	15.0	09...	1330	2.3	23	6.2	15.0
16727000 - UPPER HAMAKUA DITCH AB PULKAPU RES NR KAMUELA HI (LAT 20 02 53 LONG 155 37 17)											
OCT , 1978						FEB , 1979					
11...	1230	4.6	27	6.3	12.0	14...	1105	.05	28	6.4	17.0
DEC						MAY					
06...	1010	.24	27	6.5	18.5	09...	1555	1.4	26	6.3	14.0
16756000 - KOHAKOHAU STREAM NEAR KAMUELA, HAWAII, HI (LAT 20 03 02 LONG 155 40 58)											
OCT , 1978						FEB , 1979					
12...	1040	1.5	28	6.4	13.0	14...	1550	26	20	6.0	16.0
DEC						JUL					
07...	1105	12	20	5.8	15.0	19...	0920	2.8	26	6.0	15.0
16758000 - WAIKOLOA STR AT MARINE DM NR KAMUELA, HAWAII, HI (LAT 20 02 48 LONG 155 39 58)											
OCT , 1978						MAY , 1979					
12...	0935	6.9	33	6.8	13.0	10...	0900	3.2	26	6.3	15.0
DEC						JUL					
07...	1000	12	20	5.9	16.0	19...	0900	5.5	25	6.0	15.0
FEB , 1979											
14...	1435	12	30	6.4	15.0						
16759000 - HAUANI GULCH NEAR KAMUELA, HAWAII, HI (LAT 20 02 28 LONG 155 39 05)											
OCT , 1978						MAY , 1979					
11...	1445	.50	33	6.4	15.0	10...	1125	.25	35	5.8	15.0
DEC						JUL					
06...	1325	15	22	6.0	14.0	19...	1155	.67	34	5.3	15.0
FEB , 1979											
14...	1315	2.1	30	6.5	15.0						
16759200 - R BR WAIAHA STREAM NEAR HOLLALOA, HAWAII, HI (LAT 19 38 41 LONG 155 54 55)											
OCT , 1978						JUL , 1979					
11...	0800	.01	50	6.6	16.0	18...	1100	.14	31	6.1	16.0
FEB , 1979											
13...	1415	.05	38	6.8	19.0						

OBSERVATIONS OF PHYSICAL PARAMETERS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF HAWAII--Continued

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
16759800 - KIILAE STREAM NEAR HONAUNAU, HAWAII, HI (LAT 19 24 52 LONG 155 50 56)											
OCT , 1978						JUL , 1979					
10...	1340	.01	29	6.9	16.0	18...	0800	.34	22	6.0	16.0
FEB , 1979											
16...	1215	.03	25	6.6	14.0						
16764000 - HILEA GULCH TRIBUTARY NEAR HONLAPO, HAWAII, HI (LAT 19 10 27 LONG 155 35 58)											
OCT , 1978						MAY , 1979					
10...	0915	1.2	50	7.1	13.0	22...	1145	.35	42	6.7	16.0
DEC						JUL					
22...	1150	1.1	63	7.8	14.0	17...	1000	.12	45	5.5	15.0
FEB , 1979						AUG					
09...	1215	3.6	40	7.0	14.0	24...	1200	.94	41	5.8	15.0
MAR											
20...	1145	.21	50	7.0	16.0						
16765000 - HILEA GULCH TRIB NO 2 NEAR HONUAPA, HAWAII, HI (LAT 19 10 17 LONG 155 36 05)											
OCT , 1978						MAY , 1979					
10...	0940	.01	37	6.2	15.0	22...	1250	.09	34	7.0	16.0
FEB , 1979						AUG					
09...	1235	.19	25	6.5	16.0	24...	0905	.80	30	6.5	15.0
16770500 - PAAUAU GULCH AT PAHALA, HAWAII, HI (LAT 19 12 39 LONG 155 28 48)											
DEC , 1978											
05...	0825	.55	39	6.3	19.5						

Samples are collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin. Such sites are referred to as miscellaneous sites.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI

221206159280100 WEST TAILWATER FROM TARO PATCH NEAR HANALEI (LAT 22°12'06" LONG 159°28'01")

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)
MAR											
13...	1440	90	7.1	23.0	--	--	--	39	8	7.8	4.8
14...	1110	--	--	--	--	240	8100	--	--	--	--
21...	1055	--	--	20.0	5300	--	--	--	--	--	--

DATE	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)
MAR											
13...	6.4	26	.4	.3	31	7.0	8.5	.0	18	72	.10
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
MAR											
13...	.02	.02	.01	.08	.09	.11	.49	.04	.03	160	0
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI--Continued

221208159280200 HANALEI RIVER ABOVE TIDEWATER NEAR HANALEI (LAT 22°12'08" LONG 159°28'02")

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)
MAR												
13...	1420	93	90	7.6	20.0	--	--	--	38	2	5.5	5.7
14...	1050	--	--	--	--	--	70	210	--	--	--	--
21...	1035	--	--	--	18.5	4300	--	--	--	--	--	--

DATE	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)
MAR												
13...	6.5	27	.5	.3	36	3.4	8.6	.0	19	71	.10	17.8
14...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS N)	NITRO-GEN, TOTAL (MG/L AS NO3)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
MAR											
13...	.01	.01	.00	.04	.04	.05	.22	.01	.01	130	10
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF KAUAI--Continued

221243159283900 EAST TAILWATER FROM TARO PATCH NEAR HANALEI (LAT 22°12'43" LONG 159°28'39")

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)
MAR											
13...	1615	93	7.1	25.0	--	--	--	31	6	5.6	3.2
14...	1130	--	--	--	--	260	720	--	--	--	--
21...	1115	--	--	20.5	5900	--	--	--	--	--	--

DATE	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)
MAR											
13...	7.1	33	.6	.4	25	3.2	9.4	.1	16	67	.09
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
MAR											
13...	1.3	1.4	.04	.38	.42	1.7	7.6	.09	.04	120	0
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1978

HAWAII, ISLAND OF KAUAI--Continued

221247159285400 WEST TAILWATER TARO PATCH ABOVE HIGHWAY NEAR HANALEI (LAT 22°12'47" LONG 159°28'54")

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)
MAR											
13...	1630	75	6.5	27.0	--	--	--	20	6	3.9	2.5
14...	1150	--	--	--	--	130	420	--	--	--	--
21...	1130	--	--	--	K3000	--	--	--	--	--	--

DATE	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)
MAR											
13...	8.5	47	.8	.4	14	12	7.1	.1	14	53	.07
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS NO3)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
MAR											
13...	.02	.05	.04	.13	.17	.19	.84	.11	.03	150	10
14...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--

K Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF HAWAII

194655155143900 EAGLE SITE 2 BOG NEAR PAPAIKOU (LAT 19°46'55" LONG 155°14'39")

DATE	TIME	ELEVATION (FT. NGVD)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)
MAR											
09...	0700	3680.00	4	3	1.4	.2	1.2	36	.3	.2	1
10...	0900	3680.00	9	7	3.0	.3	1.5	26	.2	.3	2

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, DISSOLVED (MG/L AS P)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
MAR											
09...	2.6	3.3	.0	.9	11	.02	.04	.01	300	460	10
10...	3.1	2.6	.0	.6	13	.02	.05	--	170	270	10

194708155144000 RIGHT FORK HONOLII STREAM NEAR PAPAIKOU (LAT 19°47'08" LONG 155°14'40")

DATE	TIME	ELEVATION (FT. NGVD)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO
MAR									
08...	0915	3660.00	6	5	1.8	.3	1.3	32	.2
09...	1445	3660.00	--	--	--	--	--	--	--

DATE	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
MAR									
08...	.2	1	2.6	1.6	.0	4.6	14	.02	.13
09...	--	--	--	--	--	--	--	--	--

DATE	PHOSPHORUS, DISSOLVED (MG/L AS P)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)	COPPER, TOTAL RECOVERABLE (UG/L AS CU)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	LEAD, TOTAL RECOVERABLE (UG/L AS PB)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
MAR								
08...	.01	350	10	0	30	280	0	10
09...	--	230	0	10	20	370	0	10

NOTE.--Water-quality samples collected by U.S. Forest Service.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF HAWAII--Continued

194709155144100 TRIBUTARY NO. 1 RIGHT FORK HONOLII STREAM NEAR PAPAIKOU (LAT 19°47'09" LONG 155°14'41")

DATE	TIME	ELEVATION (FT. NGVD)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)
MAR 08...	1000	3665.00	6	5	2.2	.0	.9	26	.2	.1	1

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, DISSOLVED (MG/L AS P)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
MAR 08...	5.3	2.2	.0	2.7	14	.02	.00	.01	210	350	20

194703155143800 TRIBUTARY NO. 2 RIGHT FORK HONOLII STREAM NEAR PAPAIKOU (LAT 19°47'03" LONG 155°14'38")

DATE	TIME	ELEVATION (FT. NGVD)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)
MAR 08...	1445	3680.00	3	1	.8	.3	2.0	55	.5	.3	2

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
MAR 08...	3.7	2.2	.0	8.8	17	.02	.00	100	180	10

NOTE.--Water-quality samples collected by U.S. Forest Service.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

HAWAII, ISLAND OF HAWAII--Continued

194659155143800 TRIBUTARY NO. 3 RIGHT FORK HONOLII STREAM NEAR PAPAIKOU (LAT 19°46'59" LONG 155°14'38")

DATE	TIME	ELEVATION (FT. NGVD)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)
MAR 08...	1430	3660.00	2	2	.5	.2	1.4	57	.4	.2	0

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
MAR 08...	2.9	2.2	.0	3.6	11	.02	.03	110	190	10

194657155143800 TRIBUTARY NO. 4 RIGHT FORK HONOLII STREAM NEAR PAPAIKOU (LAT 19°46'57" LONG 155°14'38")

DATE	TIME	ELEVATION (FT. NGVD)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)
MAR 08...	1645	3660.00	3	2	.7	.2	1.6	56	.4	.1	1

DATE	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, DISSOLVED (MG/L AS P)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)	IRON, TOTAL RECOVERABLE (UG/L AS FE)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
MAR 08...	4.2	2.4	.0	4.3	15	.02	.27	.01	100	200	10

NOTE.--Water-quality samples collected by U.S. Forest Service.

ISLAND OF KAUAI

220354159205601. Local number, 2-0320-01.
LOCATION.--Lat 22°03'54", long 159°20'56", Hydrologic Unit 20070000, in Wailua Houselots, Wailua. Owner: Kauai County, Department of Water.
AQUIFER.--Koloa Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled basal water-table well, diameter 8 in (0.2 m), depth 240 ft (73.2 m), cased to 193 ft (58.8 m), open end.
DATUM.--Land-surface datum is 155 ft (47.2 m) above mean sea level. Measuring point: Top edge of steel pumpbase at breather hole, 155.98 ft (47.543 m) above mean sea level.
REMARKS.--Water-quality records for 1960, 1966, 1972-78 are available in files of district office; those for 1979 are published elsewhere in this report. Water pumped from this well is used frequently for public supply.
PERIOD OF RECORD.--February 1960, June 1973 to September 1975 records available in files of district office; November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.04 ft (6.108 m) above mean sea level, Feb. 17, 1960; lowest measured, 3.31 ft (1.009 m) below mean sea level, May 27, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	a0.73	JAN 17	12.14	APR 27	5.64	JUN 11	11.90	JUL 18	10.32	SEP 11	a-0.71
DEC 6	10.43	MAR 22	8.94								

a Well being pumped.

HAWAII, ISLAND OF OAHU

211718157491001 (Formerly 211718157490801). Local number, 3-1749-07 tube B.
LOCATION.--Lat 21°17'18", long 157°49'08", Hydrologic Unit 20060000, at Kaimuki High School grounds near Olokele Street, Honolulu. Owner: State of Hawaii.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation artesian basal water-table well, diameter 0.5 in (0.01 m), depth 378 ft (115 m), cased to 378 ft (115 m), open end.
DATUM.--Land-surface datum is 14 ft (4.3 m) above mean sea level. Measuring point: Top of iron cover 0.5 ft (0.2 m) above ground, 14.85 ft (4.526 m) above mean sea level.
REMARKS.--Tube B is one of five sampling tubes installed on Sept. 7, 1951 in existing 8 in (0.2 m) well. The bottom of each tube is at different depths to obtain water samples for determining vertical distribution of the chloride concentration. Water-quality records for 1951-78 are available in files of district office; those for 1979 are published elsewhere in this report.
PERIOD OF RECORD.--July 1951, October 1955 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.88 ft (8.803 m) above mean sea level, Feb. 6, 1957; lowest measured, 19.51 ft (5.947 m) Aug. 31, 1962.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 21	25.14	MAR 20	25.63	APR 24	25.34	JUN 13	26.30	JUL 18	26.11	AUG 31	24.66
FEB 2	24.95										

212154158015201. Local number, 3-2101-03.
LOCATION.--Lat 21°21'54", long 158°01'52", Hydrologic Unit 20060000, in Honouliuli. Owner: Hawaii Meat Co.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation artesian basal water-table well, diameter 10 in (0.25 m), depth 355 ft (108 m), cased to 165 ft (50.3 m), open hole. Water overflows casing at 13.53 ft (4.124 m) above mean sea level since 1978.
DATUM.--Land-surface datum is 11 ft (3.4 m) above mean sea level. Measuring point: Top of lowest horizontal flange, 11.16 ft (3.402 m) above mean sea level.
REMARKS.--Water-quality records for 1910-16, 1920-21, 1923-75, 1978 are available in files of district office; those for 1979 are published elsewhere in this report.
PERIOD OF RECORD.--April 1910 to June 1921, September 1923 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.16 ft (8.888 m) above mean sea level, April 1918; lowest measured, less than 11.16 ft (3.402 m) above mean sea level, Sept. 2, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 26	15.54	MAR 21	16.47	APR 27	15.64	JUN 18	15.98	JUL 25	14.93	SEP 11	14.25
FEB 5	16.22										

HAWAII, ISLAND OF OAHU--Continued

212238157561101. Local number, 3-2256-10.
LOCATION.--Lat 21°22'38", long 157°56'11", Hydrologic Unit 20060000, in Pearl Harbor Navy Reservation near Kamehameha Highway, Aiea. Owner: U.S. Navy.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled artesian basal water-table well, diameter 12 in (0.30 m), depth 173 ft (52.7 m), cased to 143 ft (43.0 m), open hole.
DATUM.--Land-surface datum is 10 ft (3.0 m) above mean sea level. Measuring point: Top of 10 in (0.25 m) stilling pipe for water-level recorder, 26.15 ft (7.971 m) above mean sea level (since Sept. 9, 1968).
REMARKS.--Recording gage installed Sept. 9, 1968. Water-quality records for 1923, 1928-30, 1934-68, 1972, 1974-75 are available in files of district office.
PERIOD OF RECORD.--January 1928 to February 1931, September 1934 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.90 ft (7.894 m) above mean sea level, Jan. 16, 1928; lowest, 12.97 ft (3.953 m) above mean sea level, Oct. 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	13.10	14.22	14.96	15.46	15.93	16.97	16.69	16.52	16.38	16.36	15.81	15.37
10	13.04	14.39	14.98	15.50	16.19	16.90	16.70	16.52	16.38	16.22	15.62	15.37
15	13.14	14.54	15.05	15.80	16.34	16.88	16.76	16.47	16.36	16.13	15.57	15.29
20	13.12	14.68	15.12	15.86	16.62	16.82	16.76	16.49	16.35	15.96	15.54	15.20
25	13.17	14.88	15.25	15.87	16.86	16.79	16.64	16.34	16.33	15.89	15.45	15.21
EOM	13.47	14.92	15.31	15.86	16.93	16.75	16.57	16.38	16.22	15.83	15.30	15.17

WTR YEAR 1979 MAX 17.03 MAR 4, 1979 MIN 12.97 OCT 5, 1978

212927158014807. Local number, 3-2901-07.
LOCATION.--Lat 21°29'27", long 158°01'48", Hydrologic Unit 20060000, at Kamehameha Highway and Wilikina Drive, Wahiawa. Owner: U.S. Army.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Dug domestic high-level water-table well, size 8 x 8 ft (2 x 2 m), length of 30-degree inclined shaft 1,148 ft (349.9 m).
DATUM.--Land-surface datum is 850 ft (259 m) above mean sea level. Measuring point: Top of pump chamber floor at recorder, 287.00 ft (87.478 m) above mean sea level.
REMARKS.--Recorder is located on the pump chamber floor at the bottom of shaft. Recording gage installed November 1938. Water-quality records for 1966-72, 1975-78 are available in files of district office; those for 1979 are published elsewhere in this report. Water pumped from this well is used continually for public supply.
PERIOD OF RECORD.--August 1936 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 284.40 ft (86.685 m) above mean sea level, May 12, 1969; lowest, 269.52 ft (82.150 m) above mean sea level, Dec. 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	269.93	269.99	269.80	269.92	270.18	270.55	271.02	271.86	272.26	272.88	273.00	273.04
10	269.93	269.98	269.88	269.91	270.47	270.57	271.24	271.86	272.51	272.98	273.17	273.04
15	269.97	269.98	269.86	270.04	270.23	270.59	271.33	271.87	272.67	272.84	273.02	273.13
20	270.01	269.94	269.85	270.00	270.43	270.69	271.48	271.98	272.73	272.87	273.01	273.04
25	269.78	269.86	269.96	270.07	270.39	270.75	271.61	271.98	272.79	273.06	273.07	273.15
EOM	270.20	269.85	269.89	270.04	270.43	270.86	271.54	272.50	272.89	272.94	272.93	273.10

Note: Well being pumped throughout the year.

213327157524401. Local number, 3-3352-01.
LOCATION.--Lat 21°33'27", long 157°52'44", Hydrologic Unit 20060000, at mouth of Kahana Valley and 700 ft (180 m) southwest of Kamehameha Highway (Highway 83), Kahana. Owner: Mary B. Foster Estate.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled artesian basal water-table well, diameter 10 in (0.25 m), depth 441 ft (134 m), cased to 177 ft (53.9 m), open hole.
DATUM.--Land-surface datum is 6 ft (2 m) above mean sea level. Measuring point: Top of blind flange, 5.76 ft (1.756 m) above mean sea level.
REMARKS.--Water-quality records for 1935-78 are available in files of district office; those for 1979 are published elsewhere in this report.
PERIOD OF RECORD.--April 1935 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.3 ft (6.49 m) above mean sea level, Mar. 29, 1966; lowest measured, 14.37 ft (4.380 m) above mean sea level, Aug. 25, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	14.38	DEC 14	16.38	APR 2	18.27	MAY 16	17.01	JUN 27	17.30

HAWAII, ISLAND OF OAHU--Continued

213446158104901. Local number, 3-3410-08.
LOCATION.--Lat 21°34'46", long 158°10'49", Hydrologic Unit 20060000, near Dillingham Air Force Base south of Farrington Highway, Mokuleia. Owner: Waialua Sugar Co., Inc.
AQUIFER.--Basalt of Waianae Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation artesian basal water-table well, diameter 1.0 in (0.03 m), depth 447 ft (136 m), cased to 447 ft (136 m), perforated 410 to 447 ft (125 to 136 m).
DATUM.--Land-surface datum is 16 ft (4.9 m) above mean sea level. Measuring point: Top of 12 in (0.30 m) stilling well 20.53 ft (6.258 m) above mean sea level.
REMARKS.--Recording gage was operated January 1963 to February 1972. Present one-inch galvanized pipe was installed inside of existing 6-inch well and space between the two casings grouted on Sept. 13, 1948. Water-quality records for 1929-78 are available in files of district office; those for 1979 are published elsewhere in this report.
PERIOD OF RECORD.--January 1929 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.98 ft (6.090 m) above mean sea level, Jan. 5, 1969; lowest measured, 16.08 ft (4.901 m) above mean sea level, Aug. 6, 1929.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	17.81	JAN 25	18.28	APR 24	18.04	JUN 5	17.92	JUL 6	17.85	AUG 27	18.22
DEC 7	18.03	MAR 7	18.30								

214125158013401. Local number, 3-4101-03.
LOCATION.--Lat 21°41'25", long 158°01'34", Hydrologic Unit 20060000, on Kamehameha Highway at Waialee. Owner: State of Hawaii.
AQUIFER.--Basalt of Koolau Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation artesian basal water-table well, diameter 8 in (0.2 m), depth 61 ft (19 m), cased to 36 ft (11 m), open hole.
DATUM.--Land-surface datum is 22 ft (6.7 m) above mean sea level. Measuring point: Top of 4-inch (0.1 m) pipe, 21.89 ft (6.672 m) above mean sea level.
REMARKS.--Water-quality records for 1929-74 are available in files of district office.
PERIOD OF RECORD.--February 1929 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.60 ft (4.755 m) above mean sea level, Nov. 14, 1932; lowest measured, 10.97 ft (3.344 m) above mean sea level, July 1, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	11.99	JAN 5	12.35	MAR 30	12.49	JUN 22	12.59	AUG 3	12.75	SEP 14	12.89
NOV 17	12.39	FEB 9	12.37	MAY 11	12.44						

HAWAII, ISLAND OF MOLOKAI

210425156483001. Local number, 4-0448-02.
LOCATION.--Lat 21°04'25", long 156°48'30", Hydrologic Unit 20050000, 100 ft (30 m) north of Highway 45, and 0.8 mi (1 km) west of Pukoo. Owner: P. Friel.
AQUIFER.--East Molokai Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Dug observation basal water-table well, 4 x 6 ft (1 x 2 m), depth 22 ft (6.7 m).
DATUM.--Land-surface datum is 19 ft (5.8 m) above mean sea level. Measuring point: Top of 2 x 2 in (0.05 x 0.05 m) steel plate bolted to top of concrete well wall, 21.23 ft (6.471 m) above mean sea level.
REMARKS.--Recording gage was operated Aug. 8, 1970 to Jan. 22, 1973. Water-quality records for 1970 to 1973 are available in files of district office.
PERIOD OF RECORD.--August 1970 to September 1975 records available in files of district office; November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.11 ft (1.862 m) above mean sea level, Nov. 26, 1970; lowest measured, 3.67 ft (1.119 m) above mean sea level, Feb. 8, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	4.19	FEB 7	4.53	APR 2	4.21	MAY 29	4.08	JUL 9	4.05	SEP 4	4.06
DEC 11	4.21										

HAWAII, ISLAND OF MOLOKAI--Continued

210605157012001. Local number, 4-0601-01.
LOCATION.--Lat 21°06'05", long 157°01'20", Hydrologic Unit 20050000, in Kaunakakai Gulch, Kaunakakai. Owner: State of Hawaii.
AQUIFER.--Basalt of East Molokai Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 12 in (0.30 m), depth 59 ft (18 m), cased to 20 ft (6.1 m), open hole.
DATUM.--Land-surface datum is 51 ft (16 m) above mean sea level. Measuring point: Top of 15 in (0.38 m) surface casing 51.95 ft (15.834 m) above mean sea level.
REMARKS.--Water-quality records for 1954-78 are available in files of district office; those for 1979 are published elsewhere in this report.
PERIOD OF RECORD.--May 1954 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.30 ft (1.006 m) above mean sea level, Jan. 20, 1969; lowest measured, 1.6 ft (0.49 m) above mean sea level, Dec. 5, 1964.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	2.76	DEC 14	2.70	APR 5	2.59	JUN 1	2.61	JUL 12	2.50	SEP 7	2.48

HAWAII, ISLAND OF MAUI

203912156255901. Local number, 6-3925-01.
LOCATION.--Lat 20°39'12", long 156°25'59", Hydrologic Unit 20020000, 0.75 mi (1.2 km) east of Makena. Owner: State of Hawaii.
AQUIFER.--Hana Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in (0.2 m), depth 382 ft (116 m), cased to 363 ft (111 m), open hole.
DATUM.--Land-surface datum is 352 ft (107 m) above mean sea level. Measuring point: Top of 2 in (0.05 m) pipe attached to the casing cover, 352.29 ft (107.378 m) above mean sea level.
REMARKS.--Water-quality records for 1964 are available in files of district office.
PERIOD OF RECORD.--August 1964, June 1972 to September 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.47 ft (0.143 m) above mean sea level, Aug. 24, 1964; lowest measured, 0.41 ft (0.125 m) below mean sea level, May 4, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	0.24	JAN 24	0.02	MAR 14	-0.25	MAY 1	-0.18	JUN 27	-0.23	AUG 21	-0.26
DEC 6	0.10										

204827156242201. Local number, 6-4824-01.
LOCATION.--Lat 20°48'27", long 156°24'22", Hydrologic Unit 20020000, on Waiakoa Road 1,000 ft (305 m) south of intersection with Kalaloa Gulch, and 4 mi (6 km) east of Kihei. Owner: State of Hawaii.
AQUIFER.--Kula Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 12 in (0.30 m), depth 647 ft (197 m), cased to 598 ft (182 m), screened 598 to 638 ft (182 to 194 m), open hole.
DATUM.--Land-surface datum is 593 ft (181 m) above mean sea level. Measuring point: Top of 3 in (0.08 m) pipe attached to the steel casing cover, 594.75 ft (181.280 m) above mean sea level.
REMARKS.--Water-quality records for 1971, 1973 are available in files of district office.
PERIOD OF RECORD.--March 1971, May 1972 to September 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.20 ft (1.585 m) above mean sea level, Jan. 17, 1974; lowest measured, 3.65 ft (1.113 m) above mean sea level, Jan. 27, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	4.23	JAN 26	4.64	MAR 15	3.69	MAY 2	4.54	JUN 27	3.94	AUG 22	4.13
DEC 15	4.63										

204818156310301. Local number, 6-4831-01.
LOCATION.--Lat 20°48'18", long 156°31'03", Hydrologic Unit 20020000, on sugar plantation road 0.7 mi (1.1 km) north of Maalaea and 0.9 mi (1.4 km) southwest of intersection of Honoapiilani Highway and Kihei Road. Owner: State of Hawaii.
AQUIFER.--Wailuku Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in (0.2 m), depth 219 ft (66.8 m), cased to 187 ft (57.0 m), open hole.
DATUM.--Land-surface datum is 166 ft (50.6 m) above mean sea level. Measuring point: Top of 8 in (0.2 m) casing, 166.60 ft (50.780 m) above mean sea level.
REMARKS.--Water-quality records for 1965-67 are available in files of district office. Recording gage was operated January to July 1974.
PERIOD OF RECORD.--September 1972 to September 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.57 ft (1.698 m) above mean sea level, Jan. 16, 1974; lowest measured, 4.74 ft (1.445 m) above mean sea level, Mar. 16, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	5.27	JAN 23	5.34	MAR 15	5.15	MAY 2	5.33	JUN 27	5.03	AUG 22	5.17
DEC 4	5.46										

204909156281401. Local number, 6-4928-02.
LOCATION.--Lat 20°48'27", long 156°28'14", Hydrologic Unit 20020000, at Puunene Airport on Mokulele Highway 2.5 mi (4.0 km) north of intersection with Kihei Road, Kihei. Owner: Hawaiian Commercial and Sugar Co.
AQUIFER.--Honomanu Volcanic Series.
WELL CHARACTERISTICS.--Dug basal water-table well, 6 x 9 ft (2 x 3 m) vertical shaft, depth 53 ft (16 m).
DATUM.--Land-surface datum is 50 ft (15 m) above mean sea level. Measuring point: Top of angle iron at well, 50.08 ft (15.264 m) above mean sea level.
REMARKS.--Recording gage installed Mar. 22, 1972. Water-quality records for 1973 are available in files of district office.
PERIOD OF RECORD.--March 1972 to September 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.44 ft (1.353 m) above mean sea level, Nov. 20, 1978; lowest, 3.05 ft (0.930 m) above mean sea level, Mar. 5, 6, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	3.80	4.23	4.10	3.89	4.13	4.00	4.11	4.05	3.70	3.57	3.77	3.63
10	3.87	4.24	4.24	3.87	4.24	3.90	4.11	3.97	3.67	3.68	3.73	3.66
15	3.91	4.32	4.26	4.05	4.10	3.88	4.13	3.82	3.64	3.70	3.74	3.63
20	3.90	4.42	4.12	4.14	4.13	3.90	4.12	3.82	3.58	3.72	3.73	3.61
25	3.90	4.41	4.15	4.25	4.10	3.91	4.10	3.78	3.57	3.68	3.73	3.61
EOM	4.02	4.25	4.04	4.16	4.04	4.17	4.09	3.81	3.65	3.66	3.66	3.62

WTR YEAR 1979 MAX 4.44 NOV 20, 1978 MIN 3.53 JUL 6, 1979

205552156193101. Local number, 6-5519-01.
LOCATION.--Lat 20°55'52", long 156°19'31", Hydrologic Unit 20020000, at Haiku School 1.0 mi (1.6 km) north of Haiku and 2.7 mi (4.3 km) northeast of Paia. Owner: State of Hawaii.
AQUIFER.--Kula Volcanic Series, Pleistocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in (0.2 m), depth 400 ft (122 m), cased to 363 ft (111 m), perforated 363 to 383 ft (111 to 117 m).
DATUM.--Land-surface datum is 365 ft (111 m) above mean sea level. Measuring point: Top of 2.5 in (0.06 m) coupling pipe attached to the casing cover, 366.26 ft (111.636 m) above mean sea level.
REMARKS.--Water-quality records for 1967 are available in files of district office.
PERIOD OF RECORD.--May 1967, December 1970, May 1972 to September 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.75 ft (1.753 m) above mean sea level, Dec. 10, 1973; lowest measured, 4.75 ft (1.448 m) above mean sea level, Mar. 7, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	5.35	JAN 26	5.46	MAR 7	5.43	APR 23	5.66	JUN 20	5.18	AUG 14	5.36
NOV 29	5.66										

HAWAII, ISLAND OF MAUI--Continued

205856156400101. Local number, 6-5840-01.
LOCATION.--Lat 20°58'56", long 156°40'01", Hydrologic Unit 20020000, on sugar plantation road 0.9 mi (1.4 km) east of Kahana and 1.5 mi (2.4 km) southwest of Honokahua. Owner: State of Hawaii.
AQUIFER.--Honolua Volcanic Series, Pliocene (?) age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in (0.2 m), depth 274 ft (83.5 m), cased to 274 ft (83.5 m), perforated 264 to 274 ft (80.5 to 83.5 m). Hole was drilled to depth of 284 ft (86.6 m) but plugged back 10 ft (3.0 m) with cement.
DATUM.--Land-surface datum is 257 ft (78.3 m) above mean sea level. Measuring point: Top of 2.2 in (0.06 m) coupling pipe attached to casing cover 257.46 ft (78.474 m) above mean sea level.
REMARKS.--Recording gage installed Aug. 6, 1975. Water-quality records for 1964 are available in files of district office.
PERIOD OF RECORD.--June 1964 to July 1964, March 1972 to September 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.43 ft (1.045 m) above mean sea level, July 20, 1978; lowest, 2.43 ft (0.741 m) above mean sea level Mar. 25, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	3.06	3.23	3.07	2.90	3.00	2.91	3.02	3.08	3.04	2.90	2.98	3.05
10	3.16	3.20	2.96	3.03	3.00	2.85	3.07	3.11	3.00	2.94	3.05	3.10
15	3.21	3.13	2.97	2.95	2.78	2.87	3.11	3.04	3.00	3.01	3.09	3.05
20	3.19	3.16	2.89	2.96	2.90	2.92	3.11	3.08	2.89	3.06	3.04	3.04
25	3.17	3.12	2.88	3.05	2.85	2.99	3.17	3.08	2.92	3.00	3.07	3.05
EOM	3.21	3.13	2.85	2.94	2.83	3.10	3.13	3.15	2.88	3.04	3.00	3.12

WTR YEAR 1979 MAX 3.39 NOV 8, 1978 MIN 2.66 DEC 28, 1978

HAWAII, ISLAND OF HAWAII

193017154502101. Local number, 8-3080-02.
LOCATION.--Lat 19°30'17", long 154°50'21", Hydrologic Unit 20010000, 0.5 mi (0.8 km) south of intersection of Highway 132 and Highway 137 near Pahoa. Owner: County of Hawaii.
AQUIFER.--Puna Volcanic Series, Holocene age.
WELL CHARACTERISTICS.--Dug basal water-table well, diameter 66 in (1.7 m), depth 46 ft (14 m), with two horizontal infiltration tunnels 2 x 50 ft (0.6 x 15 m) extending in opposite directions from 3 ft (0.9 m) above bottom of well.
DATUM.--Land-surface datum is 39 ft (12 m) above mean sea level. Measuring point: Top of steel manhole cover at 1-inch (0.03 m) hole, 39.50 ft (12.040 m) above mean sea level.
REMARKS.--Water-quality records for 1972-78 are available in files of district office; those for 1979 are published elsewhere in this report. Water pumped from this shaft is used frequently for public supply.
PERIOD OF RECORD.--March 1972 to August 1975 records available in files of district office; November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.10 ft (1.250 m) above mean sea level, Apr. 18, 1979; lowest measured, 1.71 ft (0.521 m) above mean sea level, July 11, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	4.00	JAN 12	3.82	APR 18	4.10	MAY 31	3.87	JUL 24	3.61	SEP 12	a2.48
NOV 15	3.94	MAR 13	a3.10								

a Well being pumped.

193339154594801. Local number, 8-3389-01.
LOCATION.--Lat 19°33'39", long 154°59'48", Hydrologic Unit 20010000, 4.9 mi (7.9 km) southeast of Keaau on Orchid Land Estate subdivision. Owner: County of Hawaii.
AQUIFER.--Puna Volcanic Series, Holocene age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in (0.2 m), depth 475 ft (145 m), cased to 403 ft (123 m), perforated 403 to 475 ft (123 to 145 m).
DATUM.--Land-surface datum is 427 ft (130 m) above mean sea level. Measuring point: Top of casing, 428.14 ft (130.497 m) above mean sea level.
REMARKS.--Water-quality records for 1961 are available in files of district office.
PERIOD OF RECORD.--September 1974 to September 1975 records available in files of district office; November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.37 ft (8.038 m) above mean sea level, Mar. 26, 1979; lowest measured, 15.99 ft (4.874 m) above mean sea level, Apr. 25, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	17.59	DEC 26	18.39	FEB 23	25.49	APR 25	20.59	JUN 26	18.64	AUG 28	17.70
NOV 27	19.77	JAN 26	22.08	MAR 26	26.37	MAY 25	19.63	JUL 26	18.34	SEP 25	17.82

194134155005601. Local number, 8-4100-01.
LOCATION.--Lat 19°41'34", long 155°00'56", Hydrologic Unit 20010000, 5.5 mi (8.9 km) southeast of Hilo Post Office and 5.0 mi (8.0 km) northeast of Keaau. Owner: Hawaiian Paradise Corporation.
AQUIFER.--Kau Volcanic Series, Holocene age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 10 in (0.25 m), depth 55 ft (17 m), cased to 39 ft (12 m), perforated 39 to 55 ft (12 to 17 m).
DATUM.--Land-surface datum is 45 ft (14 m) above mean sea level. Measuring point: Top of casing, 46.84 ft (14.277 m) above mean sea level.
REMARKS.--Water-quality records for 1971, 1973-78 are available in files of district office; those for 1979 are published elsewhere in this report.
PERIOD OF RECORD.--November 1971 to August 1975 records available in files of district office; November 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.66 ft (1.725 m) above mean sea level, Jan. 17, 1979; lowest measured, 2.24 ft (0.683 m) above mean sea level, Mar. 9, 1972.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	4.55	JAN 17	5.66	APR 4	5.40	MAY 24	5.17	AUG 8	4.15

195947155485801. Local number, 8-5948-01.
LOCATION.--Lat 19°59'47", long 155°48'58", Hydrologic Unit 20010000, 0.7 mi (1.1 km) east of Hapuna Beach Park and 3.1 mi (5.0 km) southeast of Kawaihae. Owner: State of Hawaii.
AQUIFER.--Hamakua Volcanic Series, Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 10 in (0.25 m), depth 268 ft (81.7 m), cased to 246 ft (75.0 m), screened 246 to 266 ft (75.0 to 81.1 m).
DATUM.--Land-surface datum is 244 ft (74.4 m) above mean sea level. Measuring point: Hole in pumpbase, 245.0 ft (74.7 m) above mean sea level.
REMARKS.--Water-quality records for 1970, 1973-78 are available in files of district office; those for 1979 are published elsewhere in this report. Water pumped from this well is used frequently for irrigation.
PERIOD OF RECORD.--April 1970, March 1973 to August 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.11 ft (0.948 m) above mean sea level, Oct. 23, 1978; lowest measured, 0.09 ft (0.027 m) below mean sea level, Sept. 28, 1979.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	3.11	JAN 15	2.67	APR 4	2.96	JUN 14	2.47	JUL 23	2.37	SEP 28	-0.09

200132155471001. Local number, 8-6147-01.
LOCATION.--Lat 20°01'32", long 155°47'10", Hydrologic Unit 20010000, on Highway 26, 3.1 mi (5.0 km) east of Kawaihae and 2.8 mi (4.5 km) northeast of Hapuna Beach Park. Owner: State of Hawaii.
AQUIFER.--Pololu Volcanic Series, Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation basal water-table well, diameter 8 in (0.2 m), depth 1,008 ft (307.2 m), cased to 997 ft (304 m), perforated 997 to 1,008 ft (304 to 307.2 m). Hole was drilled to 1,040 ft (317.0 m) but was finally plugged back to 1,008 ft (307.2 m).
DATUM.--Land-surface datum is 982 ft (299 m) above mean sea level. Measuring point: Top of pipe coupling on casing cover 983.1 ft (299.6 m).
REMARKS.--Water-quality records for 1963-64 are available in files of district office.
PERIOD OF RECORD.--June to July 1963, June 1973 to August 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.2 ft (1.9 m), above mean sea level, Aug. 23, 1978, lowest measured, 4.4 ft (1.3 m) above mean sea level Sept. 20, 1976.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	5.96	JAN 11	5.50	MAR 19	5.42	JUN 6	5.52	JUL 23	5.55	SEP 28	5.83

HAWAII, ISLAND OF HAWAII--Continued

201603155521801. Local number, 8-7652-01.
LOCATION.--Lat 20°16'03", long 155°52'18", Hydrologic Unit 20010000, 0.3 mi (0.5 km) west of Upolu Point Airfield, 3.1 mi (5.0 km) northwest of Hawi, and 1.9 mi (3.1 km) west of Hoea Camp. Owner: Kohala Corporation.
AQUIFER.--Pololu Volcanic Series, Pleistocene age.
WELL CHARACTERISTICS.--Dug observation basal water-table well.
DATUM.--Land-surface datum is 7.43 ft (2.265 m) above mean sea level. Measuring point: Top of 4 in (0.1 m) steel I-beam placed across sump, 7.75 ft (2.362 m) above mean sea level.
REMARKS.--Water-quality records for 1973-78 are available in files of district office; those for 1979 are published elsewhere in this report.
PERIOD OF RECORD.--March 1973 to August 1975 records available in files of district office; October 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.09 ft (0.942 m) above mean sea level, Aug. 22, 1974; lowest measured, 1.45 ft (0.442 m) above mean sea level, July 9, 1975.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	2.77	MAR 14	2.03	MAY 10	2.01	JUN 14	1.95	JUL 31	2.60	SEP 19	1.99
DEC 1	2.40										

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
		HAWAII, ISLAND OF KAUAI							
220016159442701	2-0044-15 S14 KSC	22 00 16	159 44 27	01	78-10-19	1015	6500	22.5	2100
					78-12-07	1000	3600	22.0	1100
					79-02-05	1000	2000	21.5	540
					79-04-04	1430	3700	22.5	1000
					79-05-09	1350	1900	21.5	530
					79-06-22	1015	1200	22.0	310
					79-08-07	1400	5200	22.5	1800
					79-09-18	1130	2400	22.5	720
220136159205501	2-0120-01 W7 CNTY	22 01 36	159 20 55	01	78-10-12	1345	880	25.0	160
					79-04-27	1500	850	24.0	150
					79-06-11	1230	760	25.5	160
					79-07-18	0835	790	25.0	160
					79-09-11	1520	820	26.0	160
220148159453501	2-0145-10 W45F KSC	22 01 48	159 45 35	01	78-12-07	1100	2600	21.0	700
					79-04-04	1400	1550	21.5	440
					79-06-22	1100	1500	21.0	400
					79-08-03	1445	1600	21.5	480
					79-09-18	1215	1700	21.5	490
220354159205601	2-0320-01 W9-1A WAILUA	22 03 54	159 20 56	01	78-10-12	1315	385	23.5	45
					79-09-11	1320	360	23.5	46
220341159453901	2-0345-04 S16 KSC	22 03 41	159 45 39	01	78-10-19	1300	1900	22.5	480
					78-12-07	1300	1750	22.5	440
					79-02-05	1115	1450	22.0	370
					79-04-04	1330	1230	22.0	320
					79-05-09	1130	1500	22.0	410
					79-06-22	1130	1500	22.5	440
					79-08-03	1400	1550	23.5	460
					79-09-18	1340	1700	22.0	480
220530159450401	2-0545-01 W59 SAKIMANA	22 05 30	159 45 04	01	78-10-19	1215	900	23.5	160
					78-12-07	1215	900	23.0	160
					79-02-05	1230	850	23.5	160
					79-04-04	1245	830	24.0	160
					79-05-09	1300	830	23.0	160
					79-06-22	1145	830	23.0	160
					79-08-03	1330	790	24.0	160
					79-09-18	1400	850	23.0	170
220827159185401	2-0818-01 W90A ANAHOLA	22 08 27	159 18 54	01	78-10-11	1530	245	24.0	24
					78-12-06	1240	245	23.5	24
					79-01-16	1445	260	23.5	24
					79-07-18	1055	220	25.0	22
220826159185401	2-0818-02 W90B CNTY	22 08 26	159 18 54	01	79-06-11	1000	280	24.0	22
220950159184801	2-0918-01 SHIRAKI	22 09 50	159 18 48	01	79-06-01	1300	500	25.0	65
220946159191301	2-0919-02 WRIGHT	22 09 46	159 19 13	01	79-06-01	1430	500	25.0	78
221038159203801	2-1020-03 W78 LPC	22 10 38	159 20 38	01	78-10-11	1430	205	22.0	20
221141159252501	2-1125-01 CNTY, KILAUEA	22 11 41	159 25 25	01	78-10-10	1100	140	24.0	14
221150159264501	2-1126-01 CNTY, HANALEI	22 11 50	159 26 45	01	79-06-13	1330	160	22.5	14
221201159293401	2-1229-03 W73 HANALEI	22 12 01	159 29 34	01	78-10-10	1245	215	24.0	22
					79-06-12	1200	210	22.5	22
					79-07-16	1400	215	23.5	22
					79-09-06	1400	215	23.5	24

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
			HAWAII, ISLAND OF KAUAI--Continued						
221247159324801	2-1232-01 W67 CNTY	22 12 47	159 32 48	01	79-07-16	1335	130	23.0	19
					79-09-06	1325	140	24.0	19
221318159335901	2-1333-01 W66 HAENA	22 13 18	159 33 59	01	78-11-28	1245	210	22.0	20
					79-07-16	1310	200	24.0	19
					79-09-06	1250	205	22.5	20
215454159274201	2-5427-01 W16A KOLOA	21 54 54	159 27 42	01	78-10-13	0815	230	22.5	24
					79-02-06	1315	230	23.0	24
					79-04-09	0930	225	22.5	24
					79-05-17	1000	240	23.0	--
					79-06-15	1045	220	22.5	22
					79-08-10	1030	230	23.0	26
					79-09-20	1100	230	23.5	25
215536159263501	2-5526-01 GRV FRM, KOLOA	21 55 36	159 26 35	01	78-10-13	1000	230	23.0	22
					79-02-06	1130	220	23.0	21
					79-08-10	1215	240	23.5	22
					79-09-20	1345	220	23.0	--
215528159303001	2-5530-02 W23 MSCO	21 55 28	159 30 30	01	78-10-13	1525	245	22.5	27
					78-12-11	1025	245	22.0	27
					79-05-10	1515	240	22.5	26
					79-08-10	1000	245	23.0	28
215535159302601	2-5530-03 W22 LAWAI	21 55 35	159 30 26	01	78-10-13	1515	215	23.0	23
215522159342601	2-5534-03 W25-1 MCBRYDE	21 55 22	159 34 26	01	78-10-13	1115	500	23.5	50
215635159355001	2-5635-01 S7 KAUMAKANI	21 56 35	159 35 50	01	78-10-13	1300	750	23.5	140
					78-12-11	0915	750	22.5	140
					79-02-06	0845	710	23.0	140
					79-04-05	1455	690	23.5	140
					79-05-10	1400	680	23.0	140
					79-06-15	0830	650	23.0	140
					79-08-10	0830	680	23.5	140
					79-09-20	0930	680	23.0	140
215635159355002	2-5635-02 W25-3 OLKL SGR	21 56 35	159 35 50	02	78-10-13	1315	980	23.0	210
					79-06-15	0845	900	23.0	220
215803159401201	2-5840-02 W26 WAIMEA	21 58 03	159 40 12	01	78-10-19	1330	690	25.0	140
					78-12-07	1345	660	24.0	120
					79-02-05	1420	680	23.5	130
					79-04-05	1330	580	25.0	110
					79-05-10	1230	630	24.5	120
					79-06-22	1320	560	25.0	100
					79-08-09	1415	650	24.5	130
					79-09-20	0845	640	24.0	130
215854159424601	2-5842-02 S11 KSC	21 58 54	159 42 46	01	78-10-19	0915	770	24.0	130
					78-12-07	0925	730	24.0	120
					79-02-05	0915	700	23.5	120
					79-04-05	1245	690	24.0	120
					79-05-10	1035	700	24.0	120
					79-06-22	0925	700	23.5	130
					79-08-09	1200	700	24.5	120
					79-09-17	1400	700	24.0	120
215843159422901	2-5842-03 S10 KSC	21 58 43	159 42 29	01	78-10-19	0845	1500	24.0	350
					79-02-05	1330	650	23.5	110
					79-04-04	1035	1300	24.0	360
					79-05-10	1115	1400	24.0	360
					79-06-22	0900	1150	23.5	300
					79-08-09	1230	1100	24.0	270
					79-09-17	1345	1050	24.0	250

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF KAUAI--Continued									
215906159395601	2-5939-01 S9 CNTY	21 59 06	159 39 56	01	78-10-13	1400	580	23.5	100
					78-12-07	1415	470	23.0	63
					79-02-05	1440	460	23.0	66
					79-04-05	1410	410	23.5	58
					79-05-10	1315	480	23.5	78
					79-06-22	1345	580	25.0	120
					79-08-09	1500	650	23.5	130
					79-09-20	0900	580	23.5	120
215937159434201	2-5943-01 S13 WAIAWA	21 59 37	159 43 42	01	78-10-19	0945	1650	24.0	360
					78-12-07	0945	1500	24.0	330
					79-02-05	0945	1450	24.0	330
					79-04-05	1310	1300	24.0	310
					79-05-09	1445	1300	23.5	330
					79-06-22	0945	1300	24.0	330
					79-08-07	1500	1350	24.0	340
					79-09-17	1430	1350	24.0	340
HAWAII, ISLAND OF OAHU									
211646157465201	3-1646-01 W18 WAIALAE GC	21 16 46	157 46 52	01	78-10-30	0845	800	23.5	190
					79-01-29	1345	700	22.0	160
					79-03-20	1320	740	23.0	170
					79-04-30	0915	800	23.0	180
					79-06-14	1210	775	23.0	180
					79-07-18	1330	825	23.0	200
					79-09-10	1010	850	22.5	220
211718157491002	3-1749-07 W25 TUBE D	21 17 18	157 49 08	02	78-12-21	1345	1400	23.0	370
					79-02-02	1055	1500	23.5	400
					79-03-20	1405	1425	23.5	380
					79-04-24	1530	1600	24.0	420
					79-06-13	1515	1350	24.0	380
					79-07-18	1450	1400	24.0	400
					79-08-31	1510	1500	24.5	430
211718157491001	3-1749-07 W25 TUBE E	21 17 18	157 49 08	01	78-12-21	1350	800	23.0	200
					79-02-02	1100	850	23.5	210
					79-03-20	1410	850	23.5	200
					79-04-24	1535	900	23.5	210
					79-06-13	1525	840	23.5	210
					79-07-18	1455	800	24.0	210
					79-08-31	1520	900	24.0	230
211832157515501	3-1851-19 W102 TUBE A	21 18 32	157 51 55	01	78-10-30	1430	15000	23.5	7200
					78-12-21	1700	15500	23.5	7400
					79-02-02	1530	17500	23.5	7500
					79-03-20	1530	17000	23.5	7400
					79-04-30	1015	19500	23.5	7400
					79-06-18	1540	19000	23.5	7600
					79-07-20	1350	19000	23.5	8000
					79-09-10	1520	16000	24.0	7900
211832157515502	3-1851-19 W102 TUBE B	21 18 32	157 51 55	02	78-10-30	1445	1500	23.5	420
					78-12-21	1705	1550	23.5	440
					79-02-02	1535	1600	23.5	450
					79-03-20	1525	1600	23.5	460
					79-04-30	1020	1700	23.5	460
					79-06-18	1545	1600	23.5	470
					79-07-20	1400	1650	23.5	480
					79-09-10	1530	1700	23.5	480

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued									
212038157422501	3-2042-13 W420-1A PAC CO	21 20 02	157 42 07	01	78-11-14	1130	5000	25.0	1600
					78-12-29	1000	6500	25.5	1500
					79-02-13	1015	5000	25.0	1300
					79-04-03	1000	5000	25.0	1400
					79-05-14	1100	5300	25.0	1400
					79-06-26	1530	5000	25.0	1500
					79-08-07	1115	5300	26.0	1600
212154158015201	3-2101-03 W266 HAW MEAT	21 21 54	158 01 52	01	78-12-26	0930	1000	22.5	230
					79-02-05	1010	950	22.5	220
					79-03-21	1010	950	22.5	210
					79-04-27	1030	1075	22.0	240
					79-06-18	1040	1000	22.0	250
					79-07-25	1100	1075	22.5	280
					79-09-11	1030	1125	22.5	300
212133158035501	3-2103-03 S14 NAVY	21 21 33	158 03 55	01	78-12-26	1015	1075	23.0	220
					79-04-27	0905	1100	23.5	220
					79-06-18	0845	1000	23.5	220
					79-07-25	0920	1000	23.5	220
					79-09-11	0910	1025	23.5	220
212106157533701	3-2153-02 W153 DAMON EST	21 21 06	157 53 37	01	78-10-30	1040	390	21.5	69
					78-12-20	1500	380	22.0	69
					79-02-02	1230	400	21.5	70
					79-03-20	1450	400	21.5	69
					79-04-26	1515	400	21.5	71
					79-06-15	1530	380	22.0	71
					79-07-20	1045	380	22.0	71
					79-09-10	1100	380	22.0	71
212237158002001	3-2200-03 W234 NAVY	21 22 37	158 00 20	01	78-12-26	1235	8300	23.0	2800
					79-02-05	1130	8100	22.5	2800
					79-03-21	1100	8500	22.0	2800
					79-04-27	1150	8000	22.0	2800
					79-06-18	1155	8000	22.5	2800
					79-07-25	1325	8100	22.5	2800
212259157554201	3-2255-35 W189-3A C&H	21 22 59	157 55 42	01	79-02-02	1310	900	22.5	210
					79-03-21	1415	900	22.5	140
					79-04-26	1425	950	22.0	220
					79-07-20	1025	900	22.0	230
212238157561102	3-2256-12 W187C NAVY	21 22 38	157 56 11	02	78-12-18	1310	620	23.5	160
					79-02-05	1400	640	22.5	160
					79-03-21	1355	650	24.5	160
					79-04-26	1335	640	24.5	160
					79-06-14	1045	620	25.0	160
					79-07-19	1515	610	28.0	170
					79-09-07	1425	600	27.5	160
212300158004801	3-2300-06 W253 CNTY	21 23 00	158 00 48	01	78-12-26	1050	730	22.0	210
					79-02-05	1110	500	21.0	110
					79-03-21	1040	560	21.5	120
					79-04-27	1130	610	22.0	140
					79-06-18	1135	610	21.5	150
					79-07-25	1300	580	23.5	120
212343158001001	3-2300-11 W238 WATANABE	21 23 43	158 00 10	01	78-12-26	1135	825	22.5	200
					79-02-05	1245	825	22.5	190
					79-03-21	1210	840	22.5	190
					79-04-27	1335	850	22.5	190
					79-06-18	1310	800	22.5	190
					79-07-25	1345	800	22.5	200
					79-09-11	1150	800	23.0	200

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued									
212358158010901	3-2301-09, 10 W247J,I	21 23 58	158 01 09	01	78-12-26	1155	530	22.0	99
					79-02-05	1200	560	21.5	110
					79-04-27	1320	600	23.0	120
					79-06-18	1220	550	23.5	110
					79-07-25	1200	500	24.0	96
					79-09-11	1135	460	24.0	84
212332157582201	3-2358-02 W201 NAVY	21 23 32	157 58 22	01	78-12-21	1545	1600	20.5	460
					79-02-02	1430	2000	20.5	580
					79-03-21	1305	5400	20.5	1600
					79-04-27	1445	4400	20.5	1300
					79-06-18	1420	3400	20.5	1000
					79-07-25	1430	2200	20.5	680
					79-09-10	1215	2100	20.5	640
212318157583401	3-2358-19 W205-1 NAVY	21 23 18	157 58 34	01	78-12-21	1535	1200	23.5	330
					79-02-02	1340	1175	24.0	310
					79-03-21	1250	1300	22.5	350
					79-04-27	1430	1250	24.0	340
					79-06-18	1400	1200	26.0	340
					79-07-23	1215	1050	26.0	300
					79-09-10	1200	1020	26.5	300
212342157584301	3-2358-22 W204-4	21 23 42	157 58 43	01	78-12-21	1525	750	20.5	190
					79-02-05	1300	900	20.5	220
					79-03-21	1235	1025	20.5	260
					79-04-27	1355	1000	20.5	260
					79-06-18	1335	900	20.5	240
					79-07-25	1400	900	20.5	240
					79-09-10	1410	850	20.5	220
212343157584701	3-2358-29 W204-9	21 23 43	157 58 47	01	78-12-21	1515	1200	20.0	320
					79-02-05	1310	1900	20.5	430
					79-03-21	1230	3400	20.5	980
					79-04-27	1350	3300	20.0	920
					79-06-18	1325	2800	20.5	820
					79-07-25	1405	2400	20.5	740
					79-09-10	1415	1800	20.5	540
212336157591801	3-2359-05 W204-11 OSHITA	21 23 36	157 59 18	01	78-12-21	1500	1500	22.0	400
					79-02-05	1325	1750	22.5	480
					79-03-21	1220	2200	22.0	600
					79-04-27	1410	2100	22.0	580
					79-06-18	1350	1950	22.0	570
					79-07-25	1415	1800	22.0	540
					79-09-10	1425	1650	22.0	480
212422157485601	3-2448-01 W416 STATE	21 24 22	157 48 56	01	78-10-10	0810	190	20.5	19
					78-11-21	1230	200	20.5	18
					79-01-08	1200	200	21.0	19
					79-02-16	0800	190	21.0	18
					79-06-28	0800	190	21.0	18
					79-09-26	0815	190	21.0	19
212501158080701	3-2508-02 S2 CNTY	21 25 01	158 08 07	01	78-10-24	0945	1400	28.0	270
					78-12-11	1445	1350	28.0	270
					79-01-25	1345	1350	27.5	280
					79-03-09	0930	1350	27.5	270
					79-04-25	1400	1400	27.5	280
					79-06-05	0955	1360	28.0	270
					79-07-12	0925	1340	28.0	280
					79-08-24	0955	1200	28.0	280

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued									
212556157500301	3-2550-01 W407-16	21 25 56	157 50 03	01	78-10-10	0730	140	23.0	17
					79-02-16	0720	130	22.0	17
					79-05-14	0800	140	22.5	18
					79-06-28	0730	140	22.0	17
					79-09-26	0800	140	22.0	18
212506157582301	3-2558-10 S16 NAVY	21 25 06	157 58 23	01	78-12-20	1325	1100	22.0	300
					79-02-01	1225	1100	21.5	280
					79-03-16	1225	1100	21.5	280
					79-04-25	1130	1225	21.5	300
					79-06-18	1435	1000	22.0	270
					79-07-25	1445	950	21.5	260
					79-09-10	1330	900	22.0	250
212617158033801	3-2603-01 W330-8 HAW CO	21 26 17	158 03 38	01	79-02-05	1045	355	21.0	47
					79-04-27	1110	360	22.5	47
					79-06-18	1110	340	22.5	48
					79-07-25	1130	340	22.5	50
					79-09-11	1115	340	22.5	50
212656158071801	3-2607-01 W277-97 NAVY	21 26 56	158 07 18	01	78-10-24	1045	360	24.0	45
					78-12-11	1300	355	24.0	45
					79-01-25	1350	360	24.0	44
					79-03-09	0745	350	24.0	46
					79-04-25	0745	355	24.0	47
					79-06-05	0845	358	24.0	46
					79-07-12	0850	350	24.0	46
					79-08-24	0820	350	24.0	47
212803158000701	3-2800-01 W250-4A CNTY	21 28 03	158 00 07	01	78-10-24	1630	165	28.0	17
					79-04-25	1040	165	25.5	16
					79-07-09	1455	160	21.5	18
					79-08-24	1500	160	21.5	18
212813158080201	3-2808-01 W277-92 NAVY	21 28 13	158 08 02	01	78-10-24	1105	1300	26.5	150
					79-04-25	0805	1300	26.0	160
					79-06-04	0905	1400	26.0	160
					79-07-12	0825	1440	26.5	180
					79-08-24	0845	1350	26.5	170
212828158092001	3-2809-06 CNTY, WAIANAE	21 28 28	158 09 20	01	78-10-18	0940	380	23.0	29
					78-12-13	1130	360	23.0	29
					79-01-16	1035	300	21.5	27
					79-03-08	1330	350	22.0	32
					79-04-19	0950	330	21.5	27
					79-06-01	1205	320	22.0	26
					79-07-11	0915	310	22.0	26
					79-08-23	1315	310	22.0	26
212859158124301	3-2812-01 S1 CNTY	21 28 59	158 12 43	01	78-10-18	1120	590	25.0	94
					78-12-13	1030	600	24.5	92
					79-01-16	1215	590	23.5	92
					79-03-08	1500	590	24.5	93
					79-04-19	1110	620	23.5	96
					79-06-01	1400	600	25.0	98
					79-07-11	1045	570	25.0	100
					79-08-24	1210	570	25.0	98
212927158014801	3-2901-07 S4 ARMY	21 29 27	158 01 48	01	78-10-13	0920	175	22.0	17
					78-12-01	0925	175	22.5	18
					79-01-26	1525	175	21.5	19
					79-03-09	1045	170	21.5	16
					79-04-18	0915	170	21.5	17
					79-05-24	0915	165	23.5	18
					79-07-03	0940	168	21.5	16
					79-08-21	0850	175	22.5	20
					79-09-27	0900	165	22.0	18

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued									
212945158014301	3-2901-09 W330-6 CNTY	21 29 45	158 01 43	01	78-10-20	1545	190	21.5	20
					78-11-29	1430	190	21.5	20
					79-01-19	1645	192	21.5	20
					79-03-07	1445	190	21.0	19
					79-04-24	1740	188	21.5	18
					79-07-05	1700	185	22.0	19
					79-08-24	1520	190	21.5	20
212939158112301	3-2911-02 WDCO, MAKAHA	21 29 39	158 11 23	01	78-10-18	1220	265	21.5	26
					78-11-30	1500	270	21.5	26
					79-01-16	1640	260	21.5	26
					79-03-08	1535	260	21.0	25
					79-04-19	1630	260	21.0	26
					79-06-01	1725	260	21.5	25
					79-07-11	1510	260	21.5	24
					79-08-23	1650	260	21.0	26
213224158135901	3-3213-06 W277-101 PAGE	21 32 24	158 13 59	01	78-10-18	1030	880	24.5	200
					78-12-13	0945	850	24.0	210
					79-01-16	1115	950	23.5	210
					79-03-08	1420	940	23.5	220
					79-04-19	1020	920	24.0	210
					79-06-01	1340	825	24.5	210
					79-07-11	1000	860	24.5	210
					79-08-24	1230	855	24.5	210
213243157510001	3-3251-01 W406 SWANZY	21 32 43	157 51 00	01	78-10-06	1440	1000	23.0	240
					79-01-05	1500	1000	23.0	240
					79-02-14	1600	1000	22.5	240
					79-04-02	1630	950	22.5	250
					79-05-16	1720	950	22.0	240
					79-06-27	1330	950	22.5	240
					79-08-03	1530	950	22.5	240
					79-09-25	1705	950	22.5	240
213327157524401	3-3352-01 W405 FOSTER	21 33 27	157 52 44	01	78-10-06	1410	280	23.0	36
					79-02-14	1540	270	22.5	36
					79-04-02	1600	270	22.0	36
					79-05-16	1700	280	22.0	36
					79-06-27	1730	265	22.0	36
					79-09-25	1645	260	22.0	37
213427158055501	3-3405-02 W323-2 CNTY	21 34 27	158 05 55	01	79-08-27	1715	820	22.5	200
213411158074501	3-3407-25 W320 CNTY	21 34 11	158 07 45	01	78-10-24	0820	2500	22.5	680
					78-12-07	1000	2200	23.0	620
					79-01-25	0900	2200	22.5	590
					79-03-07	1215	2200	22.5	590
					79-04-24	1320	2250	22.5	640
					79-06-05	1310	1980	23.0	530
					79-07-06	1500	2560	22.5	700
					79-08-27	1320	2500	22.5	760
213444158075501	3-3407-30 W318-2 WSCO	21 34 44	158 07 55	01	78-10-25	1300	7000	25.0	1900
					78-12-07	1345	6800	25.0	2100
					79-04-24	1600	4500	24.5	1300
					79-06-04	1500	6500	25.0	1800
					79-08-27	1010	5400	24.5	1600

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF OAHU--Continued									
213438158091101	3-3409-16 W308 MENDONCA	21 34 38	158 09 11	01	78-10-23	1020	820	22.0	180
					78-12-07	1025	850	22.0	200
					79-01-25	0940	850	21.5	180
					79-03-07	0930	820	22.5	180
					79-04-24	1340	835	21.5	180
					79-06-05	1415	845	22.0	180
					79-07-06	1535	805	22.0	190
					79-08-27	1415	820	22.0	190
213446158104901	3-3410-08 W286 WSCO	21 34 46	158 10 49	01	78-10-23	1050	1040	22.0	250
					78-12-07	1205	1075	22.0	250
					79-01-25	1010	1090	21.0	260
					79-03-07	1005	1040	21.5	250
					79-04-24	1420	1050	21.5	260
					79-06-05	1440	1050	22.0	250
					79-07-06	1600	1010	21.5	260
					79-08-27	1130	1000	21.5	260
213512158061601	3-3506-03,04 W329A,B	21 35 12	158 06 16	01	78-10-11	1200	530	22.0	98
					79-04-24	1700	550	21.5	110
					79-06-04	1600	580	22.0	110
					79-07-05	1620	570	21.5	120
					79-08-27	0900	575	21.5	120
					79-09-25	1525	580	21.5	120
213636158053701	3-3605-03 W334C WSCO	21 36 36	158 05 37	01	78-10-11	1655	2400	21.5	640
					78-11-28	1035	2100	21.5	650
					79-01-19	1550	1620	21.0	420
					79-03-07	1530	1700	21.0	450
					79-04-11	1500	1400	21.0	360
					79-05-30	1550	2050	21.0	540
					79-07-06	1350	2350	21.0	630
					79-08-17	1435	2100	21.0	590
					79-09-25	1645	2250	21.5	660
213636158053702	3-3605-21 W334U WSCO	21 36 35	158 05 40	02	78-10-11	1635	1500	21.5	390
					78-11-28	1030	1450	21.5	380
					79-01-19	1610	1400	21.0	350
					79-03-07	1515	1400	21.0	360
					79-04-11	1445	1800	21.0	500
					79-05-30	1610	1400	21.5	370
					79-07-06	1330	1380	21.5	380
					79-08-17	1455	1400	21.0	400
					79-09-25	1700	1400	21.5	400
213656157550401	3-3655-01 W394 CNTY	21 36 56	157 55 04	01	78-10-06	1340	240	21.5	34
					78-11-17	1430	250	21.5	32
					79-01-05	1245	240	21.5	33
					79-02-09	1520	240	21.5	34
					79-03-30	1600	240	21.5	32
					79-05-11	1400	240	22.0	32
					79-06-22	1250	235	22.0	32
					79-08-03	1500	236	22.0	34
					79-09-14	1445	220	21.5	34
213902157561601	3-3956-04 W366 KAHAWAI	21 39 02	157 56 16	01	78-10-06	1205	500	22.0	110
					78-11-17	1330	520	21.5	100
					79-01-05	1200	480	21.5	98
					79-02-09	1500	450	21.5	92
					79-03-30	1540	420	22.0	90
					79-05-11	1330	420	22.0	91
					79-06-22	1235	420	22.0	88
					79-08-03	1400	420	21.5	88
					79-09-14	1410	420	21.5	86

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
			HAWAII, ISLAND OF OAHU--Continued						
214050157573301	3-4057-01 W353A KAHUKU	21 40 50	157 57 33	01	79-01-05	0800	400	21.5	78
					79-03-30	0815	400	21.5	74
214029157570101	3-4057-06 W357 CMPBL EST	21 40 29	157 57 01	01	78-10-06	1120	1400	22.0	400
					79-01-05	1100	1400	22.0	400
					79-05-11	1250	1400	22.0	400
					79-06-22	1220	1400	22.0	410
					79-08-03	1340	1400	22.5	400
					79-09-14	1340	1480	22.0	410
214157158000101	3-4100-01 W338 DEL WEBB	21 41 57	158 00 01	01	78-10-06	0845	400	21.5	67
					79-03-30	0930	400	21.5	71
					79-05-11	0900	380	21.5	--
					79-06-22	0850	380	21.5	70
					79-08-03	0930	380	21.5	68
214131158011601	3-4101-08 W337-6 CNTY	21 41 31	158 01 16	01	78-10-06	1025	240	21.0	32
					78-11-17	1100	240	20.5	34
					79-03-30	1200	220	21.5	30
					79-05-11	1040	230	21.0	33
					79-09-14	1100	220	20.5	34
214233157583501	3-4258-04 W345 RCA	21 42 33	157 58 35	01	78-10-06	0830	1900	24.0	500
					78-11-17	0840	1700	23.0	510
					79-01-05	0830	1700	22.5	540
					79-03-30	0845	1700	23.0	540
					79-05-11	0830	1700	23.5	540
					79-06-22	0820	1800	24.0	540
					79-08-03	0900	1650	25.0	540
					79-09-14	0815	1800	24.0	560
			HAWAII, ISLAND OF MOLOKAI						
210402156495801	4-0449-01 S6 CNTY	21 04 02	156 49 58	01	78-10-16	1805	320	20.0	58
					79-02-06	1705	320	20.0	58
					79-05-29	1720	310	20.0	58
					79-09-04	1655	320	20.0	64
210419156570501	4-0457-01 S4 CNTY	21 04 19	156 57 05	01	78-10-17	1635	385	22.5	81
					79-02-06	1740	310	23.0	62
					79-05-29	1800	300	22.0	59
					79-09-04	1735	330	23.0	70
210605157012001	4-0601-01 W11 MO RANCH	21 06 05	157 01 20	01	78-10-18	1450	500	24.0	94
					78-12-14	0830	360	23.0	54
					79-04-05	1545	230	24.0	19
					79-06-01	0855	260	23.5	30
					79-07-12	0915	280	23.0	32
					79-09-07	0835	320	24.0	44
210856157011201	4-0801-01 W16 HHC	21 08 56	157 01 12	01	79-07-10	0900	410	--	67
					79-09-05	1135	410	21.0	90
210857156010701	4-0801-02 STATE, KALAE	21 08 57	157 01 07	01	79-07-26	1400	--	--	j 76
210903157013001	4-0901-01 W17 DEL MONTE	21 09 03	157 01 30	01	78-10-17	0925	390	20.0	80
					78-12-13	1110	370	20.0	76
					79-05-30	1600	350	--	76
					79-09-05	1330	335	--	73

j Collected by non-USGS agency.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
			HAWAII, ISLAND OF MAUI						
203835156065001	6-3806-01 KAUPO RANCH	20 38 35	156 06 50	01	79-08-08	1045	440	--	110
203947156261201	6-3926-03 WAILEA PUMP 8	20 39 47	156 26 12	01	79-01-24	0950	2600	19.0	620
					79-08-21	1100	3000	18.0	880
204126156262101	6-4126-02 W78-1 A&B INC	20 41 26	156 26 21	01	78-10-24	1000	1850	19.5	440
					78-12-06	1040	1850	19.5	450
					79-01-24	0915	1850	19.0	540
					79-03-14	1025	2100	20.0	560
					79-05-01	1140	1800	21.0	460
					79-06-27	0950	1800	18.5	450
					79-08-21	1010	2100	18.5	520
204601156001501	6-4600-01 W55 HANA RANCH	20 46 01	156 00 15	01	78-10-03	1700	590	21.0	92
					78-11-21	1530	530	22.5	88
					79-01-10	1545	530	21.0	79
					79-02-27	1615	450	21.0	67
					79-04-17	1640	450	22.0	61
					79-06-12	1615	460	21.0	73
					79-08-07	1610	445	22.0	67
204633156003201	6-4600-03 STATE WELL 8	20 46 33	156 00 32	01	78-10-04	0745	200	20.0	37
					78-11-21	1620	150	21.0	28
					79-01-10	1530	155	19.0	22
					79-02-28	1555	132	20.0	14
					79-04-18	1620	136	20.0	14
					79-06-13	1745	165	19.0	25
					79-08-08	1510	160	20.0	30
204634156271101	6-4627-08 W225 HASHIMOTO	20 46 34	156 27 11	01	78-12-06	1415	1650	23.0	320
					79-01-24	1420	1750	23.0	340
					79-05-01	1515	1750	23.0	360
					79-08-21	1415	1850	23.0	360
204635156270101	6-4627-14 W226 HASHIMOTO	20 46 35	156 27 01	01	78-10-24	1355	1450	22.0	290
					79-03-14	1210	1400	22.0	290
					79-06-27	1320	1430	22.5	300
204845156255001	6-4825-01 S15 HC&S	20 48 45	156 25 50	01	78-10-26	0830	1730	--	350
204931156371201	6-4937-01 S10 PNR MILL	20 49 31	156 37 12	01	78-11-29	1320	3850	--	1100
					79-02-16	0815	870	--	160
					79-05-28	--	2910	--	780
					79-08-01	1410	3090	--	850
					79-08-24	1330	3390	--	950
					79-09-28	1015	3570	--	1000
205014156212701	6-5021-01 LANDCO	20 50 14	156 21 27	01	79-05-04	0945	1700	--	460
205102156282501	6-5128-02 S16 HC&S	20 51 02	156 28 25	01	78-10-26	0730	2100	--	440
					78-11-30	1035	2350	24.0	480
205127156382301	6-5138-01 AMFAC	20 51 27	156 38 23	01	79-07-12	0900	--	--	j170
205243156243201	6-5224-02 S22 HC&S	20 52 43	156 24 32	01	78-10-26	0935	1770	--	410
205305156304401	6-5330-05 S33 WSCO	20 53 05	156 30 44	01	79-08-22	1200	320	20.0	40
205329156305502	6-5330-09 W15A CNTY	20 53 29	156 30 55	02	79-01-26	1345	630	22.0	130
					79-05-02	1020	700	21.5	140
205329156305501	6-5330-10 W15B CNTY	20 53 29	156 30 55	01	78-10-24	1120	480	23.0	89
					79-03-15	1505	540	21.0	100
					79-06-27	1300	520	22.0	99
205330156305401	6-5330-11 W15F CNTY	20 53 30	156 30 54	01	78-10-24	1140	430	22.5	66
					78-12-04	1545	450	22.0	72
					79-08-22	1300	440	23.0	66

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WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
			HAWAII, ISLAND OF MAUI--Continued						
205320156394501	6-5339-02 W292 CNTY	20 53 20	156 39 45	01	78-10-12	1210	1240	21.5	280
					79-02-16	1040	940	21.0	190
205344156393001	6-5339-03 STATE, LAHAINA	20 53 44	156 39 30	01	79-02-16	1010	540	20.0	120
205343156401101	6-5340-02 S5 PNR MILL	20 53 43	156 40 11	01	78-11-29	0910	2020	--	520
					79-02-16	0930	1200	21.5	210
					79-04-28	0920	1890	--	480
					79-05-28	1215	2170	--	560
					79-08-01	1135	2220	--	600
					79-08-24	1210	2670	--	660
					79-09-28	0800	2110	--	560
205412156193801	6-5419-01 STATE, HAIKU	20 54 12	156 19 38	01	79-06-01	1700	--	--	j95
205503156401801	6-5540-03 AMER FAC	20 55 03	156 40 18	01	79-02-16	0820	870	21.0	180
205651156401001	6-5640-01 S36 PAR MILL	20 56 51	156 40 10	01	79-02-16	0825	590	19.5	130
					79-04-28	1020	838	--	200
					79-05-28	1325	1250	--	320
					79-08-01	1230	783	--	190
					79-08-24	1245	1460	--	380
					79-09-28	0845	1220	--	300
205635156413101	6-5641-01 S3 PAR MILL	20 56 35	156 41 31	01	79-02-16	0900	3300	21.0	950
205837156384601	6-5838-01 STATE, NAPILI	20 58 37	156 38 46	01	78-10-12	0920	660	21.5	150
					78-12-08	1240	660	21.5	160
					79-01-23	1120	670	20.0	150
					79-02-22	1445	660	21.5	160
					79-03-13	1240	690	21.5	160
					79-04-26	1500	670	21.5	160
					79-08-20	1315	730	21.5	170
205838156383101	6-5838-02 STATE, NAPILI	20 58 38	156 38 31	01	78-12-08	1250	230	--	40
					79-01-23	1145	220	--	40
					79-03-13	1200	265	20.5	50
					79-04-26	1445	240	--	45
					79-06-26	1030	310	19.0	66
					79-08-20	1325	300	20.0	60
205854156383301	6-5838-03 STATE	20 58 54	156 38 33	01	79-04-27	0900	--	--	j90
205848156383601	6-5838-04 STATE, NAPILI	20 58 48	156 38 36	01	79-02-05	2000	--	20.6	j34
			HAWAII, ISLAND OF HAWAII						
190832155310801	8-0831-01 HWN INVEST CO	19 08 32	155 31 08	01	79-09-11	1055	630	18.0	150
191114155294801	8-1129-01 BRWR ORCHARDS	19 11 14	155 29 48	01	79-09-11	1035	92	18.0	4.5
191219155291601	8-1229-01 CNTY, PAHALA	19 12 19	155 29 16	01	79-03-21	1015	95	16.5	3.5
192108155021201	8-2102-01 W9-10 STATE	19 21 08	155 02 12	01	78-10-05	1345	925	26.0	240
					78-11-15	1250	950	26.0	240
					79-01-12	1330	540	24.0	130
					79-03-13	1450	280	25.5	56
					79-04-18	1355	1050	25.5	280
					79-05-31	1310	1100	25.0	300
					79-07-24	1340	1100	25.0	300
					79-09-12	1330	1050	25.0	290

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WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF HAWAII--Continued									
192456154571901	8-2487-01 W9-7 CNTY	19 24 56	154 57 19	01	79-09-12	1425	390	24.0	90
192738155534201	8-2753-01 W12-4 CNTY	19 27 38	155 53 42	01	78-10-18	1550	690	19.0	160
					79-01-05	0815	710	18.5	160
					79-03-21	1400	680	19.0	170
					79-07-06	0810	675	19.0	160
					79-09-27	1545	675	18.5	170
192731155534101	8-2753-02 W12-8 CNTY	19 27 31	155 53 41	01	79-03-21	1325	630	19.0	160
					79-09-27	1520	675	18.5	170
192728154530101	8-2783-01 W9-9 STATE	19 27 28	154 53 01	01	78-10-05	1040	13500	54.0	4900
					78-11-15	1030	11500	54.0	4100
					79-01-12	1100	6400	52.0	2400
					79-03-13	1100	5600	52.0	2100
					79-04-18	1120	7200	51.0	2300
					79-05-31	0950	9000	52.0	3200
					79-07-24	1120	11500	54.0	4300
					79-09-12	1035	11700	54.0	4800
192924154564701	8-2986-01 W9-5B CNTY	19 29 24	154 56 47	01	79-04-18	0955	130	22.0	5.5
					79-09-12	0930	130	22.5	6.0
192923154564701	8-2986-02 W9-5A CNTY	19 29 23	154 56 47	01	79-03-13	0950	120	22.0	6.0
193017154502101	8-3080-02 S9 CNTY	19 30 17	154 50 21	01	79-03-13	1220	800	25.0	90
					79-09-12	1145	875	25.0	150
193113154555801	8-3185-01 W9-11 HAW BCH	19 31 13	154 55 58	01	78-10-26	0940	135	21.0	18
					79-06-26	0945	135	21.0	15
					79-07-26	0935	125	21.0	14
193510155570801	8-3557-01 W12-5 CNTY	19 35 10	155 57 08	01	78-10-18	1325	250	20.0	41
					79-01-05	0950	240	19.5	36
					79-03-21	1510	240	19.5	35
					79-05-15	0940	240	19.5	35
193508155570701	8-3557-03 CNTY, KAHALUU	19 35 08	155 57 07	01	79-07-05	1615	170	20.0	18
193805155020201	8-3802-03 PUNA SGR CO	19 38 05	155 02 02	01	78-10-27	0850	80	18.5	4.5
					78-12-28	1115	85	18.5	4.5
					79-03-12	1455	95	18.5	--
					79-04-26	1015	100	18.5	4.5
					79-06-28	0915	95	18.5	4.0
					79-08-13	1115	93	18.0	5.0
					79-09-12	0840	95	18.0	5.0
193937155004301	8-3900-01 W9-2 RYL HWN	19 39 37	155 00 43	01	78-12-28	1150	260	23.0	49
					79-03-12	1420	200	22.5	25
					79-09-26	1145	360	19.0	67
194040155035201	8-4003-02 CNTY, PAHAEWA	19 40 40	155 03 52	01	78-10-27	0955	90	19.5	4.0
					78-12-28	1330	92	19.5	4.5
					79-03-12	1325	98	19.5	4.0
					79-04-26	0940	100	19.5	4.5
					79-06-28	1025	105	20.0	4.5
					79-08-13	1010	100	20.0	4.0
					79-09-26	1040	92	20.0	4.0
194134155005601	8-4100-01 HAW PROSE PARK	19 41 34	155 00 56	01	78-11-13	1045	1200	18.5	350
					79-01-17	1410	850	19.5	240
					79-04-04	0945	1050	19.0	320
					79-05-24	1340	1150	19.5	330
					79-08-08	0935	1150	19.0	340

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

STATION NUMBER	LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	DATE OF SAMPLE	TIME	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
HAWAII, ISLAND OF HAWAII--Continued									
194222155034801	8-4203-06 W8-2B HELCO	19 42 22	155 03 48	01	78-10-27	1035	200	23.0	30
					78-12-28	1045	135	24.0	19
					79-03-12	1150	110	21.0	9.5
					79-04-26	0910	115	24.0	9.0
					79-06-28	0840	120	20.5	10
					79-08-13	0920	115	25.0	12
					79-09-26	1115	125	24.5	14
194337155041801	8-4304-01 HELCO, WAIAKEA	19 43 37	155 04 18	01	78-12-28	1015	9000	21.0	3500
					79-04-26	1120	24000	21.0	15000
					79-06-28	1110	30000	22.0	16000
					79-08-13	0855	--	20.5	6000
					79-09-26	0815	13000	20.5	6000
194818155582301	8-4858-02 KONA VILLAGE	19 48 18	155 58 23	01	78-10-18	1045	2000	21.0	380
					79-01-05	1150	1800	20.5	390
					79-07-05	1415	1900	20.5	400
					79-09-27	1115	1800	20.5	400
194820155582401	8-4858-03 ISL COPRA	19 48 20	155 58 24	01	79-03-22	0920	2600	20.0	680
					79-05-15	1105	3100	20.0	710
195043155053801	8-5005-02 PEPEEKEO SGR	19 50 43	155 05 38	01	78-11-14	0845	185	22.0	20
					79-01-10	1100	200	22.0	15
					79-03-19	0920	210	22.0	18
					79-05-24	1010	220	22.0	18
					79-07-31	0905	210	22.0	17
					79-09-28	1255	210	22.0	18
195049155051601	8-5005-04 HILO CST PROC	19 50 49	155 05 16	01	79-05-24	1045	14000	17.5	4900
					79-09-28	1240	--	17.5	6200
195051155051501	8-5005-05 HILO COAST	19 50 51	155 05 15	01	78-11-14	0920	11000	18.0	3900
					78-12-28	0930	9000	18.0	3600
					79-03-19	0945	9000	18.0	4200
					79-07-31	0940	10000	18.0	3800
195546155480301	8-5548-01 BOISE CASCADE	19 55 46	155 48 03	01	79-07-05	1315	2000	28.0	560
195724155455301	8-5745-01 BOISE CASCADE	19 57 24	155 45 53	01	78-10-18	0935	280	26.0	26
					79-03-22	1125	280	26.5	28
195722155455201	8-5745-02 BOISE CASCADE	19 57 22	155 45 52	01	78-10-18	0930	280	26.0	28
195857155142301	8-5814-01 CNTY, LAUPAHOE	19 58 57	155 14 23	01	79-03-14	1450	340	19.5	60
195947155485801	8-5948-01 STATE, HAPUNA	19 59 47	155 48 58	01	78-10-23	1130	1550	25.5	440
					79-01-15	1240	1550	25.0	450
					79-04-04	1330	1600	25.0	450
					79-06-14	1020	1650	25.0	460
					79-07-23	1220	1600	25.0	450
					79-09-28	0900	1550	25.0	460
200122155480901	8-6148-01 W14 CNTY	20 01 22	155 48 09	01	79-07-23	1315	1350	27.0	380
					79-09-28	0945	1350	27.0	390
201603155521801	8-7652-01 S1 KOHALA SGR	20 16 03	155 52 18	01	78-10-16	1305	1400	21.5	510
					78-12-01	1135	1100	22.0	300
					79-03-14	1135	1150	22.0	320
					79-06-14	1140	1800	22.0	500
					79-07-31	1220	1650	21.5	480
					79-09-19	1045	1100	22.5	320

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

LOCAL IDENT-I-FIER	LAT-I-TUDE	LONG-I-TUDE	SEQ. NO.	STATION NUMBER	DATE OF SAMPLE	TIME	TEMPER-ATURE (DEG C)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)
HAWAII, ISLAND OF MOLOKAI									
4-0801-02 STATE, KALAE	21 08 57	157 01 07	01	210857156010701	79-07-26	1400	--	92	56
HAWAII, ISLAND OF MAUI									
6-5138-01 AMFAC, LAUNIUPOKO	20 51 27	156 38 23	01	205127156382301	79-07-12	0900	--	150	83
6-5419-01 STATE, HAIKU	20 54 12	156 19 38	01	205412156193801	79-06-01	1700	--	120	73
6-5838-03 STATE, HONOKAHUA	20 58 54	156 38 33	01	205854156383301	79-04-27	0900	--	80	46
6-5838-04 STATE, NAPILI	20 58 48	156 38 36	01	205848156383601	79-02-05	2000	20.6	48	13

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)
HAWAII, ISLAND OF MOLOKAI							
4-0801-02 STATE, KALAE	79-07-26	76	.1	83	227	.31	.50
HAWAII, ISLAND OF MAUI							
6-5138-01 AMFAC, LAUNIUPOKO	79-07-12	170	.1	60	425	.58	2.2
6-5419-01 STATE, HAIKU	79-06-01	95	.2	44	276	.38	--
6-5838-03 STATE, HONOKAHUA	79-04-27	90	.1	40	249	.34	.22
6-5838-04 STATE, NAPILI	79-02-05	34	.1	41	146	.20	.42

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

LOCAL IDENTI-FIER	DATE OF SAMPLE	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	SODIUM, POTAS-SIUM DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)
HAWAII, ISLAND OF MOLOKAI										
4-0801-02 STATE, KALAE	79-07-26	12	15	30	66	1.4	33	3.1	36	24
HAWAII, ISLAND OF MAUI										
6-5138-01 AMFAC, LAUNIUPOKO	79-07-12	22	24	66	47	2.3	72	6.2	71	24
6-5419-01 STATE, HAIKU	79-06-01	25	13	50	47	2.0	55	4.7	43	18
6-5838-03 STATE, HONOKAHUA	79-04-27	17	9.2	50	56	2.4	54	4.0	34	17
6-5838-04 STATE, NAPILI	79-02-05	9.8	5.7	22	48	1.4	--	2.4	35	8.1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	IRON, DIS-SOLVED (UG/L AS FE)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	AGENCY COL-LECTING SAMPLE (CODE NUMBER)
HAWAII, ISLAND OF MOLOKAI					
4-0801-02 STATE, KALAE	79-07-26	.04	30	6	j 9999
HAWAII, ISLAND OF MAUI					
6-5138-01 AMFAC, LAUNIUPOKO	79-07-12	--	10	2	j 9999
6-5419-01 STATE, HAIKU	79-06-01	.06	30	0	j 9999
6-5838-03 STATE, HONOKAHUA	79-04-27	.14	10	0	j 9999
6-5838-04 STATE, NAPILI	79-02-05	.13	40	0	j 9999

j Collected by non-USGS agency.

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