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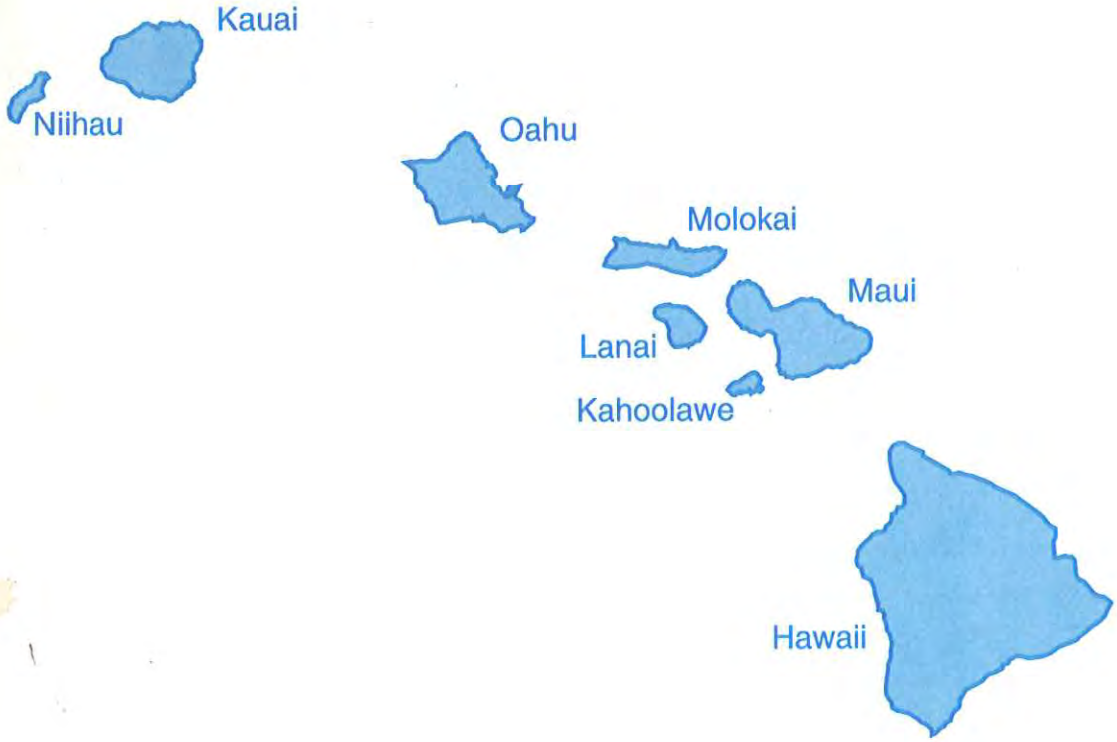
Water Resources Data
Hawaii
Water Year 1998

Water-Data Report HI-98-1



U.S. Department of the Interior
U.S. Geological Survey

Prepared in cooperation with the State of Hawaii Department of Land and Natural Resources, Commission on Water Resource Management and with other agencies

CALENDAR FOR WATER YEAR 1998

1997

OCTOBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
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NOVEMBER

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1998

JANUARY

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FEBRUARY

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MARCH

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JUNE

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JULY

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AUGUST

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23	24	25	26	27	28	29
30	31					

SEPTEMBER

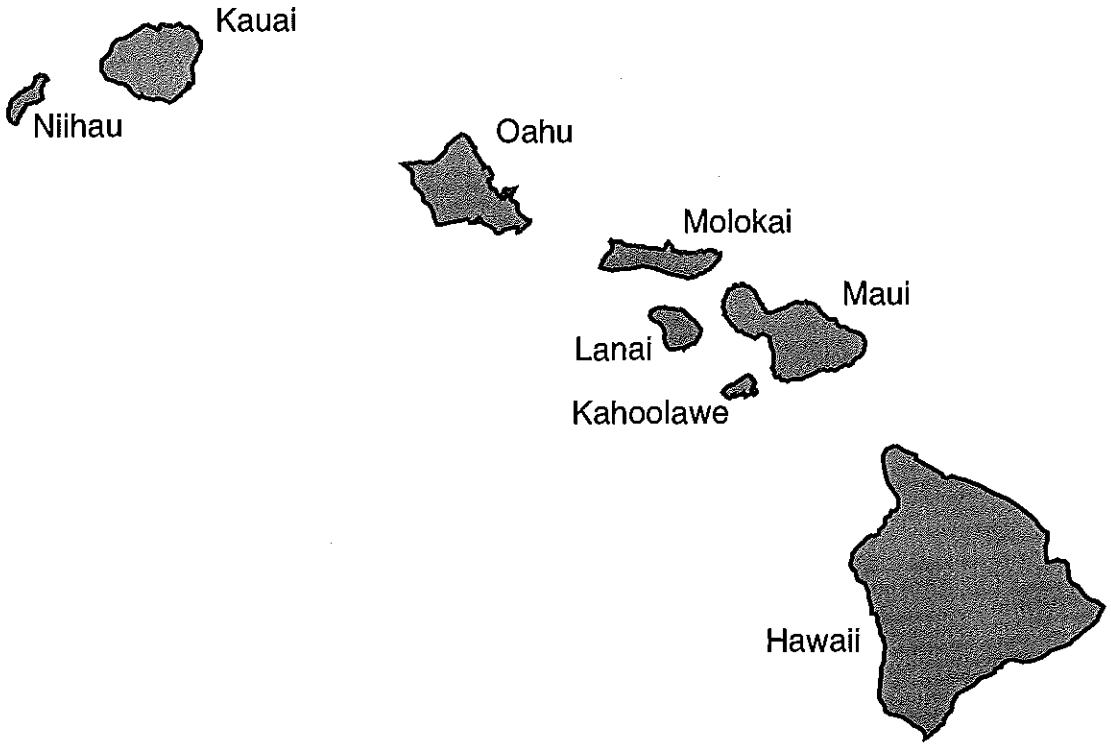
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data Hawaii Water Year 1998

By Barry R. Hill

Water-Data Report HI-98-1



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

UNITED STATES DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

Charles G. Groat, Director

Prepared in cooperation with the
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and with other agencies as listed
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For additional information write to
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677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

1999

PREFACE

This annual hydrologic data report of Hawaii is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface and ground-water data collection networks in each State, Puerto Rico, American Virgin Islands, selected islands in the Caribbean, Commonwealth of the Northern Mariana Islands, Guam, American Samoa, Republic of Palau, and selected islands in the Pacific. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report contains hydrologic data for Hawaii. It is the culmination of a concerted effort by personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the author, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines, the Hawaii District discipline specialists (Steven Anthony, Richard Fontaine, and Stephen Gingerich) reviewed and verified the data, and the following individuals contributed significantly to the collection, processing, and tabulation of the data:

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- Clayton H. Yoshida

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- Gary A. Sanchez

Islands of Maui and Molokai
- Phillip C. Teeters*
- Matt A.T. Wong

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- Benjamin H. Shimizu
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- Vaughn Kunishige
- Wayne S. Shibata
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This report was prepared in cooperation with the State of Hawaii, and with other local and Federal agencies under the general supervision of William Meyer, District Chief, Hawaii.

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13. ABSTRACT *(Maximum 200 words)*

Water resources data for the 1998 water year for Hawaii consist of records of stage, discharge, and water quality of streams and springs; and water levels and quality of water wells.

- Water discharge for 74 gaging stations on streams, springs, and ditches.
- Discharge data for 88 crest-stage partial-record stations and 71 miscellaneous sites.
- Water-quality data for 6 streams, 28 partial-record stations, and 122 wells.
- Water levels for 84 observation wells.
- Rainfall data for 40 rainfall stations.

These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating Federal, State, and other local agencies in Hawaii.

14. SUBJECT TERMS
*Hawaii, *Hydrologic data, *Surface water, *Water quality, *Ground water, Gaging stations, Flow rate, Chemical analyses, Sediment, Water temperature, Sampling sites, Water analyses, Water levels, Rainfall accumulation.

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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

NOTE.--Data for partial-record and miscellaneous sites are published in separate sections of the data report. See references at the end of this list of page numbers for these sections.

Letters after station name designate type of data: (d) discharge, (c) chemical, (m) microbiological, (t) water temperature, and (s) sediment.

HAWAII	Station number	Page
ISLAND OF KAUAI		
Kawaikoi Stream (head of Waimea River) near Waimea (d)	16010000	34
Waimea River:		
Waialae Stream at altitude 3,820 ft, near Waimea (d)	16019000	36
Makaweli River near Waimea (d)	16036000	38
Hanapepe River below Manuahi Stream, near Eleele (d)	16049000	40
Wailua River:		
South Fork Wailua River near Lihue (d)	16060000	42
North Fork Wailua River:		
North Wailua ditch below Waikoko Stream, near Lihue (d)	16061200	44
Stable storm ditch near Lihue (d)	16062000	46
East Branch of North Fork Wailua River near Lihue (d)	16068000	48
Wailua ditch near Kapaa (d)	16069000	50
North Fork Wailua River near Kapaa (d)	16071000	52
Opaekaa Stream:		
Left Branch Opaekaa Stream near Kapaa (d)	16071500	54
Kapaa Stream:		
Makaleha Stream:		
Makaleha ditch near Kealia (d)	16077000	56
Kapahi ditch near Kealia (d)	16079000	58
Anahola Stream:		
Anahola ditch above Kaneha Reservoir, near Kealia (d)	16088000	60
Kilauea Stream:		
Halaulani Stream at altitude 400 ft, near Kilauea (d)	16097500	62
Hanalei River near Hanalei (d)	16103000	64
Wainiha River near Hanalei (d)	16108000	66
Limahuli Stream near Wainiha (d)	16114000	68
ISLAND OF OAHU		
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North Fork Kaukonahua Stream above Right Branch, near Wahiawa (d)	16200000	72
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Kipapa Stream near Wahiawa (d)	16212800	78
Waikele Stream at Waipahu (d)	16213000	80
Waiawa Stream near Pearl City (d)	16216000	82
Halawa Stream:		
North Halawa Stream near Kaneohe (ds)	16225800	84
North Halawa Stream near Aiea (d)	16226000	92
North Halawa Stream near Honolulu (dcmts)	16226200	94
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Kalihi Stream at Kalihi (d)	16229300	106
Waiakeakua Stream (head of Manoa Stream) at Honolulu (d)	16240500	108
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Maunawili ditch above Anianinui tunnel near Kailua (d)	16249900	112
Maunawili ditch near Waimanalo (d)	16250000	114
Maunawili Stream:		
Makawao Stream near Kailua (d)	16254000	116

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

	Station number	Page
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Kaneohe Stream:		
Kamooalii Stream:		
Right Branch Kamooalii Stream near Kaneohe (s)	16265600	118
Luluku Stream at altitude 220 ft, near Kaneohe (dcmts)	16270900	122
Kamooalii Stream below Luluku Stream, near Kaneohe (dcmts)	16272200	132
Kapunahala Stream:		
South Fork Kapunahala Stream at Kaneohe (dcmts)	16273950	142
Haiku Stream near Heeia (dcmts)	16275000	156
Kahaluu Stream near Ahuimanu (d)	16283200	166
Waihee Stream near Kahaluu (d)	16284200	168
Waikane Stream at altitude 75 ft, at Waikane (d)	16294900	170
Kahana Stream at altitude 30 ft, near Kahana (d)	16296500	172
Punaluu Stream:		
Punaluu ditch near Punaluu (d)	16302000	174
Punaluu Stream near Punaluu (d)	16303000	176
Kaluanui Stream near Punaluu (d)	16304200	178
Waimea River:		
Kamananui Stream at Pupukea Military Road, near Maunawai (d)	16325000	180
Kamananui Stream at Maunawai (d)	16330000	182
Paukauila Stream:		
Opaeula Stream near Wahiawa (d)	16345000	184
ISLAND OF MOLOKAI		
Halawa Stream near Halawa (d)	16400000	188
Waikolu Stream:		
Molokai tunnel at east portal (d)	16405100	190
Molokai tunnel at west portal (d)	16405300	192
Waikolu Stream at altitude 900 ft, near Kalaupapa (d)	16405500	194
Kaunakakai Gulch at Kaunakakai (d)	16414000	196
Papio Gulch at Halawa (d)	16419500	198
ISLAND OF MAUI		
Hanawi Stream:		
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West Wailuaiki Stream near Keanae (d)	16518000	204
Honopou Stream near Huelo (d)	16587000	206
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Opana Gulch:		
Opana tunnel at Kailiili (d)	16599500	208
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ISLAND OF HAWAII		
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Olaa flume Spring near Kaumana (d)	16700900	221
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Honolii Stream near Papaikou (d)	16717000	238
Kawainui Stream (head of Wailoa Stream) near Kamuela (d)	16720000	240
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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

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Waipio Stream (continuation of Kawainui Stream):		
Alakahi Stream near Kamuela (d)	16725000	248
Upper Hamakua ditch above Waimea Reservoir diversion, near Kamuela (d)	16726000	250
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Kohakohau Stream below DWS intake, near Kamuela (d)	16756300	254
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GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

Letters after well number designate type of data: (c) chemical, (t) water temperature, (w) water level

HAWAII

ISLAND OF KAUAI

			Page
(2-0021-01)	220057159210301	(w)	343
(2-0022-01)	220013159224001	(w)	344
(2-0023-01)	220051159231801	(w)	344
(2-0044-14)	220019159444801	(w)	345
(2-0120-01)	220136159205501	(ct)	399
(2-0120-02)	220134159205401	(w)	346
(2-0121-01)	220131159214701	(w)	346
(2-0124-01)	220133159242001	(w)	347
(2-0126-01)	220126159261501	(w)	348
(2-0320-01)	220354159205601	(ctw)	349, 399
(2-0320-03)	220354159205602	(ctw)	349, 399
(2-0545-01)	220530159450401	(ct)	399
(2-0623-04)	220621159232101	(ctw)	350, 399
(2-0818-01)	220827159185401	(ct)	399
(2-0818-02)	220826159185401	(ct)	399
(2-0818-03)	220825159185301	(w)	350
(2-1020-03)	221038159203801	(ctw)	351, 399
(2-1125-01)	221141159252501	(ct)	400
(2-1125-02)	221141159252502	(ct)	400
(2-1126-01)	221150159264501	(ctw)	351, 400
(2-1126-02)	221151159265001	(ct)	400
(2-1229-03)	221201159293401	(ct)	400
(2-1232-01)	221247159324801	(ctw)	352, 400
(2-1333-01)	221318159335901	(ctw)	352, 400
(2-5426-03)	215434159263301	(w)	353
(2-5427-01)	215454159274201	(ctw)	353, 400
(2-5427-02)	215455159274201	(ct)	401
(2-5526-01)	215536159263501	(w)	354
(2-5530-03)	215535159302601	(ct)	401
(2-5534-03)	215522159342601	(ctw)	354, 401
(2-5626-01)	215630159265101	(w)	355
(2-5634-01)	215607159344301	(w)	356
(2-5840-01)	215803159401201	(ctw)	357, 401
(2-5843-01)	215857159430101	(ctw)	357, 401
(2-5921-01)	215958159214301	(ctw)	358, 401
(2-5923-01)	215901159235301	(ct)	401
(2-5923-07)	215901159235201	(ctw)	358, 401
(2-5923-08)	215950159231601	(w)	359
(2-5939-01)	215906159395601	(ctw)	360, 402

ISLAND OF OAHU

(3-1646-01)	211646157465201	(ct)	403
(3-1646-02)	211646157465202	(w)	362
(3-1851-19A)	211832157515501	(ctw)	362, 403
(3-1851-19B)	211832157515502	(ctw)	363, 403
(3-1851-22)	211828157515801	(w)	363, 403
(3-1959-05)	211907157594701	(w)	364
(3-2006-12)	212038158061501	(w)	365
(3-2101-03)	212154158015201	(w)	365
(3-2103-01)	212132158035701	(w)	366
(3-2103-03)	212133158035501	(ctw)	366, 403
(3-2153-02)	212106157533701	(ct)	403
(3-2153-05)(F)	212123157535501	(w)	367

GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

ISLAND OF OAHU--Continued

(3-2153-05)(S)	212123157535503	(w)	368
(3-2153-08)	212117157534601	(w)	369
(3-2256-10)	212238157561101	(w)	370
(3-2256-12)	212238157561102	(ctw)	371, 403
(3-2300-11)	212343158001001	(ct)	403
(3-2300-18)	212340158001901	(cw)	371, 404
(3-2301-09,10)	212358158010901	(ct)	404
(3-2358-02)	212332157582201	(ct)	404
(3-2358-19)	212318157583401	(w)	372
(3-2358-22)	212342157584301	(ct)	404
(3-2358-29)	212343157584701	(ct)	404
(3-2359-05)	212336157591801	(ct)	404
(3-2448-01)	212422157485601	(ct)	405
(3-2508-02)	212501158080701	(w)	372
(3-2550-01)	212556157500301	(ct)	405
(3-2558-10)	212506157582301	(ct)	405
(3-2603-01)	212617158033801	(ct)	405
(3-2607-01)	212656158071801	(ct)	405
(3-2659-01)	212614157594301	(cw)	373, 405
(3-2800-01)	212803158000701	(ct)	406
(3-2808-01)	212813158080201	(w)	373
(3-2809-06)	212828158092001	(ct)	406
(3-2812-01)	212859158124301	(ct)	406
(3-2901-07)	212927158014801	(ctw)	374, 406
(3-2901-09)	212945158014301	(ct)	406
(3-2901-12)	212945158014302	(ct)	406
(3-3213-06)	213224158135901	(ctw)	375, 406
(3-3352-01)	213327157524401	(ctw)	375, 406
(3-3405-01)	213429158055501	(ct)	407
(3-3405-02)	213427158055501	(ct)	407
(3-3407-25)	213411158074501	(ct)	407
(3-3407-30)	213444158075501	(ct)	407
(3-3409-16)	213438158091101	(w)	376
(3-3410-08)	213446158104901	(ctw)	376, 407
(3-3506-03,04)	213512158061601	(ct)	407
(3-3605-03)	213636158053701	(ct)	407
(3-3605-21)	213636158053702	(ct)	407
(3-3655-01)	213656157550401	(ct)	408
(3-3956-04)	213902157561601	(ct)	408
(3-4057-05)	214053157570401	(w)	377
(3-4100-01)	214157158000101	(ct)	408
(3-4101-03)	214125158013401	(w)	377
(3-4101-08)	214131158011601	(ct)	408
(3-4258-04)	214233157583501	(ct)	408

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(4-0448-02)	210425156483001	(ctw)	379, 409
(4-0449-01)	210402156495801	(ctw)	379, 409
(4-0456-04)	210414156565601	(c)	409
(4-0456-06)	210429156565106	(c)	409
(4-0456-08)	210419156562108	(c)	409
(4-0456-09)	210426156563509	(c)	409
(4-0457-01)	210419156570501	(ctw)	380, 410
(4-0457-04)	210433156574201	(c)	410
(4-0601-01)	210605157012001	(ctw)	380, 410
(4-0700-01)	210711157000501	(w)	381
(4-0801-01)	210856157011201	(c)	410
(4-0801-02)	210857156010701	(c)	410
(4-0901-01)	210903157013001	(c)	410

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(6-3925-01)	203912156255901	(w)	383
(6-3926-03)	203947156261201	(ct)	411
(6-4627-14)	204635156270101	(ct)	411
(6-4824-01)	204827156242201	(w)	383
(6-4825-01)	204845156255001	(ct)	411
(6-4831-01)	204818156310301	(w)	384
(6-4928-02)	204909156281401	(w)	384
(6-5021-01)	205014156212701	(ct)	411
(6-5128-02)	205102156282501	(ct)	411
(6-5130-01)	205140156304501	(w)	385
(6-5130-02)	205154156303801	(w)	385
(6-5224-02)	205243156243201	(ct)	411
(6-5330-09)	205329156305502	(ct)	411
(6-5330-10)	205329156305501	(ct)	411
(6-5330-11)	205330156305401	(ct)	412
(6-5332-04)	205312156321402	(w)	386
(6-5339-01)	205322156394501	(ct)	412
(6-5339-02)	205320156394501	(ct)	412
(6-5340-01)	205343156401101	(ct)	412
(6-5424-01)	205416156244301	(ct)	412
(6-5430-03)	205419156304401	(w)	386
(6-5430-05)	205405156305401	(ctw)	387, 412
(6-5431-01)	205437156310501	(w)	388
(6-5522-01)	205511156222101	(ct)	413
(6-5631-01)	205617156311101	(w)	389
(6-5631-02)	205651156313201	(w)	390
(6-5640-01)	205651156401001	(ct)	413
(6-5838-01)	205837156384601	(ct)	413
(6-5838-02)	205838156383101	(ct)	413
(6-5838-04)	205848156383601	(ct)	413
(6-5840-01)	205856156400101	(w)	391

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(8-0335-01)	190347155354301	(ct)	414
(8-0437-01)	190423155371501	(w)	393
(8-0632-01)	190602155325901	(w)	393
(8-0831-02)	190832155310901	(ct)	414
(8-1128-02)	191108155281701	(ct)	414
(8-1129-01)	191114155294801	(ct)	414
(8-1229-01)	191219155291601	(ct)	414
(8-2653-01)	192646155532001	(ct)	414
(8-2753-01)	192738155534201	(ct)	414
(8-2753-02)	192731155534101	(ct)	414
(8-2986-01)	192924154564701	(ct)	415
(8-2986-02)	192923154564701	(ct)	415
(8-3080-02)	193017154502101	(w)	394
(8-3155-01)	193122155551701	(w)	394
(8-3185-01)	193113154555801	(ct)	415
(8-3207-04)	193251155072101	(w)	395
(8-3557-01)	193510155570801	(ct)	415
(8-3557-05)	193502155572301	(ct)	415
(8-4003-01)	194037155035301	(ct)	415
(8-4010-01)	194035155102201	(w)	395
(8-4858-02)	194818155582301	(ct)	415
(8-4953-01)	194945155534401	(w)	396
(8-5546-01)	195546155462001	(ct)	415

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(8-5946-01)	195929155462501	(ct)	416
(8-5948-01)	195947155485801	(ctw)	396, 416
(8-6147-01)	200132155471101	(w)	397
(8-6148-01)	200122155480901	(ct)	416
(8-6148-02)	200121155480801	(ct)	416
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DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS

The following continuous record streamflow or stage-only stations in Hawaii have been discontinued or converted to partial-record stations. Daily records were collected and are stored in NWIS for the period of record shown for each station.

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF KAUAI			
16011000	Waikoali Str nr Waimea	1.58	1909-13, 1919-25
16012000	Kauaikinana Str nr Waimea	0.84	1919-25
16013000	Mohihi Str at alt 3,420 ft nr Waimea	1.68	1920-26, 1936-71
16014000	Kokee Ditch nr Waimea	--	1926-82
16015000	Mohihi Str nr Waimea	2.20	1909-17
16016000	Waimea River at alt 840 ft nr Waimea	20.0	1916-18, 1925-68
16017000	Koaie Str at alt 3,770 ft nr Waimea	1.68	1919-32, 1954-68
16018000	Koaie Str nr Waimea	9.97	1916-18
16020000	Waialae Str nr Waimea	2.81	1910-16
16021000	Waialae Str at alt 800 ft nr Waimea	7.87	1917-21
16022000	Kekaha Ditch at Camp 1 nr Waimea	--	1908-68
16024000	Kekaha Ditch at siphon nr Waimea	--	1910-12
16025000	Kekaha Ditch at flume 2 nr Waimea	--	1910-12
16027000	Kekaha Ditch below tunnel 12 nr Waimea	--	1908-34
16028000	Waimea River below Kekaha Ditch intake near Waimea	44.2	1921-55
16029000	Waimea Ditch nr Waimea	--	1912-14 1916-21
16029100	Waimea Ditch below wasteway nr Waimea	--	1960-72
16031000	Waimea River nr Waimea	57.8	1910-18, 1919, 1943-68, 1969-72, 1975-96
16033000	Olokele Ditch at weir nr Makaweli	--	1912-17
16034000	Olokele River nr Waimea	4.85	1915-16
16035000	Halekua Str nr Waimea	0.56	1912-14
16037000	Poowaiomahaihai Ditch nr Waimea	--	1911-13
16037100	Makaweli R bl Poowaiomahaihai Ditch nr Waimea	25.0	1911-17
16039000	Hiloa Ditch nr Eleele	--	1911-15
16042000	Hanapepe Ditch at Hanapepe Falls nr Eleele	--	1911-15
16043000	Hanapepe Ditch below intake	--	1930-38
16044000	Hanapepe Ditch at Koula nr Eleele	--	1910-21, 1927-49
16045000	Hanapepe Ditch below makai siphon nr Eleele	--	1929-32
16046000	Hanapepe Ditch at weir nr Hanapepe	--	1912-13, 1915-17
16047000	Koula River at Koula nr Eleele	12.6	1910-16
16048000	Manuahi Str at Koula nr Eleele	5.44	1917-20
16050000	G Ditch at makai siphon nr Eleele	--	1929-32
16051000	Hanapepe River at makai siphon nr Eleele	20.5	1929-32
16053000	Kamoolao Str nr Koloa	1.30	1939-41
16053400	Upper Haiku Ditch nr Puhi	--	1963-71
16053600	Lower Haiku Ditch nr Puhi	--	1963-71
16053800	Kamooloa Str nr Puhi	5.79	1963-70
16054000	Kuia Str nr Puhi	0.40	1939-41
16054200	Koloa Ditch nr Koloa	--	1964-71
16054400	Koloa tunnel nr Koloa	--	1966-71
16054500	Kuia Str nr Puhi	5.09	1963-66
16056000	Hanamaulu Str at Kapaia nr Lihue	6.41	1911-13
16056800	Waiahi-Kuia aqueduct nr Puhi	--	1964-71
16057000	Lihue Ditch nr Lihue	--	1910-19
16058000	Hanamaulu Ditch nr Lihue	--	1910-20
16058500	S F Wailua River nr rock quarry nr Lihue	20.2	1974-83
16061000	North Wailua Ditch nr Lihue	--	1932-85
16063000	N F Wailua River at alt. 650 ft nr Lihue	5.29	1914-85
16064000	Kanaha Ditch nr Lihue	--	1910-55
16068700	North Fork Wailua River nr Lihue	14.6	1910-14
16070000	Aahoaka Ditch nr Kapaa	--	1966-72
16072000	Konohiki Str at Makakualele mka weir nr Kapaa	0.65	1911-13

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF KAUAI--Continued			
16073000	Konohiki Str at Makakualele mki weir nr Kapaa	0.89	1912
16074000	N F Kaehulua Str at Kainahola weir nr Kapaa	1.39	1911-13
16075000	S F Kaehulua Str at Wainamuamu weir nr Kapaa	0.04	1911-13
16076000	Kaehulua Str at Kuhinoa weir nr Kapaa	1.90	1911-13
16078000	Kapaa Str nr Kealia	3.05	1910-20
16079200	Tunnel Ditch at Kapahi nr Kapaa	--	1909-11
16079400	Pipe Ditch at Kapahi nr Kapaa	--	1909-11
16079600	Kapaa Ditch at Kapahi nr Kapaa	--	1909-11
16082000	Kaneha Ditch nr Kealia	--	1909-13
16086000	Anahola Ditch above wasteway nr Kealia	--	1915-21
16087000	Anahola Ditch wasteway nr Kealia	--	1936-85
16089000	Anahola Str nr Kealia	4.27	1910, 1913-85
16090000	Lower Anahola Ditch at Kiokala nr Kealia	--	1909-14
16091000	Lower Anahola Ditch nr Kealia	--	1937-83, 1985-95
16092000	Lower Anahola Ditch at makai weir nr Kealia	--	1909-10
16093000	Anahola Str at Kiokala Dam nr Kealia	4.27	1910-12
16093200	Anahola Str at Anahola	9.24	1962-65
16094200	Ka Loko Ditch nr Kilauea	--	1932-68
16095000	Puu Ka Ele Ditch nr Kilauea	--	1932-67
16095200	Ross Ditch nr Kilauea	--	1955-67
16095900	Kalihiwai Ditch above wasteway nr Kilauea	--	1960-68
16096000	Kalihiwai Ditch nr Kilauea	--	1934-67
16097000	Pohakuhonu Str nr Kilauea	1.73	1957-72
16097300	Halaulani Str nr Kilauea	0.12	1922-25
16098000	Kalihiwai River nr Hanalei	3.64	1914-23
16099000	Kalihiwai River nr Kilauea	4.12	1912-13
16099500	Hanalei Ditch nr Kilauea	--	1956-62
16100000	Hanalei tunnel outlet nr Lihue	--	1932-85
16101000	Hanalei River at alt. 625 ft. nr Hanalei	7.17	1914-55
16102000	China Ditch nr Hanalei	--	1911-19
16104000	Kuna Ditch nr Hanalei	--	1912-14, 1917-20
16105000	Waioli Str nr Hanalei	1.81	1914-32
16106000	Lumahai River nr Hanalei	6.95	1914-33
16109000	Wainiha River above intake nr Hanalei	11.6	1914-16
16110000	Wainiha Canal at intake nr Wainiha	--	1910-16
16111000	Wainiha Canal at tunnel 18 nr Wainiha	--	1911
16113000	Wainiha River nr Wainiha	20.6	1912-16
16115000	Hanakapiai Str nr Hanalei	2.73	1931-52
16116000	Hanakoa Str nr Hanalei	0.50	1931-52
16117000	Kalalau Str nr Hanalei	1.55	1931-55
ISLAND OF OAHU			
16201000	RB of NF Kaukonahua Str nr Wahiawa	1.17	1913-53
16203000	Mauka Ditch nr Wahiawa	--	1947-68
16204000	North Fork Kaukonahua Str nr Wahiawa	4.86	1946-68
16206000	South Fork Kaukonahua Str nr Wahiawa	1.93	1913-14, 1915-16,1944-50
16206500	Koolau Ditch at reservoir nr Wahiawa	4.00	1914-15
16207000	SF Kaukonahua Str bl U.S. Army res nr Wahiawa	0.86	1914-17
16208500	RB of South Fork Kaukonahua Str nr Wahiawa	5.26	1957-72
16209000	SF Kaukonahua Str ab Wahiawa res nr Wahiawa	--	1946-58
16210900	Poamoho Tunnel nr Wahiawa	1.79	1958-79
16211000	Poamoho Str nr Wahiawa	--	1947-73
16211850	Puea Mauka Ditch nr Waianae	4.39	1960-67
16211900	Kaupuni Str nr Waianae	0.60	1957-60
16212000	Puhawai Str at Lualualei nr Waianae	1.16	1930-44
16212400	Awanui Gulch nr Barbers Point NAS	13.80	1957-58
16212900	Kipapa Str nr Waipahu	--	1966-68
16217000	Pearl Harbor Spr at Puukapu nr Pearl City	--	1931-35

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF OAHU--Continued			
16218000	Pearl Harbor Springs at Loko Kukona	--	1931-35, 1936-45
16218500	Pearl Harbor Spr at Kaluaoopu nr Pearl City	--	1931-37
16219000	Hawn Elec. Co. tunnel at Waiau nr Pearl City	--	1939-42
16220000	Hawn Elec. Co. wasteway at Waiau nr Pearl City	--	1953-59
16222000	Pearl Harbor Sprngs at Waiau	--	1913-39, 1942-47
16224000	Pearl Harbor Springs at Kalauoa	--	1931-62, 1964-65, 1966-68, 1970-88
16224500	Kalauao Str at Moanalua Road at Aiea	2.59	1957-82
16225000	Kalauao Str at Aiea	2.61	1953-57
16227500	Moanalua Str nr Kaneohe	0.94	1968-78
16227700	Moanalua Str tributary nr Kaneohe	0.62	1968-78
16227900	Moanalua Str tributary nr Aiea	0.03	1972-78
16228900	Kalihi Str nr Kaneohe	0.60	1966-71
16230000	Lulumahu Dit at upper Nuuanu Res nr Honolulu	--	1911-13
16231000	Luakaha weir in upper Nuuanu Valley nr Hon	--	1910-13
16231500	Moole Ditch mauka station nr Honolulu	--	1917-20
16231700	Moole Ditch makai station nr Honolulu	--	1918-23
16232000	Nuuanu Stream below res 2 wasteway, nr Honolulu	3.35	1913-96
16235000	Nuuanu Str at Kuakini Street nr Honolulu	4.39	1911-12
16236000	Kahuawai Spring nr Honolulu	--	1912-14
16237000	Pauoa Str at upper Pauoa Valley nr Honolulu	0.79	1911-13
16238500	Waihi Str at Honolulu	1.14	1913-21, 1925-83
16239500	East Manoa Ditch nr Honolulu	--	1915-16, 1918-20, 1926-39
16241000	Manoa Str at upper Manoa Valley nr Honolulu	2.62	1910-13
16242000	Manoa Str at College of Hawaii nr Honolulu	4.99	1909-10, 1912-18
16243000	Manoa Str at Waialae Road nr Honolulu	5.38	1910-12
16244000	Pukele Str nr Honolulu	1.18	1926-82
16245000	Waiomao Str at upper Palolo Valley nr Hon	0.35	1911-13
16246000	Waiomao Str nr Honolulu	1.04	1911, 1912, 1926-71
16247000	Palolo Str nr Honolulu	3.63	1952-79
16248900	Waimanalo Ditch below main res nr Waimanalo	--	1912-13
16249000	Waimanalo Str at Waimanalo	2.16	1967-70
16249200	Maunawili Str nr Waimanalo	1.28	1912-16
16249400	Main Spring nr Kailua	--	1914-16
16249600	Makawao Spring nr Kailua	--	1914-16
16249800	Makawao Ditch nr Kailua	--	1912-15
16250000	Maunawili Ditch nr Waimanalo	--	1954-68
16256000	Kamakalepo Str nr Kailua	0.82	1912, 1913-16
16257000	Pohakea Str nr Kailua	0.21	1912-14
16258000	Maunawili Str ab Wong Leongs Ditch nr Kailua	4.60	1922-23
16260000	Maunawili Str nr Kailua	4.60	1912, 1913-16
16260500	Maunawili Str at highway 61 nr Kailua	5.34	1922, 1956-67, 1971-96
16261000	North Branch Kahanaiki Str nr Kailua	0.34	1913-14
16262000	South Branch Kahanaiki Str nr Kailua	0.21	1913-14
16263000	Kahanaiki Str nr Kailua	0.58	1912, 1914-16
16264400	Kawainui Swamp drain canl at Kailua Rd at Kailua	--	1961-65
16264500	Kawainui Swamp canal at Wanaao Rd at Kailua	--	1961-64
16265600	Right Branch Kamooalii	1.11	1983-97
16266000	Kamooalii Str nr Kaneohe	1.48	1914-16
16267000	Hooleinaiwa Str nr Kaneohe	0.61	1914-16
16268000	Piho Str nr Kaneohe	0.43	1914-16
16269000	Kuou Ditch nr Kaneohe	--	1914-16
16270000	Kuou Str nr Kaneohe	0.37	1914-16
16270500	Kamooalii Str below Kuou Str nr Kaneohe	3.21	1967-70, 1971,1972-76
16271000	North Luluku Ditch nr Kaneohe	--	1914-16
16272000	Luluku Str nr Kaneohe	0.46	1914-16
16273000	Young Mau Ditch nr Kaneohe	--	1914-16
16273900	Kamooalii Str at Kaneohe	4.38	1959-63, 1965-80

WATER RESOURCES DATA FOR HAWAII, 1998

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF OAHU--Continued			
16274000	Ahlo Ditch nr Kaneohe	--	1914-16
16276000	Reservoir Ditch nr Heeia	--	1914-16
16277000	Waipio Ditch nr Heeia	--	1914-16
16278000	Iolekaa Str mauka nr Heeia	0.29	1940-70
16279000	Iolekaa Str nr Heeia	0.52	1914-16
16280000	Wing Wo Tai Ditch nr Heeia	--	1914-16
16281000	Hop Tuck Ditch nr Heeia	--	1914-16
16282000	Lee Ditch nr Heeia	--	1914-16
16283000	Kahaluu Str nr Heeia	0.28	1935-71
16283600	South Fork Waihee Stream near Heeia	0.03	1962-96
16283700	North Fork Waihee Stream near Heeia	0.03	1962-96
16283800	Waihee Str at alt. 260 ft nr Heeia	0.31	1961-66
16284000	Waihee Str nr Heeia	0.93	1935-82
16284500	Waihee Str at Kahaluu	2.26	1966-71
16285000	Waiahole tunnel at Waianu nr Waiahole	--	1950-69
16286000	Waiahole tunl wasteway at intk 31 nr Waiahole	--	1951-69
16287000	Waiahole tunnel at north portal nr Waiahole	--	1951-69
16287200	Waiahole tunnel at adit 8 nr Waipahu	--	1956-69
16288000	Halona Str nr Waikane	0.08	1911
16289000	Waihi Str nr Waikane	0.11	1911
16290000	Waiahole Str below powerhouse nr Waiahole	0.46	1915
16291000	Waiahole Str at alt. 250 ft. nr Waiahole	0.99	1955-68
16292000	Waiahole Str nr Waiahole	1.22	1911-16
16293000	Waianu Str nr Waikane	1.28	1911
16294000	Waiahole Str at Waiahole nr Waikane	3.60	1911-12
16295000	Waikane Str nr Waikane	2.35	1912
16296000	Kahana Str nr Kahana	3.20	1914-17
16297000	Kawa Str nr Kahana	2.09	1914-17
16299000	Punaluu Str at alt. 539 ft. nr Punaluu	0.98	1915-18
16300000	Waihoi Str nr Punaluu	0.50	1915-17
16301000	Punaluu Str at alt. 250 ft. nr Punaluu	2.78	1914-18
16304000	Kaluanui Str nr Hauula	0.50	1915-17
16305000	Kaipapau Str nr Hauula	0.21	1906-07
16306000	Koloa Gulch nr Laie	0.90	1914-18
16307000	Wailele Gulch nr Laie	0.50	1914-15, 1916-18
16308000	East Branch Kahawainui Str nr Laie	0.53	1914-18
16308990	Malaekahana Str nr Laie	0.64	1963-71
16309000	Malaekahana Str nr Kahuku	1.66	1914-18
16310000	Middle Branch Malaekahana Str nr Kahuku	0.69	1914-18
16329000	Kaiwikoele Str tributary nr Maunawai	0.97	1967-71
16340500	Anahulu River tributary nr Haleiwa	0.83	1967-71
16343000	Helemano Str at Haleiwa	14.20	1967-82
ISLAND OF MOLOKAI			
16401000	Papalaua Str nr Pukoo	2.00	1919-29
16402000	Pulena Str nr Wailau	4.38	1919-28, 1937-57
16403000	Waiakeakua Str nr Wailau	1.41	1919-29, 1937-57
16403900	Kawainui Stream near Pelekunu	1.17	1968-79, 1980-96
16404000	Pelekunu Str nr Pelekunu	2.59	1919-29, 1937-47,1948-57, 1971-82
16404200	Pilipililau Str nr Pelekunu	0.49	1968-97
16405000	Lanipuni Str nr Pelekunu	1.09	1919-29, 1937-57
16406000	Waikolu Str at alt. 650 ft nr Kalaupapa	2.99	1920-23
16408000	Waikolu Str bl pipeline crossing nr Kalaupapa	3.68	1919-32, 1937-96
16409000	Waihanau Str nr Kalaupapa	1.18	1930-32
16410000	Keolewa Str nr Kalae	0.18	1940-44
16411000	Waialala Spring nr Kalae	--	1940-60
16412000	Mokomoko Gulch nr Kalae	0.23	1940-45
16411300	Kakaako Gulch at Hwy 46 nr Mauna Loa	0.18	1964-85
16415000	EF Kawela Gulch	0.45	1946-71

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF MAUI			
16416000	Punaula Gulch nr Pukoo	0.24	1947-72
16501000	Palikea Str bl diversion dam nr Kipahulu	6.29	1927-29, 1931-35,1935-38, 1939-83
16501200	Oheo Gulch at dam nr Kipahulu	8.06	1988-97
16502000	Hahalawe Gulch nr Kipahulu	0.43	1927-37, 1938-69
16503000	Kaeluku flume nr Kaeleku	--	1940-45
16504000	Hana flume nr Hana	--	1940-45
16506000	Makapipi Ditch nr Nahiku	--	1948-66
16506500	West Makapipi Spring nr Nahiku	--	1932-45
16507000	Makapipi Str nr Nahiku	1.93	1932-45
16509000	Hanawi Str below government road, nr Nahiku	5.03	1932-47, 1992-95
16510000	Kapaula Gulch nr Nahiku	0.69	1921-63
16511000	Kapaula Gulch below government road nr Nahiku	0.93	1932-47
16512000	Koolau Ditch at Nahiku weir nr Nahiku	--	1919-85
16513000	Waiaaka Str nr Nahiku	0.10	1932-47
16514000	Paakea Gulch nr Nahiku	0.34	1932-47
16515000	Waiohue Gulch nr Nahiku	0.32	1921-63
16516000	Kopiliula Str nr Keanae	4.31	1914-17, 1921-58
16517000	East Wailuaiki Str nr Keanae	3.11	1913-17, 1922-58
16519000	West Wailuanui Str nr Keanae	1.93	1913-17, 1922-58
16520000	East Wailuanui Str nr Keanae	0.51	1914-17, 1921-58
16521000	Wailuanui Str nr Keanae	2.51	1932-36, 1938-47
16522000	Taro patch feeder Ditch at Keanae	--	1934-68
16523000	Koolau Ditch nr Keanae	--	1910-12, 1917-85
16524000	Honomanu Str at Haiku-uka boundry nr Kaili	2.54	1919-27, 1932-34,1962-68
16525000	Sevth Br Honomanu Str at Haiku-uka nr Kailiili	0.30	1932-33
16526000	Fourth Br Honomanu Str at Haiku-uka nr Kailiili	0.10	1932-33
16527000	Honomanu Str nr Keanae	3.17	1913-64
16528000	Spreckels Ditch at station 1 nr Huelo	--	1910-13
16529000	Spreckels Ditch at station 2 nr Kuelo	--	1911-13
16530000	Spreckels Ditch at station 3 nr Kuelo	--	1910-13
16531000	Kula diversion from Haipuaena Str nr Olinda	--	1945-85
16531100	Haipuaena Str at Kula pipeline intake nr Olinda	0.27	1946-68
16532000	Haipuaena Str at Haiku-uka bdy nr Kailiili	0.63	1919-26, 1932-34
16533000	Third Br Haipuaena Str at Haiku-uka nr Kailiili	0.06	1932-33
16534000	First Br Haipuaena Str at Haiku-uka nr Kailiili	0.05	1932-33
16535000	Haipuaena div ditch at Kolea Gulch nr Keanae	--	1938-60
16536000	Haipuaena Str above Spreckels Ditch nr Huelo	1.16	1913-67
16537000	Haipuaena Str nr Huelo	1.10	1910-13
16538000	Spreckels Ditch at Haipuaena weir nr Huelo	--	1922-85
16539000	Spreckels Ditch at station 4 nr Huelo	--	1910-13
16541000	Koolau Ditch at Haipuaena nr Huelo	--	1932-87
16541500	Manuel Luis Ditch at Puohokamoa Gulch nr Huelo	--	1917-24
16542000	E Br Puohokamoa Str at Haiku-uka bdry nr Kailiili	0.14	1919-27, 1932-33
16543000	M Br Puohokamoa Str at Haiku-uka bdry nr Kailiili	0.48	1919-27, 1932-34,1962-69
16544000	W Br Puohokamoa Str at Haiku-uka bdry nr Kailiili	0.45	1919-28, 1932-34
16545000	Puohokamoa Str above Spreckels Ditch nr Huelo	2.35	1913-71
16546000	Puohokamoa Str nr Huelo	2.60	1910-13
16547000	Puohokamoa intake of Koolau Ditch nr Huelo	--	1922-30
16551000	Koolau Ditch at Wahinepee nr Huelo	--	1922-29
16552000	Spreckels Ditch at Wahinepee nr Huelo	--	1929-30, 1931-38
16552200	Spreckels Ditch at station 5 nr Huelo	--	1911-13
16552500	Manuel Luis Ditch W of Puohokamoa Str nr Huelo	--	1930-35
16552600	Waikamoi Str at Puuluau nr Olinda	2.10	1949-66
16552800	Waikamoi Str ab res at Kula pl intake nr Olinda	2.50	1953-68
16553000	Waikamoi Str bl res at Kula pl intake nr Olinda	2.52	1945-49
16554000	Waikamoi Str at Haiku-uka boundary nr Kailiili	3.46	1918,19-28, 1932-34
16554500	E Br Waikamoi Str at Haiku-uka bdry nr Kailiili	0.07	1918-28, 1932-33
16555000	Waikamoi Str above Wailoa Ditch nr Huelo	3.93	1922-57

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF MAUI--Continued			
16556000	Waikamoi Str nr Huelo	3.98	1910-22
16557000	Alo Str nr Huelo	0.47	1910-57
16558000	Koolau Ditch at Alo diversion weir nr Huelo	--	1908-11
16560000	Spreckels Ditch at station 6 nr Huelo	--	1911-13
16561000	Center Ditch below Kolea reservoir nr Huelo	--	1918, 1919, 1920-24,1925-30
16562000	Center Ditch nr Huelo	--	1910-12
16565000	Kaaiea Gulch nr Huelo	0.58	1921-62
16565500	Spreckels Ditch below Kaaiea Gulch nr Huelo	--	1917-30
16566000	Oopuola Str nr Huelo	0.20	1930-57
16567000	Oopuola Str ab Spreckels Dt crossing nr Huelo	0.58	1910-15
16567500	Spreckels Ditch at station 7 nr Huelo	--	1911-12
16568000	Spreckels Ditch at station 8 nr Huelo	--	1911-13
16569000	Second Branch Nailiilihaele Str at Haiku-uka	0.20	1932-33
16570000	Nailiihaele Str nr Huelo	3.49	1910-11, 1913-18,1919-24, 1925-75
16571000	Nailiilihaele Str bl new Hamakua Dt nr Huelo	3.60	1912
16572000	New Hamakua Ditch at Nailiilihaele weir nr Huelo	--	1910-12
16573000	New Hamakua Ditch at station 1 nr Kailiili	--	1912-13
16574000	Kailua Str at Haiku-uka boundary nr Kailiili	0.80	1918-28, 1932-34
16574500	Kailua Str nr Kailiili	1.10	1963-71
16575000	Tenth Br Kailua Str at Haiku-uka nr Kailiili	0.10	1932-33
16576000	Ninth Br Kailua Str at Haiku-uka nr Kailiili	0.20	1932-33
16577000	Kailua Str nr Huelo	2.41	1910-11, 1912-18,1919-58
16578000	New Hamakua Ditch at station 2 nr Huelo	--	1912-13
16579000	New Hamakua Ditch at station 3 nr Huelo	--	1912-13
16579500	New Hamakua Ditch at station 4 nr Huelo	--	1912-13
16580000	Oanui Str nr Huelo	0.90	1910-11, 1913-16
16582000	New Hamakua Ditch at station 5 nr Huelo	--	1912-13
16583000	Old Hamakua Ditch at Kailua nr Huelo	--	1919-22
16584000	Kailua Str nr Huelo	3.69	1912-13
16585000	Hoolawanui Str nr Huelo	1.34	1910-71
16586000	Hoolawaliilii Str nr Huelo	0.55	1911-57
16588000	Wailoa Ditch at Honopou nr Huelo	--	1922-87
16589000	New Hamakua Ditch at Honopou nr Huelo	--	1918-85
16590000	Old Hamakua Ditch at Honopou nr Huelo	--	1918-22, 1936-65
16591000	Honopou Str at Lowrie Ditch siphon nr Huelo	2.00	1932-47
16592000	Lowrie Ditch at Honopou Gulch nr Huelo	--	1910-27
16593000	Honopou Str above Haiku Ditch nr Huelo	2.20	1930-85
16594000	Haiku Ditch at Honopou Gulch nr Kailua	--	1910-28, 1930-85
16595000	Honopou Str below Haiku Ditch nr Huelo	2.30	1932-47
16596000	New Hamakua Ditch at Halehaku weir nr Huelo	--	1910-14, 1915-23
16596200	Halehaku Gulch nr Kailiili	0.13	1965-71
16597000	Halehaku Gulch weir at New Hamakua Dt nr Huelo	--	1910-12
16598000	Halehaku Gulch nr Huelo	1.40	1910-12
16599000	E Br Opana Gulch at Haiku-uka bdry nr Kailiili	0.60	1932-33
16600000	Opana Ditch nr Huelo	--	1910-12
16601000	Opana Str nr Huelo	3.30	1910-12
16602000	Kauhikoa Ditch at Opana weir nr Huelo	--	1910-13, 1913-15, 1916-28
16602400	Awalau Gulch nr Kailiili	0.23	1965-71
16603000	Kaluanui Ditch at Puuomalei nr Hamakuapoko	--	1910-12
16604000	Iao Str nr Wailuku	--	1910-15
16605000	Maniania Ditch nr Wailuku	--	1910-13
16608000	North Waiehu Str nr Wailuku	0.90	1912-15
16609000	North Waiehu Ditch nr Wailuku	--	1910-11, 1916-17
16609500	North Waiehu Str bl N Waiehu Ditch nr Wailuku	0.90	1910-11
16610000	South Waiehu Str nr Wailuku	0.70	1910-17
16611000	South Waiehu Ditch nr Wailuku	--	1913
16612000	Waihee River nr Waihee	3.90	1913-17

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF MAUI--Continued			
16613000	Waihee Canal nr Waihee	--	1910-12
16613500	Waihee Canal at Waiale weir nr Wailulu	--	1911-12
16615000	Spreckels Ditch nr Waihee	--	1910-13
16616000	Spreckels Ditch at Waiale weir nr Wailuku	--	1910-11
16617000	Left Branch Makamakaole Str nr Waihee	0.40	1939-52
16617700	Kahakuloa Str at alt. 1,380 ft. nr Honokohau	1.50	1913-14
16619000	Kahakuloa Str at Kahaluloa nr Waihee	4.00	1912-13
16620000	Honokohau Str nr Honokohau	4.11	1911, 1913-20, 1922-88
16621000	Honokohau Ditch intake nr Honokohau	--	1907-13
16622000	Honokohau Ditch above Honolua Str nr Honolohau	--	1910-11
16623000	Honolua Str nr Honokohau	2.90	1913-17
16624000	Honokohau Ditch at Honokowai weir nr Lahaina	--	1910-12
16625000	Honolua Ditch nr Honokohau	--	1911-12
16626000	Honolua Str at Honolua Ranch nr Honokahau	3.96	1911
16627000	Kapaloa Str at weir 1 nr Lahaina	1.00	1901
16628000	Kapaloa Str nr Lahaina	1.00	1911-12
16629000	Honokowai Ditch nr Lahaina	--	1912-17, 1918-67
16630000	Honokowai Str nr Lahaina	1.10	1913-17
16633000	Kahoma development tunnel nr Lahaina	--	1911-17
16634000	Kahoma Str nr Lahaina	1.19	1911-12, 1913-17
16635000	Lahainaluna Str at weir 1 nr Lahaina	0.54	1901
16635500	Lahainaluna Str at weir 2 nr Lahaina	0.19	1901
16636000	Kahana Str above pipeline intake nr Lahaina	1.51	1916-25, 1926-32
16637000	Lahainaluna Ditch nr Lahaina	--	1913-14
16638000	Kahana Str nr Lahaina	1.83	1911-16
16638500	Kahoma Str at Lahaina	5.22	1962-89
16639000	North Fork Kauaula Str nr Lahaina	0.52	1901
16640000	South Fork Kauaula Str nr Lahaina	0.18	1901
16641000	Kauaula Str nr Lahaina	1.84	1912, 1914-17
16643000	Kauaula Ditch nr Lahaina	--	1911-17
16644000	Launiupoko Str nr Lahaina	1.13	1911-18
16645000	Olowalu Ditch nr Olowalu	--	1911-16, 1916-20, 1920-58, 1958-67
16646000	Olowalu Str nr Olowalu	4.00	1913-16
16647000	Ukumehame Gulch nr Olowalu	3.75	1911-12, 1913-19
16647100	Ukumehame Gulch at mouth nr Olowalu	4.03	1964-71
16648000	South side Waikapu Ditch nr Waikapu	--	1910-17
16649000	Palolo Ditch nr Waikapu	--	1910-17
16650000	Waikapu Str nr Waikapu	2.76	1910-17
ISLAND OF HAWAII			
16700000	Waiakea Stream nr Mountain View	17.4	1930-95
16700950	Lyman Springs no. 2 nr Piihonua	--	1981-95
16701000	Olaa Flume at Kaumana nr Hilo	--	1917-20
16701200	Waiakea Str nr Hilo	33.60	1957-67
16701700	Wailuku River nr Pua Akala	10.20	1964-65
16701750	Wailuku River nr Humuula	34.80	1965-82
16701800	Wailuku River nr Kaumana	43.40	1966-82
16703000	Wailuku River at Pukamaui nr Hilo	97.20	1923-28, 1929-40
16705000	Hilo Boarding School Ditch at intake nr Hilo	--	1931-40
16706000	Hilo Boarding School Ditch nr Hilo	--	1918-19
16707000	Kapehu Ditch diversion nr Hilo	--	1954-62
16708000	Kapehu Ditch nr Hilo	--	1938-41, 1942-48, 1948-51, 1951-62
16709000	Kapehu Str at Piihonua nr Hilo	4.84	1928-37
16710000	Wailuku River nr Hilo	150.00	1911-13, 1918-19
16713000	Wailuku River at Hilo	256	1977-79, 1980-95
16716000	Honolii Str nr Hilo	8.00	1924-32
16717500	Kawainui Str nr Pepeekeo	9.20	1912
16717820	Manowaiopae Str nr Laupahoehoe	1.04	1965-71

WATER RESOURCES DATA FOR HAWAII, 1998

DISCONTINUED SURFACE-WATER OR STAGE-ONLY STATIONS--Continued

Station number	Station name	Drainage area (mi^2)	Period of record
ISLAND OF HAWAII--Continued			
16718000	Upper Hamakua Ditch at Puualala nr Kukuihaele	--	1913-20
16721000	Kawainui Str at alt. 2,120 ft nr Waipio	3.48	1901-02
16721500	Br 3 Kawainui Str at alt. 1,700 ft nr Waipio	3.90	1901-02
16722000	Kawainui Str at alt. 1,435 ft nr Waipio	4.43	1901-02
16722300	Br 3 Kawainui Str at alt. 1,405 ft nr Waipio	0.47	1901-02
16722600	Br 1 Kawainui Str at alt. 1,380 ft nr Waipio	5.19	1901-02
16723000	Kawainui Str nr Waipio	5.55	1901-02
16724000	Kawainui Str at alt. 775 ft nr Waipio	6.00	1901-02
16728000	Alakahi Str at alt. 1,200 ft nr Waipio	1.49	1901-02
16729000	Alakahi Str at alt. 730 ft. nr Waipio	3.14	1901-02
16730000	Koiawe Str at alt. 1,120 ft. nr Waipio	1.65	1901-02
16731000	Koiawe Str at alt. 610 ft. nr Waipio	2.23	1901-02
16732000	Waipio Str below Koiawe Str nr Waipio	11.70	1901-02
16732100	Waima Str at alt. 790 ft. nr Waipio	0.51	1901-02
16732150	Waima Str at alt. 385 ft nr Waipio	0.77	1901-02
16732200	Wailoa Str nr Waipio	14.30	1901-02, 1911-12, 1964-69
16732300	Upper Hamakua Ditch at Puualala and Res No. 3	--	1913-20
16732600	Lower Hamakua Ditch at Waima flume nr Kukuihaele	--	1910-13
16732900	Lower Hamakua Ditch at main weir nr Kukuihaele	--	1910-20
16733000	Lower Hamakua Ditch wasteway nr Kukuihaele	--	1964-73
16733100	Lower Hamakua Ditch bl main weir nr Kukuihaele	--	1964-73
16733200	Honokaa diversion at Honokaa	--	1964-73
16733300	Lower Hamakua Ditch bl Honokaa div at Honokaa	--	1964-73
16737000	Waiilikahi Str nr Waimanu	0.76	1939-60
16738000	Kaimu Str nr Waimanu	0.90	1939-47, 1950-52
16739000	Punalulu Str nr Waimanu	0.66	1939-52
16740000	Waiaalala Str nr Waimanu	0.12	1939-52
16741000	Paopao Str nr Waimanu	0.32	1939-52
16742000	Kukui Str nr Waimanu	0.22	1939-52, 1959-66
16743000	Awini Ditch at E Honokane iki Gulch nr Niulii	--	1927-38, 1938-49, 1950-72
16744000	E Honokane iki intake to Awini Ditch nr Niulii	--	1927-36, 1937-38, 1939-40, 1940-49, 1951-72
16745000	Awini Ditch above Honokane Gulch nr Kohala	--	1918
16745500	Awini Ditch at Awini Weir nr Kohala	--	1907-17, 1963-72
16747000	E Br Honokane nui Str at alt 1,300 ft nr Honokane	4.53	1901
16747500	East Branch Honokane nui Str nr Niulii	4.96	1963-69
16748000	E Br Honokane nui Str at alt 770 ft nr Honokane	5.41	1901
16749000	W Br Honokane nui Str at alt 1,370 ft nr Honokane	1.81	1901
16749500	W Br Honokane nui Str at alt 775 ft nr Honokane	2.40	1901
16750000	Kohala Ditch at Honokane weir nr Kohala	--	1907-12
16750900	Kohala Ditch at Honokane nr Niulii	--	1963-72
16751000	Kohala Ditch at Pololu nr Niulii	--	1927-38, 1938-72
16752000	Kohala Ditch at Niulii weir nr Kohala	--	1907-17
16755000	Kehena Ditch nr Kohala	--	1917-19, 1928-66
16757000	Waikoloa Str nr Kamuela	0.78	1947-71
16759200	Right Branch Waiaha Str nr Holualoa	1.89	1960-82
16759500	Waiaha Str nr Holualoa	9.35	1957-68
16759800	Kiilae Str nr Honaunau	0.67	1958-82
16761200	Kahilipali nui Gulch at Waiohinu	0.47	1962-65
16764000	Hilea Gulch tributary nr Honuapo	9.17	1966-97
16765000	Hilea Gulch tributary 2 nr Honuapo	1.86	1966-82
16767000	Ninole Gulch nr Punaluu	15.5	1966-82
16770500	Paauau Gulch at Pahala	1.74	1962-79

WATER RESOURCES DATA FOR HAWAII, 1998
DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following continuous water-quality stations in Hawaii have been discontinued. Daily records were collected and are stored in NWIS for the period of record shown for each station.

[Type of record: C (specific conductance), S (sediment), T (temperature).]

Station number	Station name	Drainage area (mi^2)	Type of record	Period of record
ISLAND OF OAHU				
16212800	Kipapa Str nr Wahiawa	4.29	S	1973-82
16213000	Waikele Str nr Waipahu	45.70	C,T	1973-81
			S	1972-93
16227500	Moanalua Str nr Kaneohe	0.94	S	1971-78
16270500	Kamooalii Str blw Kuou Str nr Kaneohe	3.21	S	1972-76
ISLAND OF HAWAII				
16704000	Wailuku River at Piihonua, Hawaii, HI	125.00	C	1975-78
			T	1975-79
16713000	Wailuku River at Hilo, Hawaii, HI	256.00	S	1977-79, 1980-83
			C,T	1982-84, 1984-85

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INTRODUCTION

The U.S. Geological Survey (USGS), in cooperation with State, local, and other Federal agencies, obtains a large amount of data pertaining to the water resources of Hawaii each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Hawaii."

This report includes records on both surface and ground water in the State. Specifically, it contains: (1) Discharge records for 74 stream-gaging stations, 71 miscellaneous streamflow stations, and 88 crest-stage partial-record streamflow stations; (2) water-quality records for 6 streamflow-gaging stations, and 28 partial-record streamflow stations; (3) water-level records for 84 observation wells; (4) water-quality records for 122 observation wells; and (5) accumulated rainfall records for 40 rainfall stations.

This series of annual reports for Hawaii began with the 1961 fiscal year (State of Hawaii) with a report that contained only data relating to the quantities of surface water. For the 1964 fiscal year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to include, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels. Beginning with the 1993 water year, accumulated rainfall data were included in the report.

Prior to introduction of this series (through June 30, 1960, for Hawaii) and for several water years concurrent with it, water-resources data for Hawaii were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "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." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in the libraries of the principal cities in the United States, or if not out of print, may be purchased from the U.S. Geological Survey, Branch of Information Services, Box 25286, Denver, Colorado 80225-0286. For further ordering information, telephone (303) 202-4700.

Publications similar to this report are published annually by the U.S. Geological Survey for all states. These official Survey reports have 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-98-1." For archiving and general distribution, the reports for 1971-74 water years also are 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. For further ordering information, the Customer Inquires telephone number is (703) 487-4650.

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 at (808) 522-8290.

COOPERATION

The U.S. Geological Survey and organizations of the State of Hawaii have had cooperative agreements for the systematic collection of streamflow and ground water-level 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 USGS are:

Hawaii Department of Land and Natural Resources, Commission on Water Resource Management, Tim Johns, Deputy Director.

Hawaii Board of Land and Natural Resources, Land Division, Dean Uchida, Administrator.

Hawaii Department of Transportation, Kazu Hayashida, Director.

Hawaii Department of Agriculture, Paul Matsuo, Administrator.

City and County of Honolulu, Board of Water Supply, Clifford Jamile, Manager and Chief Engineer.

City and County of Honolulu, Department of Planning and Permitting, Jan Sullivan, Director and Chief Engineer.

National Tropical Botanical Garden, Charles Wichman Jr., Assistant Director.

Maui County Board of Water Supply, Dave Craddick, Director.

Kauai County Department of Water, Ernest Lau, Director.

Hawaii County Department of Water Supply, Milton Pavao, P.E., Manager.

Assistance in the form of funds or services was given by the U.S. Army Corps of Engineers, Hawaii Garrison, National Weather Service, and Hawaii County Department of Public Works.

The following organizations aided in collecting records:

East Kauai Water Co., Ltd. and East Maui Irrigation Co., Ltd.

SUMMARY OF HYDROLOGIC CONDITIONS

The 1998 water year was exceptionally dry in the Hawaiian Islands. A strong El Nino-Southern Oscillation event resulted in low rainfall in Hawaii as well as other Pacific areas (Pacific El Nino-Southern Oscillation Applications Center, 1998). Drought affected much of Hawaii, particularly the islands of Maui and Hawaii during the months of January and February 1998.

Surface Water

The low rainfall throughout Hawaii during the year was reflected in low streamflow at four index stations (figure 1; Table 1). These stations are all on streams that are undiverted and unregulated, so that increases or decreases in streamflow can be considered to be primarily the result of rainfall fluctuations. Annual mean discharges at stations 1606800, 16229000, and 16587000 were 71percent, 55 percent, and 118 percent of the 1961-90 median annual mean discharges at those stations, respectively (figure 1). Annual mean discharge at station 16717000 was 79 percent of the 1967-90 median annual mean discharge at that station (figure 1). Instantaneous peak flows at all four stations were low in relation to peak flows for the periods of record at these stations (Table 1).

Table 1.--Comparison of peak discharge for 1998 water year with the peak discharge for the period of record at four representative stations

Station Number	Station name	Water year 1998		Period of record	
		Date	Peak discharge (ft^3/s)	Date	Peak discharge (ft^3/s)
16068000	East Branch of North Fork Wailua River near Lihue, Kauai	Nov. 1	436	Nov. 12, 1955	18,400
16229000	Kalihi Stream near Honolulu, Oahu	Oct. 4	210	Nov. 18, 1930	12,400
16587000	Honopou Stream near Huelo, Maui	Dec. 30	203	Nov. 18, 1930	5,710
16717000	Honolii Stream near Papaikou, Hawaii	Sept. 21	4,350	May 23, 1978	22,600

Ground Water

Ground-water levels are affected by several factors, including rainfall, pumping, evapotranspiration, and, in coastal areas, tides. Ground-water levels at three continuously-monitored observation wells in Hawaii exhibited both increases and decreases relative to the 1997 water year. At Well 2-0021-01 (station number 220057159210301) in the Lihue Basin on Kauai, the lowest water level in the 6-year period of record was measured in 1998, and monthly mean water levels were lower than corresponding monthly mean water levels in water year 1997 for all months except October and September. At Well 3-2256-10 (station number 212238157561101) near Pearl Harbor on Oahu, monthly mean water levels decreased steadily throughout the water year. At Well 6-5431-01 (station number 205437156310501) near Wailuku, Maui, monthly mean water levels were all higher than corresponding monthly mean water levels in water year 1997, a reversal of a downward trend in water levels over the past several years.

Rainfall

The Hawaiian Islands have extreme variability in annual rainfall amounts owing to strong orographic effects. The wettest location is considered to be Mount Waialeale on Kauai, with an average rainfall of approximately 433 inches per year (Giambelluca and others, 1986). Areas of very low rainfall are found on the leeward side of the larger islands, particularly Maui and Hawaii.

In water year 1998, El Nino drought conditions prevailed. Rainfall at the USGS-National Weather Service gage on Mount Waialeale totalled 322 inches, or about 75 percent of the mean annual rainfall. In contrast, the Kepuni Gulch raingage on the leeward side of Haleakala on Maui recorded only 4.5 inches, or about 15 percent of the mean annual rainfall of roughly 30 inches (Giambelluca and others, 1986).

References

Giambelluca, T.W., Nullet, M.A., and Schroeder, T.A., 1986, Rainfall Atlas of Hawaii, Report R76, State of Hawaii Department of Land and Natural Resources, Division of Water and Land Development, Honolulu, Hawaii, 267 p.

Pacific El Nino-Southern Oscillation Applications Center, 1998, Pacific ENSO Update, vol. 4, no. 1, University of Guam, University of Hawaii, NOAA, and Pacific Basin Development Council, 11 p.

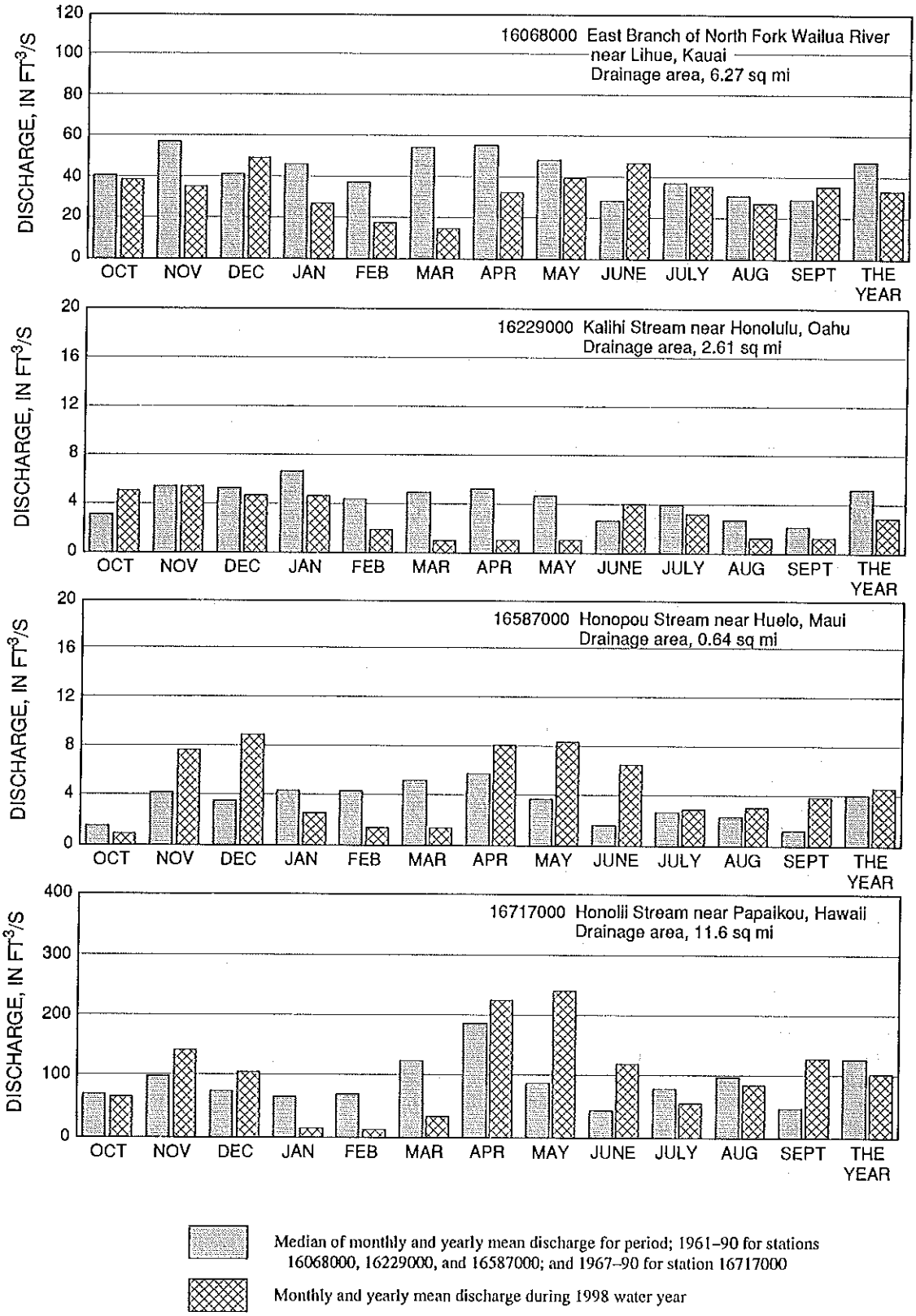


Figure 1. Discharge during 1998 water year compared with median discharge for four representative gaging stations.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives; (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites. (2) Provide the mechanism to evaluate the effectiveness of the significant reduction in SO2 emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) Provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO2 and NOx scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

http://nadp.nrel.colostate.edu/NADP

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies.

Additional information about the NAWQA Program is available through the world wide web at:

http://wwwrvares.er.usgs.gov/nawqa/nawqa_home.html

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1998 water year that began October 1, 1997, and ended September 30, 1998. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, water-quality data for surface water, ground-water, and reservoirs, ground-water level data, and rainfall accumulation data. The locations of the stations and wells where the data were collected are shown in figures 5–14 and 16–25. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether a streamgage, well, or rain gage, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water wells differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells and, in Hawaii and other Pacific areas, for surface-water stations where only miscellaneous measurements are made, and for rainfall stations.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in U.S. Geological Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the 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 two-digit number "16" plus the six-digit downstream order number "200000."

Latitude-Longitude System

The identification numbers for wells, miscellaneous surface-water sites, and rainfall stations are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a one-second grid. This site-identification number, once assigned, is a pure number, and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description (See figure 2).

Local Identifier Well-Numbering System

In addition to the latitude-longitude based site identification number, wells in the State of Hawaii are assigned local well numbers. Beginning in 1971, the local well-numbering system 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 3 and 4).

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

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

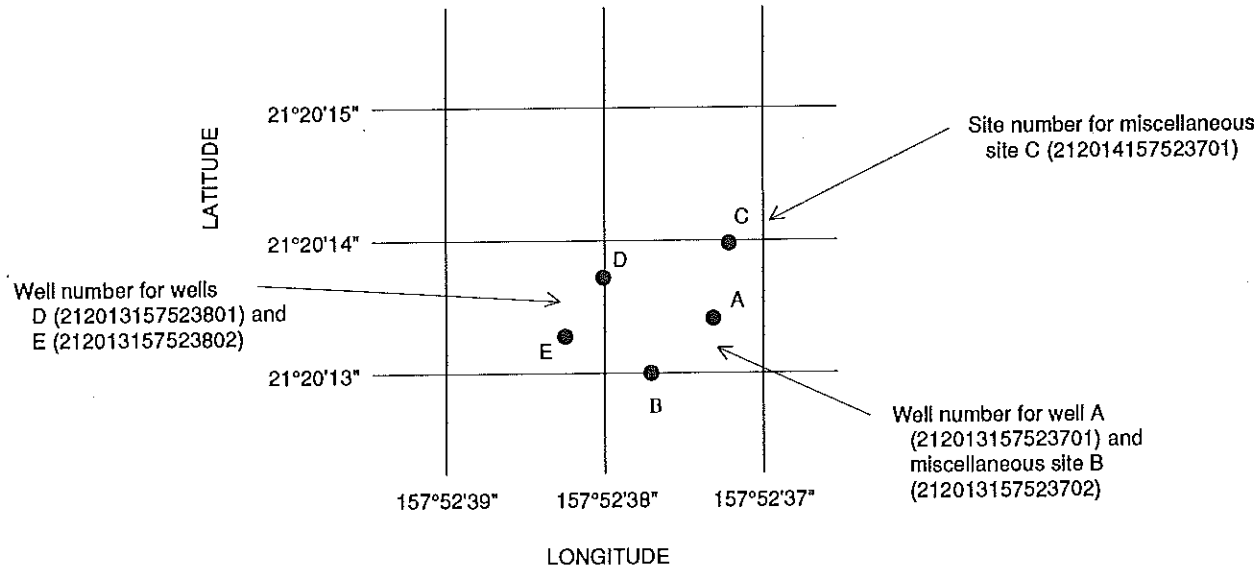


Figure 2. Sketch showing system for numbering wells and miscellaneous sites.

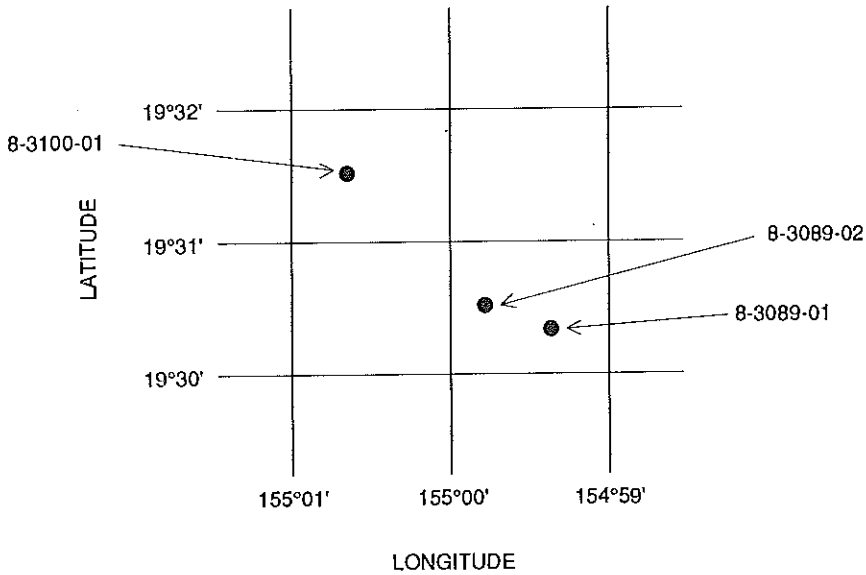


Figure 3. Sketch showing local well-numbering system.

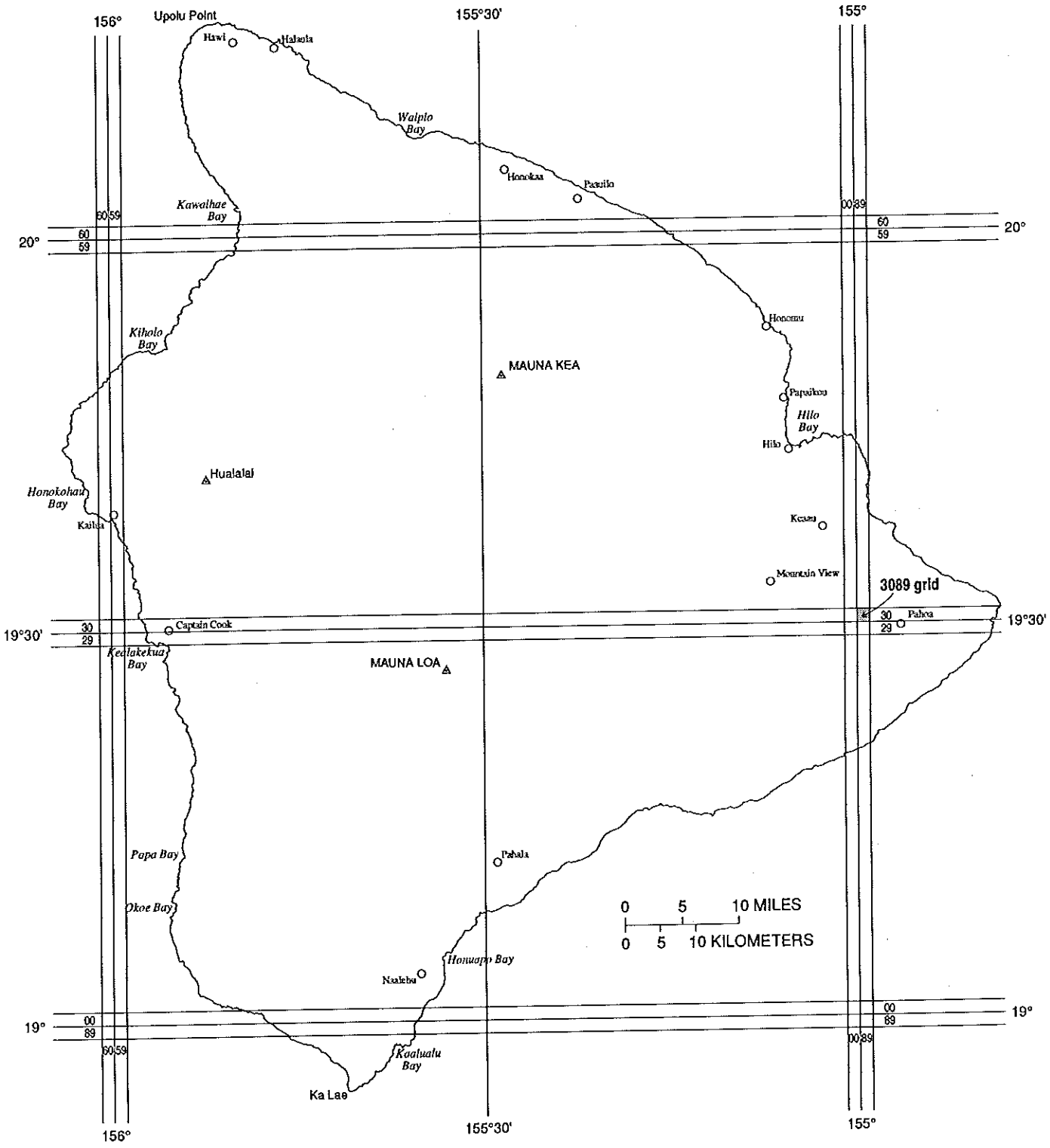


Figure 4. Map of island of Hawaii showing system for determining local well numbers.

Local State Key Numbering System

In addition to the latitude-longitude based site identification number, rainfall stations in the State of Hawaii are assigned State key numbers. The numbering system was devised in 1948 by the authors of "A Key to Rain Gages in Hawaii." The numbers run from 1 to 1145, proceeding from south to north up the island chain. However, within each five-minute latitude band, numbers proceed from west to east. Following are the blocks of numbers assigned to each island.

Island	State Key Number
Hawaii	1-223
Maui	248-497
Molokai	500-563
Lanai	650-696
Oahu	700-912
Kauai	925-1145

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 5–14.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relations between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relations between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with electronic data loggers, with digital recorders that punch stage values on paper tapes at selected time intervals, or with analog recorders that trace continuous graphs of stage. Measurements of discharge are made with current meters, using methods adapted by the U.S. Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, Water-Supply Paper 2175, and the U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapter A1 to A19 and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

In computing discharge records, results of individual measurements are plotted against corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control.

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.

In computing records of lake or reservoir contents, it is necessary to have information available from surveys, curves, or tables that define the relation of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Discharges over lake or reservoir spillways are computed from stage-discharge relations much as other stream discharges are computed.

For some gaging stations there are periods when no gage-height record is obtained, or the validity of the recorded gage height is so questionable 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, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous and following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous and following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1992 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences. In addition, beginning with the 1992 water year, a graphical hydrograph is included for surface-water discharge stations.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of five parts, the station manuscript; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; a summary statistics table that includes statistical data of annual and daily flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration; and a hydrograph of the daily mean values of discharge for the current water year. Summary statistics were not included for certain sites where these data would be misleading. Contact the U.S. Geological Survey Hawaii District office for information concerning summary statistics for these sites.

Station Manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means the instantaneous maximum discharge was revised; "(m)" the instantaneous minimum was revised; and "(P)" the peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage referred to mean sea level, and a condensed history of the types, locations, and datums of previous gages are given under this heading. In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the National Mapping Division of the U.S. Geological Survey unless otherwise qualified.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station manuscript for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remark statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, special methods of computation, conditions that affect natural flow at the station, and possibly other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the U.S. Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic average of the water-year mean discharges. Average discharge is computed only for stations having at least 5 water years of complete record; water years with incomplete record are not included in the computation. The mean-discharge value that uses all published data may differ from that given in the summary statistics data, which is based only on computer-stored data. The summary data do not include values of monthly or yearly data that were determined by various methods for the series of Water-Supply Papers entitled "Compilation of Records of Surface Water of the United States." The average-discharge value is not computed for stations where diversions, storage or other water-use practices cause the value to be meaningless. If water projects that significantly alter flow at a station are put into use after the station has been in operation for a period of years, the new average is computed as soon as 5 water years of record have accumulated after the project began.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for any canals, ditches, drains, or streams for which the peaks are subject to substantial artificial control. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Data Table of Daily Mean Values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month. The line headed "MEAN" gives the average flow in cubic feet per second during the month, and the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for the month. Discharge for the month also is usually expressed in acre-feet (line headed "AC-FT").

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEAR __-__, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary Statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS __-__," will consist of all of the station record within the specified water years, inclusive, including months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the headings. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (see address on back title page of this report.)

INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-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 about 326,000 gallons or 1,233 cubic meters.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile area drained, assuming the runoff is distributed uniformly in time and area.

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that has been exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that has been exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that has been exceeded 90 percent of the time for the designated period.

HYDROGRAPH.--The hydrograph gives a graphical presentation of the mean discharge for each day of the water year. Where possible, the same scale is used in order to facilitate visual comparison between gaging stations.

Data collected at miscellaneous sites are presented in a table following the information for continuous sites. This table summarizes discharge measurements made at sites other than continuous-record sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station manuscript.

Accuracy of the Records

The accuracy of streamflow records 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 measurements of stage, measurements of discharge, and interpretations of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the published daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair" within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft^3/s; the nearest tenths between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures for more than 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the discharge figure. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff because of 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 to 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.

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables are on file in the U.S. Geological Survey Hawaii District office. Also, most of the daily mean discharges are in computer readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the unpublished records may be obtained from the U.S. Geological Survey Hawaii District office.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurements frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape or obtained via data collection platform. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figures 5–9 and 15.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-Site Measurements and Sample Collection

In obtaining water-quality data, it is important that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made on site when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, treating the samples to prevent changes in quality pending analysis, and shipping the samples to the laboratory. Procedures for on site measurements and for collecting, treating, and shipping samples are detailed in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, and A4. These references are listed in the PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS section of this report. These methods are consistent with ASTM standards and generally follow ISO standards. Also, detailed information on collecting, treating, and shipping samples may be obtained from the U.S. Geological Survey Hawaii District office.

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. All samples obtained for the National Stream-Quality Accounting Network (see "DEFINITION OF TERMS") are obtained from at least five verticals. Whether samples are obtained from the centroid of flow or from several verticals, depends on flow conditions and other factors which must be evaluated by the collector.

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 measurements 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 U.S. Geological Survey office whose address is given on the back of the title page in this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are frequently taken at the time discharge measurements are made 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 diurnal 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, maximum, minimum, and mean temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the U.S. Geological Survey Hawaii District office.

Sediment

Suspended-sediment concentrations are determined from samples collected by one of the standard techniques discussed in TWRI, Book 3, Chapter C2, "Field methods for measurement of fluvial sediment," 1985 revision. Samples are obtained using standard depth- or point-integrating samplers, or by means of an approved pumping sampler. Mean concentrations for the sampled cross section are in turn determined from these samples.

For stations with daily suspended-sediment records, mean daily suspended-sediment concentrations and loads are computed and published for each day of the water year. During periods of unchanging flow and sediment concentration, daily suspended-sediment loads are computed as the product of daily mean streamflow, daily mean suspended-sediment concentrations, and 0.0027, a conversion factor. During periods of rapidly changing flow or rapidly changing suspended-sediment 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 discharges 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. Methods used in the computation of sediment records are described in the TWRI Book 3, Chapters C1 and C3. These methods are consistent with ASTM standards and generally follow ISO standards.

At other stations, suspended-sediment samples were collected periodically. 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 suspended-sediment discharge, periodic measurements of the particle-size distributions for the suspended-sediment, bed-load, and bed-material samples are included for stations where samples were obtained to measure this parameter.

Laboratory Measurements

Sediment samples, samples for indicator bacteria, and daily samples for specific conductance and chloride are analyzed locally. All other samples are analyzed in the U.S. Geological Survey National Water-Quality Laboratory in Arvada, Colorado. Methods used to analyze sediment samples and to compute sediment records are described in the TWRI Book 5, Chapter C1. Methods used by the U.S. Geological Survey laboratories are given in TWRI Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapter A1, A3, A4, and A5. These methods are consistent with ASTM standards and generally follow ISO standards.

In March 1989, the National Water-Quality Laboratory discovered a bias in the turbidimetric method for sulfate analysis, indicating that values below 75 mg/L have a median positive bias of 2 mg/L above the true value for the period between 1982 and 1989. Sulfate values in this report have not been corrected for this bias.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES FOR PERIOD OF RECORD.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums and minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, NWIS, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given to these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the surface-water-quality data in this report:

PRINTED OUTPUT	REMARK
E	Estimated value.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
K	Results based on colony count outside the acceptance range (non-ideal colony count).
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted).
D	Biological organism count equal to or greater than 15 percent (dominant).
V	Analyte was detected in both the environmental sample and the associated blanks
&	Biological organism estimated as dominant.

Dissolved Trace-Element Concentrations

*NOTE.--Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (µg/L) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's and 100's of nanograms per liter (ng/L). Data above the µg/L level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

Change in National Trends Network Procedures

*NOTE.--Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Coordination Office, Colorado State University, Fort Collins, CO 80532 (Telephone: 303-491-5643).

Records of Ground-Water Levels

Only water-level data from a basic network of observation wells are given in this report. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers. Locations of the observation wells in Hawaii listed in this report are shown in figures 16–20.

Although, in this report, records of water levels are presented for fewer than 100 wells, records are obtained through cooperative efforts of many Federal, State, and local agencies for several thousand observation wells throughout Hawaii and are placed in computer storage, published in reports, or kept in files. Information about the availability of ground-water data may be obtained from the District Chief, Hawaii District, U.S. Geological Survey, 677 Ala Moana Blvd., Suite 415, Honolulu, Hawaii, 96813.

Data Collection and Computation

Measurements of water levels are made in many types of wells, under varying conditions, but the method of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey TWRI publications referred to in the "On-site Measurements and Sample Collection" and the "Laboratory Measurements" sections in this data report. In addition, the TWRI Book 1, Chapter D2, describes guidelines for the collection and field analysis of ground-water samples for selected constituents. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. These methods are consistent with ASTM standards and generally follow ISO standards. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Tables of water-level data are presented by islands. The prime identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, a 7-digit number based on the local identifier well-numbering system (page 5).

Water-level records are obtained from direct measurements with a steel or electrical tape or from the graph, digital record, or electronic record of a water-stage recorder. The 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 every day. When complete water-level data for a day is not available, the day is noted with three dashes (---).

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.

Data Presentation

Each well record consists of three parts, the station description, the data table of mean daily water levels observed during the current water year, and a hydrograph of water levels observed during the past 5 years. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

LOCATION.--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); a landline location designation; the hydrologic unit number; the distance and direction from a geographic point of reference; and the owner's name.

AQUIFER.--This entry designates by name (if a name exists) and geologic age the aquifer(s) open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and (or) screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

INSTRUMENTATION.--This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on weekly, monthly, or some other frequency of measurement.

DATUM.--This entry describes the land-surface elevation at the well. The elevation of the land-surface datum is described is described in feet above (or below) mean sea level; it is reported with a precision depending on the method of determination.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that also are water-quality observation wells, and may be used to acknowledge the assistance of local (non-U.S. Geological Survey) observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the U.S. Geological Survey, may be noted.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet above mean sea level and all taped measurements of water levels are listed. For wells equipped with a recorder, only abbreviated tables are published; generally, only water-level lows are listed for every fifth day and at the end of the month (eom). Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the world wide web (WWW). These data may be accessed at:

http://www.water.usgs.gov

Some water-quality and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division district offices (see address on the back of the title page).

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point.

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 about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

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

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid.

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, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while 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. This group includes coliforms that inhabit the intestine of warm-blooded animals and those that inhabit soils. 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 that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35° C plus or minus 1.0°C on M-Endo medium (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 warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that 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 warm-blooded 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 KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Enterococcus bacteria are commonly found in the feces of humans and other warm-blooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria which produce pink to red colonies with black or reddish-brown precipitate after incubation at 41° C on mE agar and subsequent transfer to EIA medium. Enterococci include Streptococcus feacalis, Streptococcus feacium, Streptococcus avium, and their variants.

Bedload is the sediment which moves along in essentially continuous contact with the streambed by rolling, sliding, and making brief excursions into the flow a few diameters above the bed.

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

Benthic invertebrates are invertebrate animals inhabiting the bottoms of lakes, streams, and other water bodies. They are useful as indicators of water quality.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by micro-organisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass 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 105°C for zooplankton and 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 ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

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

Bottom material: See Bed material.

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 milliliters (mL) or 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, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,447 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with BOD or with carbonaceous organic pollution from sewage or industrial wastes.

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

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 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.

Cubic foot per second (FT3/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 approximately 7.48 gallons per second or 448.8 gallons per minute.

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 mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

Dissolved refers to that material in a representative water sample which passes through a 0.45 µm 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.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

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 stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

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 surface water.

Extractable organic halides (EOX) are organic compounds which contain halogen atoms such a chlorine. These organic compounds are semi-volatile and extractable by ethyl acetate from air-dried stream bottom sediments. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the stream bottom sediments.

Gage height 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 computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

High tide is the maximum height reached by each rising tide.

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

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.

Low tide is the minimum height reached by each falling tide.

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

Micrograms per liter (UG/L, µ g/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.

Microsiemens per centimeter (µS/cm, US/CM) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of units nomenclature. It is synonymous with mhos and is the reciprocal of resistance in ohms.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents 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 dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/ National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives; (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites. (2) Provide the mechanism to evaluate the effectiveness of the significant reduction in SO2 emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) Provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO2 and NOx scheduled to begin in 2000.

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Organism is any living entity.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent. The codes used in NWIS are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

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 a particle 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 the recommendation 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	0.004-0.062	Sedimentation
Sand	0.062-2.0	Sedimentation or sieve
Gravel	2.0-64.0	Sieve

The partial-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter 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.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. 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 addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

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

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (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 the 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 (PCB's) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)---a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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). The entire sample is used for the analysis.

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

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows:

$$\text{concentration (mg/L)} \times \text{discharge (ft}^3\text{/s)} \times 0.0027.$$

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

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

Solute is any substance 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 microsiemens 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 from 55 to 75 percent of the specific conductance (in microsiemens). 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.

Surface area of a lake is that area outlined on the latest USGS topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-µm filter.

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-µm 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 are 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-µm 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.

Synoptic Studies Short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial 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	*Hexagenia*
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 of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

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 determined all of the constituent in the sample).

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

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 are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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.

Volatile Organic Compounds (VOCs) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOCs are man-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human health concern because many are toxic and are known or suspected human carcinogens (U.S. Environmental Protection Agency, 1996).

Water year in U.S. Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1985, is called the "1985 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

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 the 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.

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

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting 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) pertains to 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 Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

I-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.

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

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-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F.P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.

Section E. Subsurface Geophysical Methods

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.

2-E2. *Borehole geophysics applied to ground-water investigations*, by W.S. Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 pages.

Section F. Drilling and Sampling Methods

2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

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.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS--Continued

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 measurement 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-A9. *Measurement of time of travel in streams by dye tracing*, by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.

3-A10. *Discharge ratings at gaging stations*, by E.J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.

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

3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS- -TWRI Book 3, Chapter A12. 1986. 34 pages.

3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.

3-A14. *Use of flumes in measuring discharge*, by F.A. Kilpatrick and V.R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.

3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.

3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.

3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.

3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.

3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 31 pages.

3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS--TWRI Book 3, Chapter A20. 1993. 38 pages.

3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS--TWRI Book 3, Chapter A21. 1995. 56 pages.

Section B. Ground-Water Techniques

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-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.

3-B4. *Regression modeling of ground-water flow*, by R.L. Cooley and R.L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 pages.

Section B. Instruments for Measurement of Discharge

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.

Book 9. Handbooks for Water-Resources Investigations

Section A. National Field Manual for the Collection of Water-Quality Data

9-A6. *National Field Manual for the Collection of Water-Quality Data: Field Measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI Book 9, Chapter A6. 1998. Variously paginated.

9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, by D.N. Myers and F.D. Wilde: USGS–TWRI Book 9, Chapter A7. 1997. 49 pages.

9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI Book 9, Chapter A8. 1998. 48 pages.

9-A9. *National Field Manual for the Collection of Water-Quality Data: Safety in Field Activities*, by S.L. Lane and R.G. Fay: USGS–TWRI Book 9, Chapter A9. 1998. 60 pages.

Surface-Water Station Records for Kauai

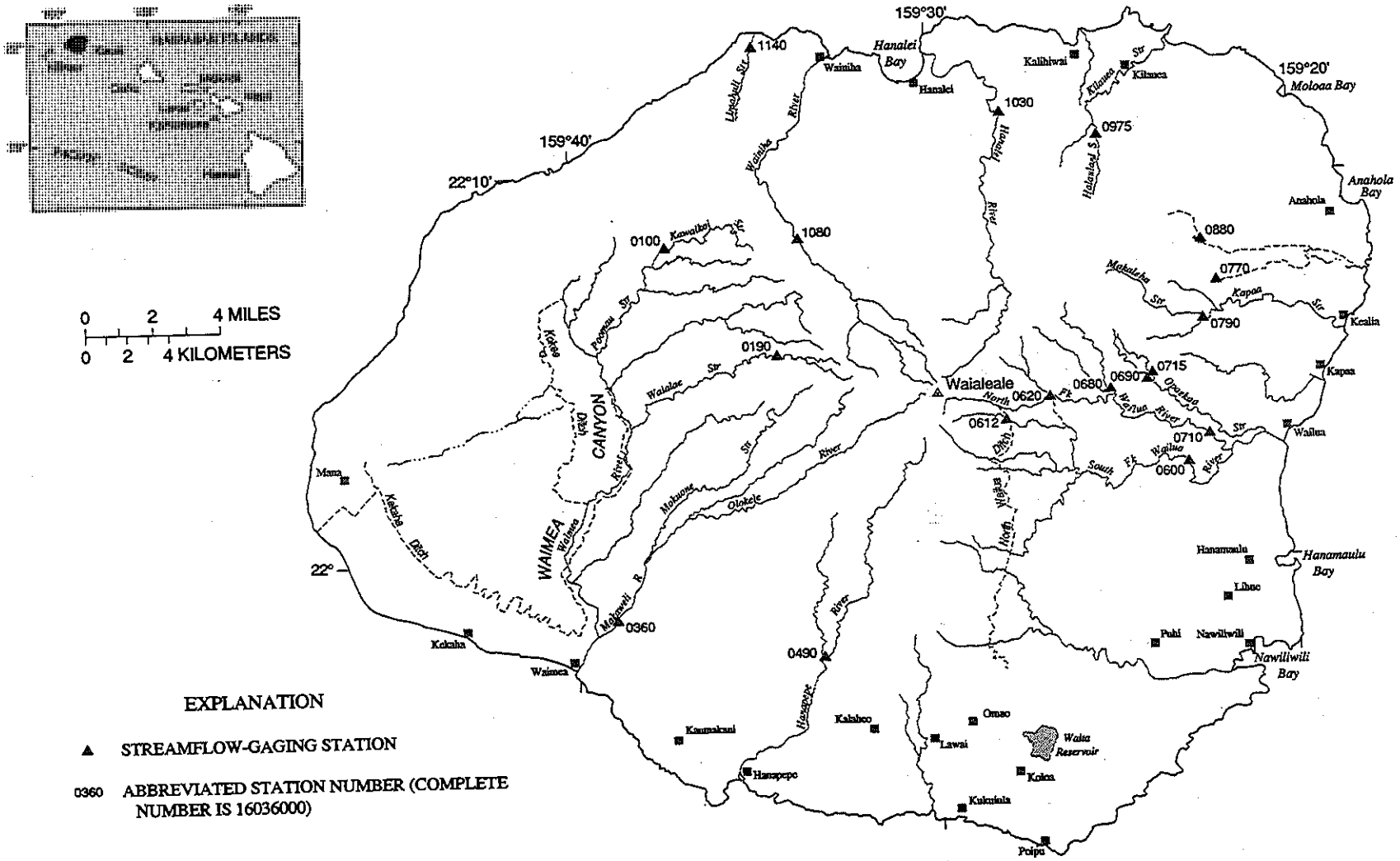


Figure 5. Locations of gaging, water-quality, and partial-record stations on Kauai.

HAWAII, ISLAND OF KAUAI

16010000 KAWAIKOI STREAM NEAR WAIMEA

LOCATION.--Lat 22°08′09″, long 159°37′22″, Hydrologic Unit 20070000, on left bank 0.2 mi upstream from Kokee-Mohihi Road crossing, 2.5 mi east of Kokee Lodge, and 12.5 mi north of Waimea.

DRAINAGE AREA.--3.95 mi^2.

PERIOD OF RECORD.--April 1909 to October 1912, December 1912 to March 1913, May 1913 to June 1915, August 1915 to May 1916, July to December 1916, July 1919 to current year. Monthly discharge only for some periods, published in WSP 1319.

REVISED RECORDS.--WSP 555: 1920-21. WSP 1185: 1914-17(M), 1920-38(M), 1940-43(M), 1947(M). WSP 1719: 1912, 1921-25, 1927-32, 1936. WSP 2137: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,420 ft above mean sea level, by barometer. Prior to May 26, 1910, nonrecording gage at site 300 ft downstream at different datum.

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversion upstream.

AVERAGE DISCHARGE.--81 years (water years 1912, 1914, 1920-98), 34.4 ft^3/s (24,930 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft^3/s, January 13, 1967, gage height, 15.33 ft, from rating curve extended above 470 ft^3/s on basis of slope-area measurements at gage heights 12.12 ft and 13.43 ft; minimum, 1.14 ft^3/s, September 21, 22, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1000	*1,260	*6.42				

Minimum discharge, 3.8 ft^3/s, March 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	416	26	16	85	7.4	110	177	11	33	113	118
2	15	24	238	13	14	6.9	151	40	11	25	29	103
3	117	11	98	15	8.7	6.6	111	63	10	21	10	100
4	84	8.9	31	20	36	6.3	33	57	9.5	102	8.5	54
5	30	7.4	20	118	12	6.0	33	28	10	20	43	27
6	13	6.3	43	82	8.2	5.8	61	18	9.1	15	26	15
7	9.2	5.5	159	38	7.1	5.6	25	18	8.4	60	15	12
8	7.5	7.2	294	19	6.6	5.1	28	46	8.1	26	20	11
9	6.2	28	43	15	6.3	4.9	464	108	7.7	35	27	10
10	6.0	8.0	71	13	6.1	4.7	408	119	7.8	30	27	10
11	5.9	8.2	56	11	5.9	4.9	256	118	8.8	31	64	9.7
12	5.1	19	40	10	5.7	4.6	236	160	7.5	18	41	9.3
13	7.3	10	24	9.8	5.9	4.5	206	61	17	20	27	9.0
14	12	7.0	18	9.3	6.0	4.4	182	103	32	35	21	8.8
15	6.0	5.4	15	8.8	79	4.2	54	58	23	59	26	8.6
16	4.9	4.7	18	8.5	62	4.1	33	35	17	18	63	8.1
17	4.4	4.3	24	54	13	4.0	25	165	9.3	12	33	7.8
18	4.2	20	16	35	8.6	4.0	21	204	7.5	10	24	7.6
19	5.0	27	12	17	7.1	3.9	18	62	15	9.6	12	7.3
20	5.5	49	11	12	6.4	3.8	16	35	28	9.0	11	7.0
21	4.9	13	11	9.7	69	9.3	23	26	31	8.7	46	7.4
22	19	19	43	9.4	152	20	22	29	68	8.1	18	7.9
23	12	64	17	11	27	38	23	39	169	7.7	110	7.1
24	6.4	251	12	9.3	15	15	16	59	68	7.7	19	6.1
25	4.8	149	13	8.0	12	19	20	27	50	10	20	5.6
26	4.4	33	12	7.3	9.8	37	13	21	47	8.8	13	5.3
27	15	179	10	8.2	8.7	66	16	17	34	7.8	26	5.0
28	21	166	9.1	13	7.9	14	52	15	180	7.0	32	5.5
29	7.5	140	247	7.8	---	33	17	14	116	11	22	6.4
30	5.0	35	120	6.7	---	49	16	13	94	19	12	9.7
31	4.7	---	29	6.1	---	40	---	12	---	23	10	---
TOTAL	457.4	1725.9	1780.1	620.9	691.0	442.0	2689	1947	1114.7	707.4	968.5	609.2
MEAN	14.8	57.5	57.4	20.0	24.7	14.3	89.6	62.8	37.2	22.8	31.2	20.3
MAX	117	416	294	118	152	66	464	204	180	102	113	118
MIN	4.2	4.3	9.1	6.1	5.7	3.8	13	12	7.5	7.0	8.5	5.0
AC-FT	907	3420	3530	1230	1370	877	5330	3860	2210	1400	1920	1210

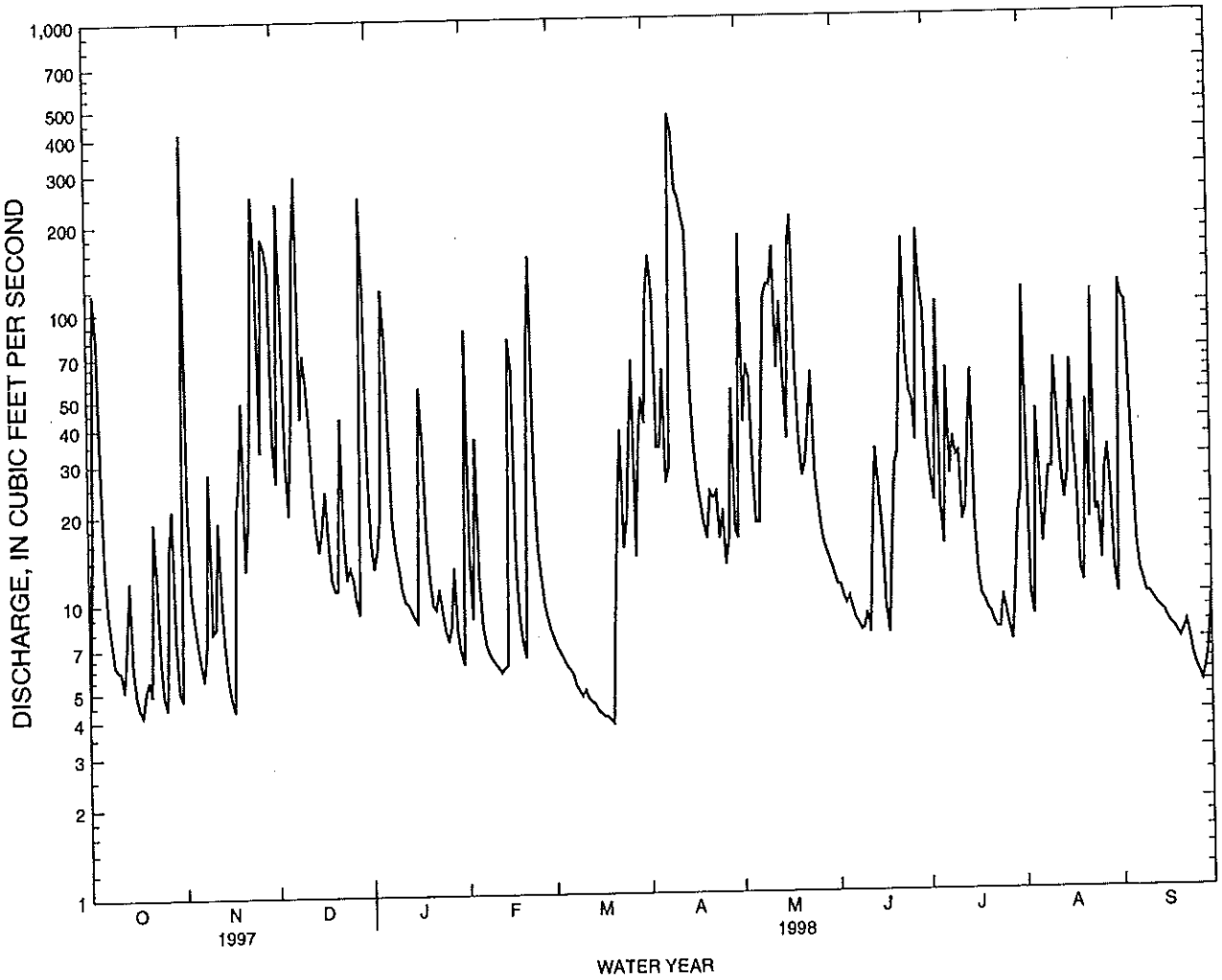
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1998, BY WATER YEAR (WY)

MEAN	21.7	44.1	53.4	53.8	41.7	49.4	45.7	27.6	17.1	23.5	21.7	14.6
MAX	60.3	170	176	343	165	152	115	86.2	68.7	94.7	195	58.1
(WY)	1917	1929	1968	1921	1956	1951	1980	1927	1978	1989	1950	1992
MIN	3.34	4.16	11.9	3.23	4.26	6.15	5.74	3.38	3.58	5.18	2.54	1.86
(WY)	1985	1964	1923	1945	1945	1926	1992	1966	1951	1922	1984	1953

HAWAII, ISLAND OF KAUAI

16010000 KAWAIKOI STREAM NEAR WAIMEA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1911 - 1998	
ANNUAL TOTAL	17255.4		13753.1			
ANNUAL MEAN	47.3		37.7		34.4	
HIGHEST ANNUAL MEAN					60.7	1982
LOWEST ANNUAL MEAN					15.3	1945
HIGHEST DAILY MEAN	1460	Jan 4	464	Apr 9	2620	Jan 15 1921
LOWEST DAILY MEAN	3.2	Sep 6	3.8	Mar 20	1.1	Sep 21 1953
ANNUAL SEVEN-DAY MINIMUM	3.4	Sep 2	4.1	Mar 14	1.2	Sep 17 1953
ANNUAL RUNOFF (AC-FT)	34230		27280		24930	
10 PERCENT EXCEEDS	118		105		74	
50 PERCENT EXCEEDS	14		16		13	
90 PERCENT EXCEEDS	5.0		5.9		4.4	



HAWAII, ISLAND OF KAUAI

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA

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

DRAINAGE AREA.--1.79 mi^2.

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 near Waimea.

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

GAGE.--Water-stage recorder. Elevation of gage is 3,820 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversion upstream.

AVERAGE DISCHARGE.--57 years (water years 1921-31, 1953-98), 21.4 ft^3/s (15,510 acre-ft/yr).

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

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug. 23	0300	*792	*3.62				

Minimum discharge, 2.1 ft^3/s, March 16-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	37	9.6	6.1	3.1	2.6	24	64	4.3	19	6.1	9.4
2	2.7	16	51	5.6	3.1	2.5	37	15	4.1	12	5.8	31
3	102	6.5	24	26	2.9	2.5	19	7.3	6.4	11	3.6	17
4	44	4.5	13	19	2.9	2.4	6.8	12	5.5	58	3.1	16
5	38	3.7	7.5	110	2.8	2.4	4.2	7.4	4.5	13	11	7.0
6	17	3.2	6.6	48	2.7	2.4	7.3	5.3	4.3	8.7	7.5	4.6
7	18	3.0	31	21	2.7	2.4	26	4.5	3.5	11	4.4	3.7
8	8.3	2.8	123	11	2.7	2.4	39	4.9	4.6	10	3.5	3.3
9	5.2	3.0	20	7.6	2.7	2.3	187	21	6.6	13	8.0	3.3
10	6.6	2.7	14	6.3	2.6	2.3	125	36	6.2	11	7.0	3.3
11	5.8	2.7	9.5	5.5	2.5	2.4	42	32	7.4	38	8.5	3.5
12	4.2	2.7	13	4.9	2.5	2.3	54	31	4.7	12	11	3.3
13	3.7	2.7	9.2	4.6	2.5	2.3	62	20	7.7	8.7	11	10
14	3.2	2.7	6.6	4.3	2.5	2.3	59	47	24	22	6.5	6.0
15	3.0	2.6	5.7	4.0	3.1	2.3	14	24	25	30	4.6	5.1
16	2.9	2.5	5.6	3.7	4.9	2.2	8.6	14	18	10	11	4.1
17	2.8	2.5	11	4.8	3.3	2.1	6.4	52	6.1	6.6	5.9	3.9
18	2.8	11	14	11	2.7	2.1	5.1	68	4.2	5.5	7.3	3.5
19	2.8	6.4	9.4	8.5	2.7	2.1	4.4	28	3.6	4.8	4.4	4.1
20	2.7	7.2	26	6.3	2.6	2.1	4.0	31	4.6	4.4	3.3	14
21	7.7	4.5	8.0	4.9	2.8	2.1	3.8	17	6.9	4.1	8.9	12
22	45	3.4	5.8	5.3	26	2.1	4.8	11	31	3.7	8.5	20
23	21	9.0	4.9	11	6.8	2.7	7.4	11	92	3.5	125	5.4
24	10	67	4.4	5.6	5.4	2.7	10	42	75	3.5	12	3.7
25	5.6	40	4.7	4.1	6.4	2.5	8.8	22	30	3.5	7.0	3.2
26	5.0	19	6.5	3.6	4.8	11	4.8	13	21	3.4	5.1	3.2
27	7.1	38	7.3	3.4	3.2	38	4.8	8.1	16	3.2	6.0	3.5
28	13	76	7.7	3.2	2.7	6.9	5.7	6.1	70	3.0	8.6	3.2
29	5.5	68	27	3.1	---	12	4.9	5.2	47	3.1	7.0	3.2
30	3.7	24	36	2.9	---	22	4.2	5.0	52	3.2	5.1	3.2
31	3.3	---	9.6	2.8	---	29	---	5.1	---	3.8	4.1	---
TOTAL	405.3	474.3	531.6	368.1	115.6	177.4	794.0	669.9	596.2	346.7	330.8	216.7
MEAN	13.1	15.8	17.1	11.9	4.13	5.72	26.5	21.6	19.9	11.2	10.7	7.22
MAX	102	76	123	110	26	38	187	68	92	58	125	31
MIN	2.7	2.5	4.4	2.8	2.5	2.1	3.8	4.5	3.5	3.0	3.1	3.2
AC-FT	804	941	1050	730	229	352	1570	1330	1180	688	656	430

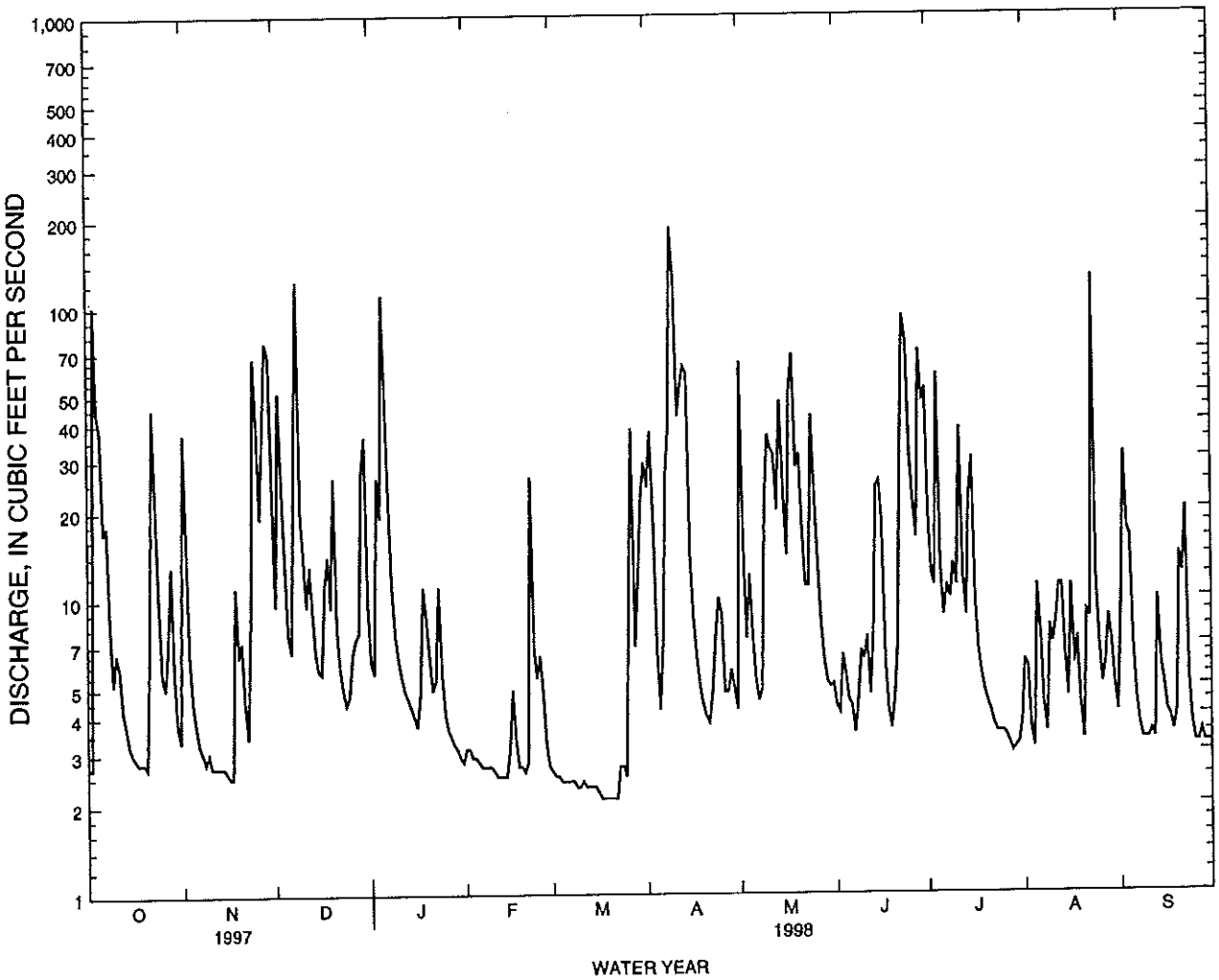
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1998, BY WATER YEAR (WY)

MEAN	15.8	32.9	33.7	33.2	26.9	28.1	24.3	13.3	10.1	15.3	12.4	11.1
MAX	52.1	99.2	106	166	155	106	92.4	44.1	39.4	58.0	44.9	56.0
(WY)	1995	1968	1968	1921	1956	1982	1974	1927	1978	1989	1959	1922
MIN	2.49	5.58	4.16	4.48	2.44	2.15	1.87	1.81	1.89	2.56	2.86	1.67
(WY)	1927	1927	1923	1966	1983	1926	1966	1966	1975	1984	1952	1975

HAWAII, ISLAND OF KAUAI

16019000 WAIALAE STREAM AT ALTITUDE 3,820 FT, NEAR WAIMEA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1920 - 1998	
ANNUAL TOTAL	7026.0		5026.6			
ANNUAL MEAN	19.2		13.8		21.4	
HIGHEST ANNUAL MEAN					40.9	1982
LOWEST ANNUAL MEAN					8.94	1926
HIGHEST DAILY MEAN	386	Apr 11	187	Apr 9	1440	Dec 1 1957
LOWEST DAILY MEAN	2.4	Sep 4	2.1	Mar 17	.99	May 17 1966
ANNUAL SEVEN-DAY MINIMUM	2.6	Aug 9	2.1	Mar 16	1.1	May 26 1966
ANNUAL RUNOFF (AC-FT)	13940		9970		15510	
10 PERCENT EXCEEDS	45		36		45	
50 PERCENT EXCEEDS	6.6		6.0		6.6	
90 PERCENT EXCEEDS	2.9		2.7		2.6	



HAWAII, ISLAND OF KAUAI

16036000 MAKAWELI RIVER NEAR WAIMEA

LOCATION.--Lat 21°58′31″, long 159°38′55″, Hydrologic Unit 20070000, on left bank 0.7 mi upstream from mouth, and 1.9 mi northeast of Waimea.

DRAINAGE AREA.--26.0 mi^2.

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

REVISED RECORDS.--WSP 2137: Drainage area.

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

REMARKS.--Records computed by Roy Taogoshi. Records good. Olokele ditch diverts all low flow from the headwaters of the Olokele River 9 mi upstream for irrigation in vicinity of Makaweli. A 5 ft^3/s capacity ditch diverts water 0.1 mi upstream of station for irrigation of taro in the vicinity of the station.

AVERAGE DISCHARGE.--55 years (water years 1944-98), 86.3 ft^3/s (62,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft^3/s, January 31, 1975, gage height, 15.51 ft, from rating curve extended above 3,200 ft^3/s on basis of slope-area measurement at gage height 10.65 ft; minimum, 3.15 ft^3/s, July 19, 1951.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,700 ft^3/s: and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug. 23	0300	3,160	7.79				

Minimum discharge, 8.8 ft^3/s, March 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	35	22	15	12	11	31	104	14	42	14	14
2	13	21	71	16	13	11	38	30	13	41	14	40
3	315	17	27	31	12	11	25	17	22	26	12	20
4	159	15	22	51	13	10	16	16	15	105	12	25
5	113	14	18	152	12	10	14	14	28	27	27	16
6	65	14	17	83	12	9.9	16	13	16	20	17	14
7	68	14	45	37	12	10	41	12	13	26	12	13
8	59	14	265	23	12	10	90	12	16	19	12	13
9	25	14	38	19	12	11	271	28	23	22	29	13
10	42	14	20	18	12	11	284	64	23	17	15	39
11	34	14	17	17	12	12	87	50	17	66	13	16
12	21	15	16	16	12	11	56	36	15	25	26	16
13	19	16	16	15	12	10	113	26	26	18	45	42
14	18	15	16	15	12	9.9	98	91	64	56	17	16
15	17	14	15	15	12	9.8	32	50	83	43	13	14
16	16	14	15	14	12	9.8	22	35	61	21	19	13
17	15	14	18	14	12	10	18	163	19	17	16	12
18	14	28	21	15	11	10	16	129	15	15	16	12
19	18	23	20	17	11	10	15	61	14	14	14	17
20	14	16	37	15	11	10	15	64	15	13	12	59
21	20	15	17	14	11	9.8	18	52	25	13	15	41
22	111	15	14	17	30	9.9	21	22	29	13	45	55
23	100	15	14	24	13	10	31	19	257	12	628	31
24	33	89	13	17	12	10	163	74	215	12	47	14
25	21	74	13	14	23	10	41	80	71	13	26	29
26	21	40	15	14	13	24	17	38	42	13	21	30
27	24	26	16	24	12	81	20	21	32	12	16	13
28	20	133	15	15	11	20	16	17	150	12	16	12
29	18	119	15	13	---	22	14	16	100	12	16	12
30	15	50	44	13	---	30	13	37	157	12	14	12
31	15	---	17	12	---	60	---	17	---	13	14	---
TOTAL	1455	917	929	775	364	494.1	1652	1408	1590	770	1213	673
MEAN	46.9	30.6	30.0	25.0	13.0	15.9	55.1	45.4	53.0	24.8	39.1	22.4
MAX	315	133	265	152	30	81	284	163	257	105	628	59
MIN	12	14	13	12	11	9.8	13	12	13	12	12	12
AC-FT	2890	1820	1840	1540	722	980	3280	2790	3150	1530	2410	1330

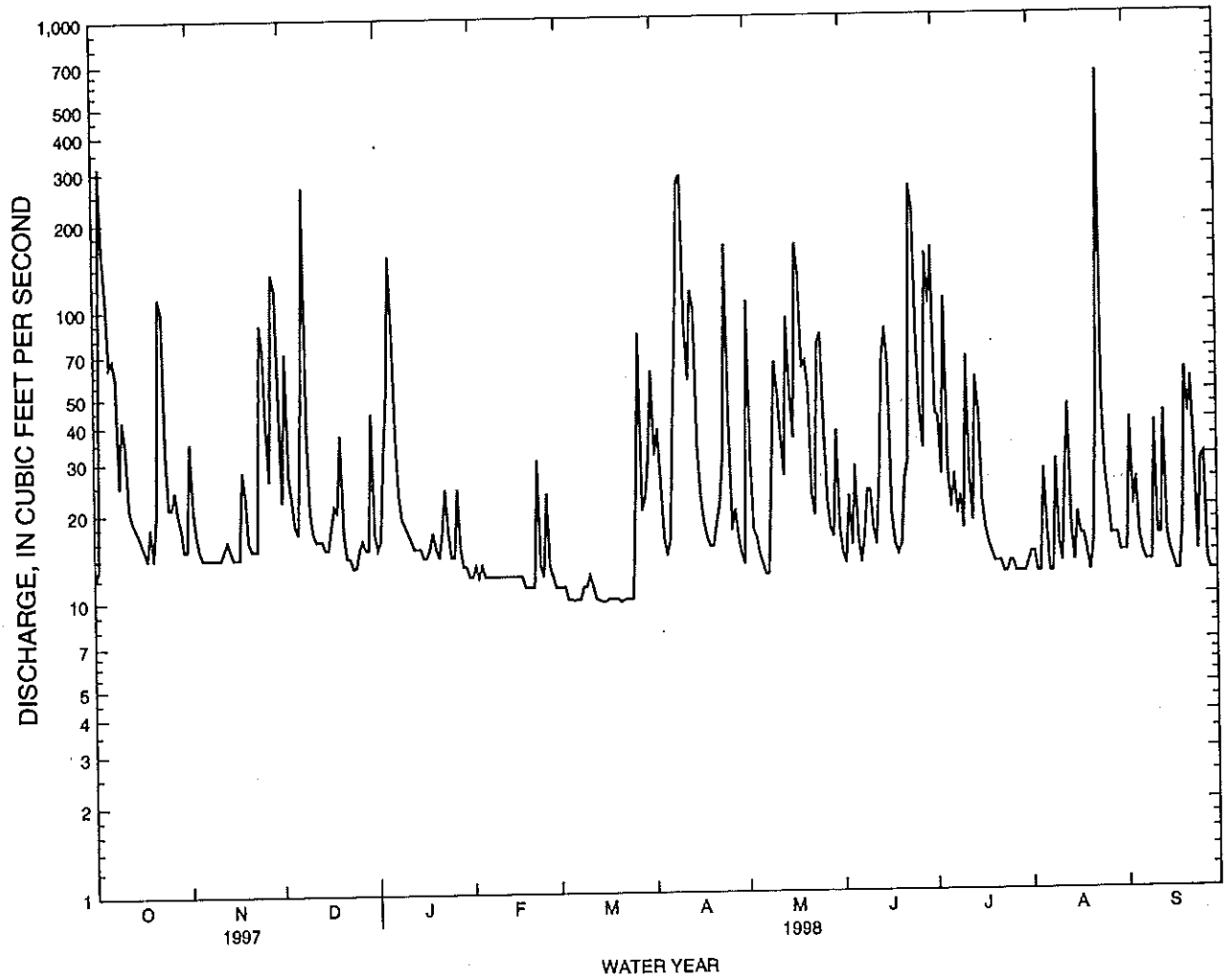
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1998, BY WATER YEAR (WY)

MEAN	60.3	127	142	130	115	130	96.1	56.7	38.9	52.7	51.7	37.1
MAX	311	491	577	441	774	609	419	283	106	222	328	205
(WY)	1995	1991	1993	1989	1956	1982	1963	1965	1996	1989	1950	1994
MIN	11.7	15.2	18.0	9.49	12.0	10.6	11.6	15.1	9.56	10.0	14.2	9.54
(WY)	1960	1951	1977	1945	1978	1959	1992	1996	1951	1984	1944	1962

HAWAII, ISLAND OF KAUAI

16036000 MAKAWELI RIVER NEAR WAIMEA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1943 - 1998	
ANNUAL TOTAL	25061		12240.1			
ANNUAL MEAN	68.7		33.5		86.3	
HIGHEST ANNUAL MEAN					204	1982
LOWEST ANNUAL MEAN					31.1	1984
HIGHEST DAILY MEAN	2070	Mar 23	628	Aug 23	5170	Dec 1 1957
LOWEST DAILY MEAN	12	Oct 1	9.8	Mar 15	4.3	Jul 19 1951
ANNUAL SEVEN-DAY MINIMUM	14	Nov 5	9.9	Mar 15	5.7	Oct 21 1944
ANNUAL RUNOFF (AC-FT)	49710		24280		62550	
10 PERCENT EXCEEDS	141		69		170	
50 PERCENT EXCEEDS	28		16		27	
90 PERCENT EXCEEDS	16		12		12	



HAWAII, ISLAND OF KAUAI

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 downstream from Manuahi Stream and 4.0 mi northeast of Eleele.

DRAINAGE AREA.--18.5 mi^2.

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 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 above mean sea level (by stadia survey). July 1, 1917 to January 22, 1921, nonrecording gage and December 16, 1926, to June 30, 1951, water-stage recorder, at same site at datum 1.00 ft higher.

REMARKS.--Records computed by Roy Taogoshi. Records good. Koula ditch diverts water 3.0 mi upstream of station for irrigation in vicinity of Makaweli.

AVERAGE DISCHARGE.--74 years (water years 1918-20, 1928-98), 84.2 ft^3/s (60,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft^3/s, April 15, 1963, gage height, 14.87 ft, from rating curve extended above 7,600 ft^3/s on basis of slope-area measurement of peak flow; minimum, 5.1 ft^3/s, May 21, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug. 23	0300	*3,980	*6.32	No other peak greater than base discharge.			

Minimum discharge, 19 ft^3/s, December 4, 5, February 26 to March 2, March 16, 17, April 4, 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	23	24	22	22	19	24	79	26	99	26	23
2	22	20	36	24	22	19	23	30	32	83	26	66
3	542	21	26	27	22	19	22	24	75	55	25	39
4	201	21	24	27	22	20	19	29	33	178	25	55
5	115	21	19	43	22	21	19	23	98	62	40	22
6	55	21	20	28	22	21	25	23	40	49	25	19
7	42	21	73	23	22	23	31	23	27	59	23	18
8	30	21	216	22	22	21	103	27	33	38	24	19
9	24	21	52	21	22	21	268	52	46	41	62	20
10	51	21	28	21	21	24	255	70	63	33	32	48
11	56	22	21	21	21	24	75	82	47	57	35	21
12	50	23	20	21	21	21	31	78	40	35	61	26
13	37	24	19	21	21	21	62	49	74	33	78	30
14	23	22	19	21	22	21	97	130	154	88	31	26
15	23	22	22	20	21	21	36	83	210	83	25	21
16	22	22	24	20	21	20	25	47	138	37	35	20
17	22	22	28	21	21	19	22	152	56	31	25	20
18	23	35	30	24	21	19	21	149	35	29	28	20
19	28	22	24	58	21	19	21	77	29	27	25	22
20	21	21	30	27	21	20	22	79	40	27	25	53
21	23	21	24	22	21	20	57	94	41	27	33	41
22	39	21	23	23	23	20	58	39	62	25	53	44
23	92	21	22	23	20	20	47	37	337	24	474	30
24	28	46	22	21	21	20	460	81	330	23	49	21
25	21	28	25	21	35	20	133	47	163	24	21	138
26	26	34	27	21	19	29	46	75	117	25	18	74
27	25	29	30	21	19	58	35	40	84	24	19	23
28	24	89	25	21	19	23	25	31	373	24	24	21
29	21	79	24	22	---	28	23	28	175	28	21	20
30	20	44	25	22	---	35	22	35	185	33	19	20
31	20	---	22	22	---	42	---	27	---	25	18	---
TOTAL	1746	858	1024	751	607	728	2107	1840	3163	1426	1425	1020
MEAN	56.3	28.6	33.0	24.2	21.7	23.5	70.2	59.4	105	46.0	46.0	34.0
MAX	542	89	216	58	35	58	460	152	373	178	474	138
MIN	20	20	19	20	19	19	19	23	26	23	18	18
AC-FT	3460	1700	2030	1490	1200	1440	4180	3650	6270	2830	2830	2020

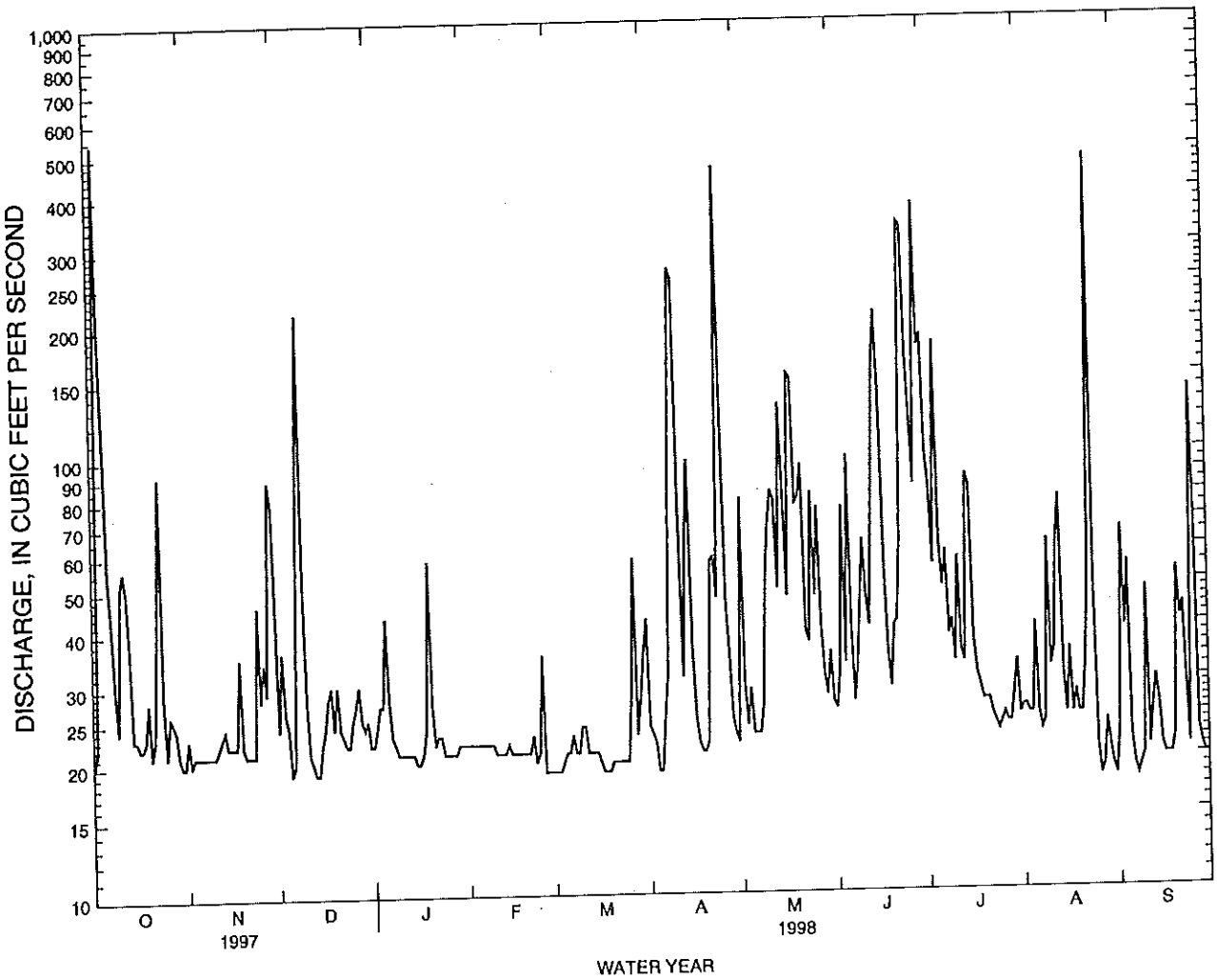
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 1998, BY WATER YEAR (WY)

MEAN	61.9	107	114	108	98.1	115	91.4	66.0	53.2	72.3	72.1	53.6
MAX	240	430	720	578	657	803	470	201	175	202	222	190
(WY)	1995	1991	1920	1920	1932	1918	1963	1965	1978	1989	1931	1994
MIN	11.5	15.3	13.0	11.7	15.0	8.84	13.2	12.9	12.1	13.6	18.4	11.7
(WY)	1954	1977	1986	1986	1986	1959	1941	1958	1959	1953	1953	1953

HAWAII, ISLAND OF KAUAI

16049000 HANAPEPE RIVER BELOW MANUAHI STREAM, NEAR ELEELE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1917 - 1998	
ANNUAL TOTAL	22730		16695			
ANNUAL MEAN	62.3		45.7		84.2	
HIGHEST ANNUAL MEAN					182	1918
LOWEST ANNUAL MEAN					30.6	1953
HIGHEST DAILY MEAN	1140	Apr 11	542	Oct 3	10900	Dec 3 1919
LOWEST DAILY MEAN	17	Jan 18	18	Aug 26	5.3	May 21 1954
ANNUAL SEVEN-DAY MINIMUM	17	Feb 18	19	Feb 26	6.4	May 10 1954
ANNUAL RUNOFF (AC-FT)	45080		33110		60970	
10 PERCENT EXCEEDS	124		82		172	
50 PERCENT EXCEEDS	26		25		30	
90 PERCENT EXCEEDS	20		20		15	



HAWAII, ISLAND OF KAUAI

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 upstream from Wailua Falls and 4.3 mi north of Lihue.

DRAINAGE AREA.--22.4 mi^2.

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. Elevation of gage is 240 ft (from topographic map). Prior to November 18, 1918, at site 0.3 mi upstream at different datum. November 18, 1918 to June 30, 1957, at site 10 ft downstream from present site at datum 2.50 ft higher and July 1, 1957 to June 23, 1958, at present datum.

REMARKS.--Records computed by Roy Taogoshi. Records good. Lihue and Hanamaulu ditches divert water upstream of station for irrigation of sugarcane in vicinity of Lihue.

AVERAGE DISCHARGE.--81 years (water years 1913-18, 1920, 1922-24, 1926-56, 1959-98), 116 ft^3/s (84,270 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,300 ft^3/s, April 15, 1963, gage height, 22.90 ft, from rating curve extended above 13,000 ft^3/s on basis of slope-area measurement of peak flow; minimum, 1.5 ft^3/s, August 21, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug. 23	0330	*3,260	*12.67				

Minimum discharge, 2.8 ft^3/s, March 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	83	44	123	5.1	26	25	47	8.5	156	9.8	38
2	19	37	61	133	5.1	23	14	27	15	163	18	184
3	551	22	38	95	5.1	13	14	11	105	142	8.7	175
4	345	17	29	105	5.0	11	6.3	20	69	265	7.4	183
5	248	15	21	180	5.0	11	3.8	12	223	153	34	73
6	164	15	21	110	5.0	10	4.5	7.2	86	141	25	40
7	155	13	109	65	4.9	13	8.4	6.0	27	145	7.9	27
8	122	11	411	42	4.9	40	62	6.1	24	115	5.0	20
9	131	14	183	37	4.8	38	147	44	66	108	64	20
10	131	9.9	148	33	5.0	26	249	77	121	81	93	129
11	111	8.0	91	29	5.5	66	126	99	122	92	25	64
12	97	18	76	24	7.5	20	78	82	102	69	43	62
13	67	20	67	15	7.8	15	84	54	118	55	82	85
14	25	16	62	14	6.8	12	100	115	265	99	44	55
15	20	8.3	74	13	7.7	9.8	39	90	271	128	22	26
16	17	6.3	74	12	7.6	9.1	13	63	325	58	37	11
17	14	5.4	92	11	5.7	9.1	7.8	174	181	37	31	6.7
18	12	43	94	14	5.0	4.8	5.4	235	117	29	72	13
19	35	35	76	69	6.2	4.6	5.4	141	91	23	20	49
20	12	13	82	33	6.5	4.1	6.3	133	92	20	10	73
21	9.0	7.6	91	18	5.3	3.6	48	163	103	18	31	100
22	35	5.5	81	16	9.2	3.2	94	93	103	14	69	133
23	266	4.9	62	43	6.6	2.9	63	77	293	10	515	61
24	92	40	55	39	5.0	4.5	260	132	363	8.0	129	23
25	36	51	57	38	46	3.4	175	87	233	7.9	76	209
26	31	52	70	28	17	13	90	111	170	12	62	183
27	35	44	70	8.7	8.1	58	75	60	133	12	61	59
28	35	172	64	8.3	27	9.3	40	29	380	6.8	76	43
29	29	128	89	7.2	---	9.4	13	19	234	7.7	69	33
30	25	91	135	6.3	---	21	9.9	45	242	12	42	23
31	21	---	72	5.3	---	20	---	22	---	14	33	---
TOTAL	2907.0	1005.9	2699	1374.8	240.4	513.8	1866.8	2281.3	4682.5	2201.4	1821.8	2200.7
MEAN	93.8	33.5	87.1	44.3	8.59	16.6	62.2	73.6	156	71.0	58.8	73.4
MAX	551	172	411	180	46	66	260	235	380	265	515	209
MIN	9.0	4.9	21	5.3	4.8	2.9	3.8	6.0	8.5	6.8	5.0	6.7
AC-FT	5770	2000	5350	2730	477	1020	3700	4520	9290	4370	3610	4370

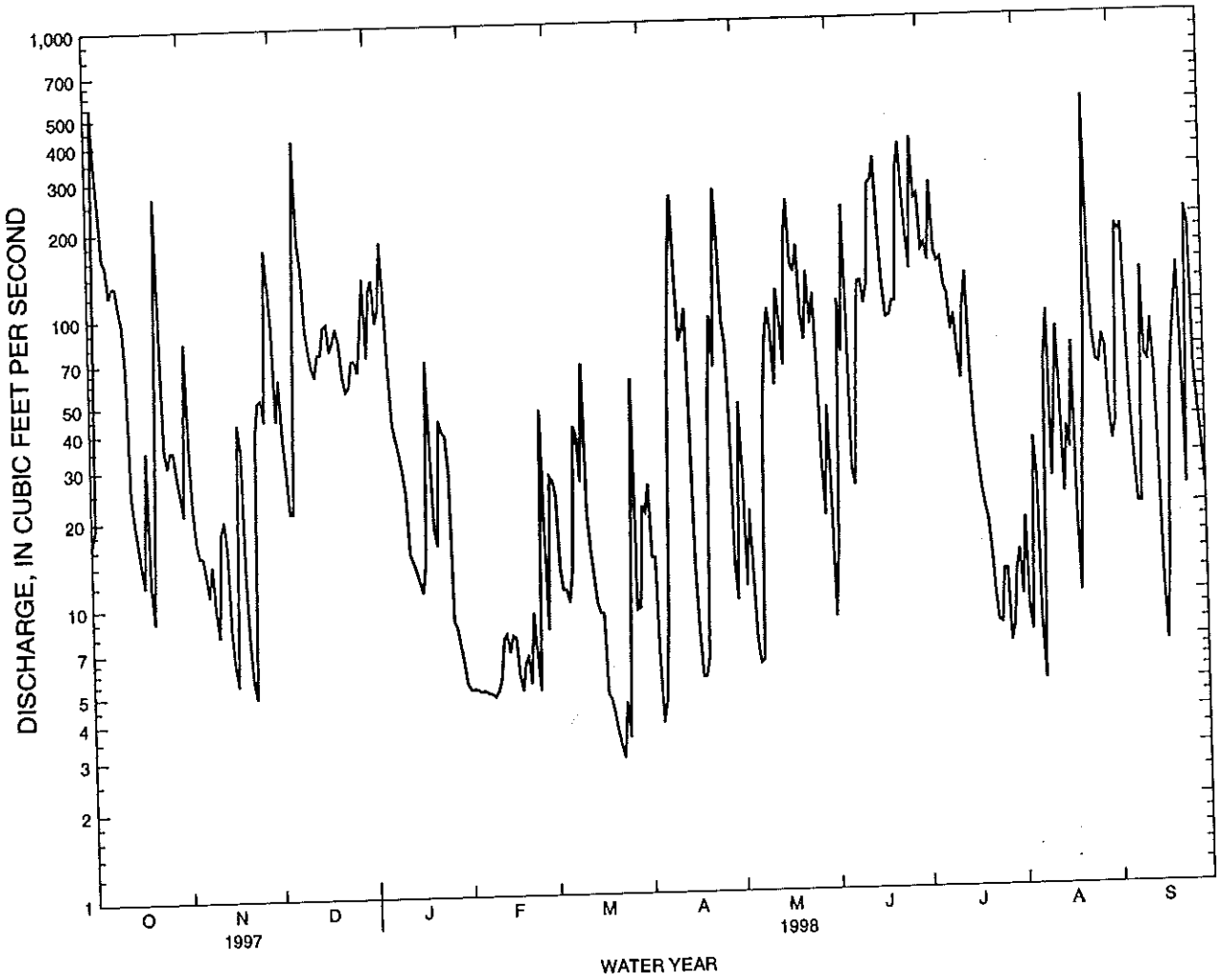
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1998, BY WATER YEAR (WY)

MEAN	93.0	175	171	174	125	148	133	98.5	56.8	75.6	83.8	76.3
MAX	339	866	696	1485	716	830	673	467	271	281	321	650
(WY)	1983	1991	1917	1921	1932	1982	1963	1927	1914	1989	1948	1914
MIN	2.58	3.13	6.61	4.66	3.15	3.46	3.84	3.29	2.82	3.27	4.76	2.59
(WY)	1954	1934	1977	1986	1947	1934	1931	1926	1957	1953	1973	1953

HAWAII, ISLAND OF KAUAI

16060000 SOUTH FORK WAILUA RIVER NEAR LIHUE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1912 - 1998	
ANNUAL TOTAL	40234.2		23795.4			
ANNUAL MEAN	110		65.2		116	
HIGHEST ANNUAL MEAN					284	1982
LOWEST ANNUAL MEAN					17.3	1984
HIGHEST DAILY MEAN	1340	Jan 19	551	Oct 3	13800	Jan 16 1921
LOWEST DAILY MEAN	4.9	Nov 23	2.9	Mar 23	1.8	Sep 17 1953
ANNUAL SEVEN-DAY MINIMUM	12	Nov 11	3.8	Mar 19	1.8	Sep 16 1953
ANNUAL RUNOFF (AC-FT)	79800		47200		84270	
10 PERCENT EXCEEDS	230		155		264	
50 PERCENT EXCEEDS	71		37		39	
90 PERCENT EXCEEDS	15		6.3		4.8	



HAWAII, ISLAND OF KAUAI

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 downstream from Waikoko Stream, 8.1 mi west of Wailua, and 8.4 mi northwest of Lihue.

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 1,070 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records good. Ditch diverts water from North Fork Wailua River and Waikoko Stream for power and irrigation in vicinity of Lihue.

AVERAGE DISCHARGE.--33 years (water years 1966-98), 21.8 ft^3/s (15,820 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 58 ft^3/s, October 11, 1966; no flow for many days.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 31 ft^3/s, October 3, September 25, 26; minimum daily, 0.60 ft^3/s, September 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	27	21	23	18	18	19	18	18	20	21	24
2	23	24	23	22	18	17	19	17	19	21	20	28
3	31	23	21	22	18	17	18	17	20	20	20	28
4	29	22	21	21	17	17	18	17	20	22	20	27
5	26	22	20	24	17	17	17	17	23	21	22	24
6	26	22	21	22	17	17	17	17	20	20	21	23
7	28	21	24	21	17	19	18	17	19	20	20	22
8	27	22	26	20	17	18	20	17	19	20	20	22
9	27	22	23	20	17	18	22	18	20	19	24	22
10	26	21	22	20	17	19	20	18	21	19	25	27
11	24	22	21	20	17	18	19	19	21	20	23	24
12	24	21	21	19	17	18	18	18	20	19	23	24
13	24	22	21	19	17	17	19	18	21	19	25	26
14	23	21	21	19	18	17	19	19	21	20	23	23
15	23	21	21	19	19	17	18	19	22	20	23	8.1
16	22	20	21	19	18	17	18	18	23	19	23	7.1
17	22	20	22	19	17	17	17	21	20	19	25	6.2
18	23	22	22	20	17	17	17	20	20	18	24	6.0
19	23	21	21	21	17	16	17	19	19	18	23	7.1
20	22	20	22	20	17	16	17	19	19	18	22	13
21	23	20	19	19	17	16	18	19	20	18	23	16
22	25	20	19	19	19	17	19	18	20	19	26	19
23	29	20	20	19	18	17	19	18	22	20	29	18
24	25	22	20	19	18	16	21	18	24	20	23	17
25	24	22	21	19	20	17	19	19	22	20	22	31
26	24	23	21	19	19	19	18	19	21	21	21	31
27	23	23	21	19	18	20	18	18	21	20	21	27
28	23	24	21	18	18	19	18	18	23	20	22	26
29	22	24	23	18	---	19	17	17	22	20	21	25
30	22	22	24	18	---	19	17	19	22	21	21	25
31	22	---	22	18	---	19	---	18	---	20	19	---
TOTAL	757	656	666	615	494	545	551	564	622	611	695	626.5
MEAN	24.4	21.9	21.5	19.8	17.6	17.6	18.4	18.2	20.7	19.7	22.4	20.9
MAX	31	27	26	24	20	20	22	21	24	22	29	31
MIN	22	20	19	18	17	16	17	17	18	18	19	6.0
AC-FT	1500	1300	1320	1220	980	1080	1090	1120	1230	1210	1380	1240

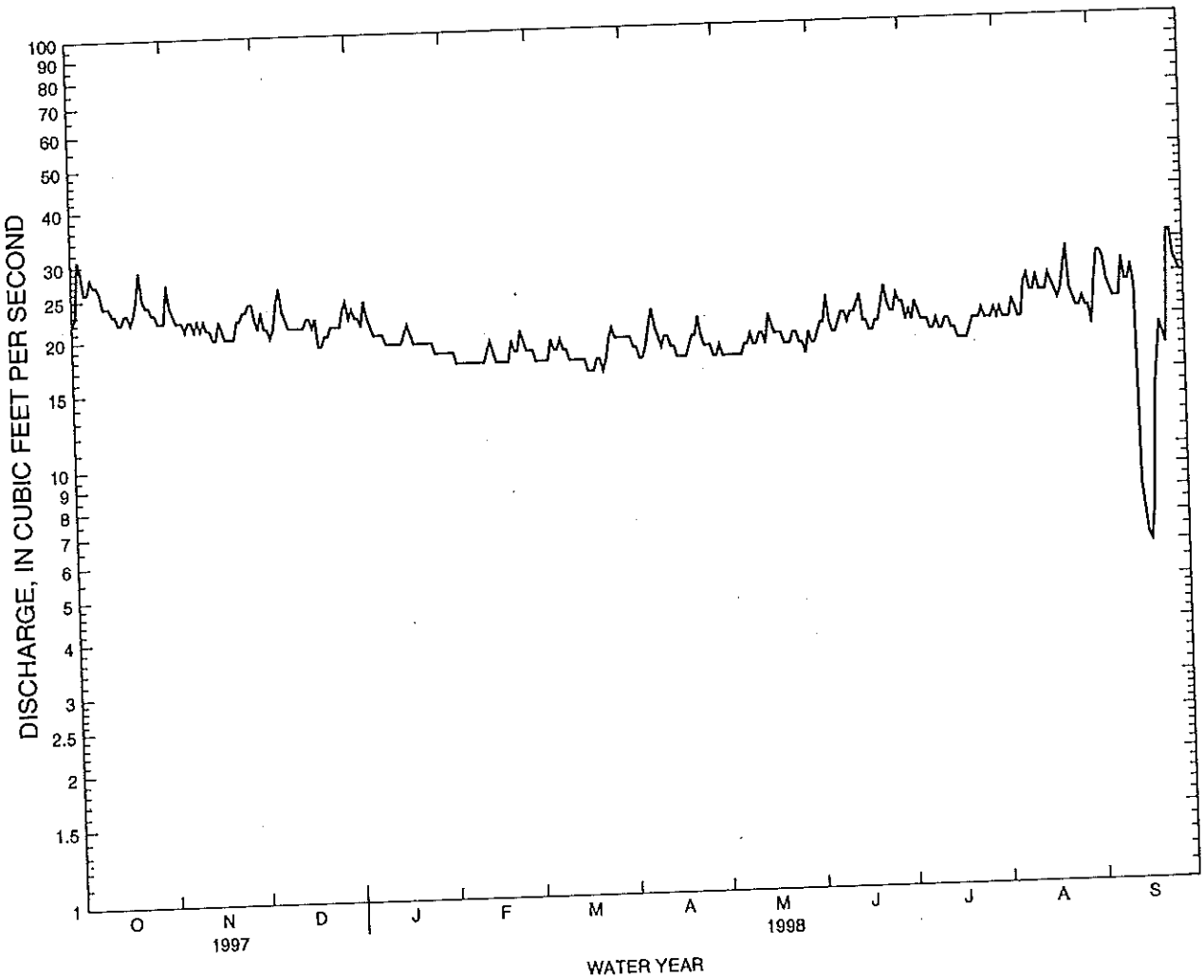
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

MEAN	22.5	22.9	21.1	20.3	20.6	21.5	22.6	22.2	22.0	22.7	22.6	21.9
MAX	29.7	34.0	33.4	30.1	34.4	32.0	31.8	31.3	28.5	34.0	31.7	30.5
(WY)	1969	1966	1969	1968	1969	1969	1986	1969	1986	1969	1966	1966
MIN	11.0	12.3	2.94	.42	.065	.21	.14	.097	.16	3.89	16.2	13.7
(WY)	1993	1983	1991	1993	1991	1991	1991	1991	1991	1991	1994	1991

HAWAII, ISLAND OF KAUAI

16061200 NORTH WAILUA DITCH BELOW WAIKOKO STREAM, NEAR LIHUE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1965 - 1998	
ANNUAL TOTAL	8563.69		7402.5			
ANNUAL MEAN	23.5		20.3		21.8	
HIGHEST ANNUAL MEAN					30.3	1969
LOWEST ANNUAL MEAN					6.64	1991
HIGHEST DAILY MEAN	38	Jan 4	31	Oct 3	58	Oct 11 1966
LOWEST DAILY MEAN	.58	Jun 4	6.0	Sep 18	.00	Jan 1 1965
ANNUAL SEVEN-DAY MINIMUM	.67	May 31	9.1	Sep 15	.00	Jan 1 1965
ANNUAL RUNOFF (AC-FT)	16990		14680		15820	
10 PERCENT EXCEEDS	28		24		29	
50 PERCENT EXCEEDS	24		20		22	
90 PERCENT EXCEEDS	20		17		16	



HAWAII, ISLAND OF KAUAI

16062000 STABLE STORM DITCH NEAR LIHUE

LOCATION.--Lat 22°04′09″, long 159°26′46″, Hydrologic Unit 20070000, on left bank 100 ft downstream from intake, 7.8 mi northwest of Lihue, and 7.9 mi west of Kapaa.

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

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 710 ft above mean sea level, by barometer.

REMARKS.--Records computed by Roy Taogoshi. Records good. Ditch diverts water from North Fork Wailua River for irrigation of sugarcane in vicinity of Lihue.

AVERAGE DISCHARGE.--61 years (water years 1938-98), 9.46 ft^3/s (6,850 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 71 ft^3/s, April 3, 1948; no flow on many days.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 11 ft^3/s, April 2, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.1	.00	.15	.00	1.9	8.0	2.3	.51	.92	.66	.00
2	.00	.00	.35	.02	.00	.01	11	2.1	.51	.92	.63	.00
3	1.9	.00	.00	.01	1.8	.00	8.6	2.1	.39	.92	.63	.00
4	.40	.00	.00	.00	4.7	.00	6.9	2.1	.39	.92	.63	.00
5	.01	.00	.00	.48	2.4	.00	6.6	1.9	.61	.92	.65	.00
6	.00	.00	.00	.02	2.2	.04	9.4	1.8	.63	.92	.63	.00
7	.51	.00	.22	.02	2.2	2.9	8.6	1.8	.56	.92	.63	.00
8	.05	.00	.97	.01	1.4	3.7	7.7	1.8	.51	.92	.63	.00
9	.99	.00	.00	.00	.12	2.4	6.8	1.8	.51	.92	.70	.00
10	.00	.00	.00	.00	1.0	2.9	2.9	1.7	.51	.84	.68	.00
11	.00	.00	.00	.00	2.5	3.1	2.7	1.6	.51	.80	.63	.00
12	.00	.00	.00	.00	2.6	2.3	2.7	1.6	.51	.73	.63	.00
13	.00	.00	.00	.00	2.7	1.8	2.6	1.6	.53	.63	.63	.00
14	.00	.00	.00	.00	4.5	1.4	2.6	1.7	.63	.73	.63	.00
15	.00	.00	.00	.00	6.1	1.2	2.5	1.6	.80	.77	.63	.01
16	.00	.00	.00	.00	5.0	1.2	2.5	1.5	.95	.70	.63	.00
17	.00	.00	.00	.00	3.7	2.5	2.5	1.6	.87	.63	.68	.00
18	.05	.00	.00	.00	3.3	4.3	2.5	1.6	.77	.63	.54	.00
19	.00	.00	.00	.00	3.1	4.4	2.5	1.4	.77	.63	.51	.00
20	.00	.00	.00	.00	2.8	4.2	2.5	1.4	.77	.63	.51	.00
21	.00	.00	.00	.00	3.7	4.3	2.5	1.4	.77	.63	.51	.00
22	.00	.00	.00	.00	6.0	4.2	2.7	1.2	.77	.63	.62	.00
23	4.0	.00	.00	.00	3.7	4.4	2.6	1.2	.87	.63	.51	.00
24	.02	.13	.00	.00	4.0	4.1	2.8	1.2	1.1	.63	.00	.00
25	.02	.00	.00	.00	5.9	4.0	2.5	1.2	.92	.63	.00	.00
26	.01	.00	.00	.00	3.8	8.7	2.4	.63	.92	.63	.00	.00
27	.00	.17	.00	.00	3.4	7.7	2.2	.63	.92	.63	.00	.00
28	.00	.36	.00	.00	3.1	5.8	2.2	.51	1.0	.63	.00	.00
29	.00	.04	.87	.00	---	5.8	2.2	.51	.92	.63	.00	.00
30	.00	.00	.05	.00	---	5.5	2.2	.63	.92	.63	.00	.00
31	.00	---	.00	.00	---	6.0	---	.51	---	.63	.00	---
TOTAL	7.96	1.80	2.46	0.71	85.72	100.75	126.4	44.62	21.35	22.93	14.13	0.01
MEAN	.26	.060	.079	.023	3.06	3.25	4.21	1.44	.71	.74	.46	.000
MAX	4.0	1.1	.97	.48	6.1	8.7	11	2.3	1.1	.92	.70	.01
MIN	.00	.00	.00	.00	.00	.00	2.2	.51	.39	.63	.00	.00
AC-FT	16	3.6	4.9	1.4	170	200	251	89	42	45	28	.02

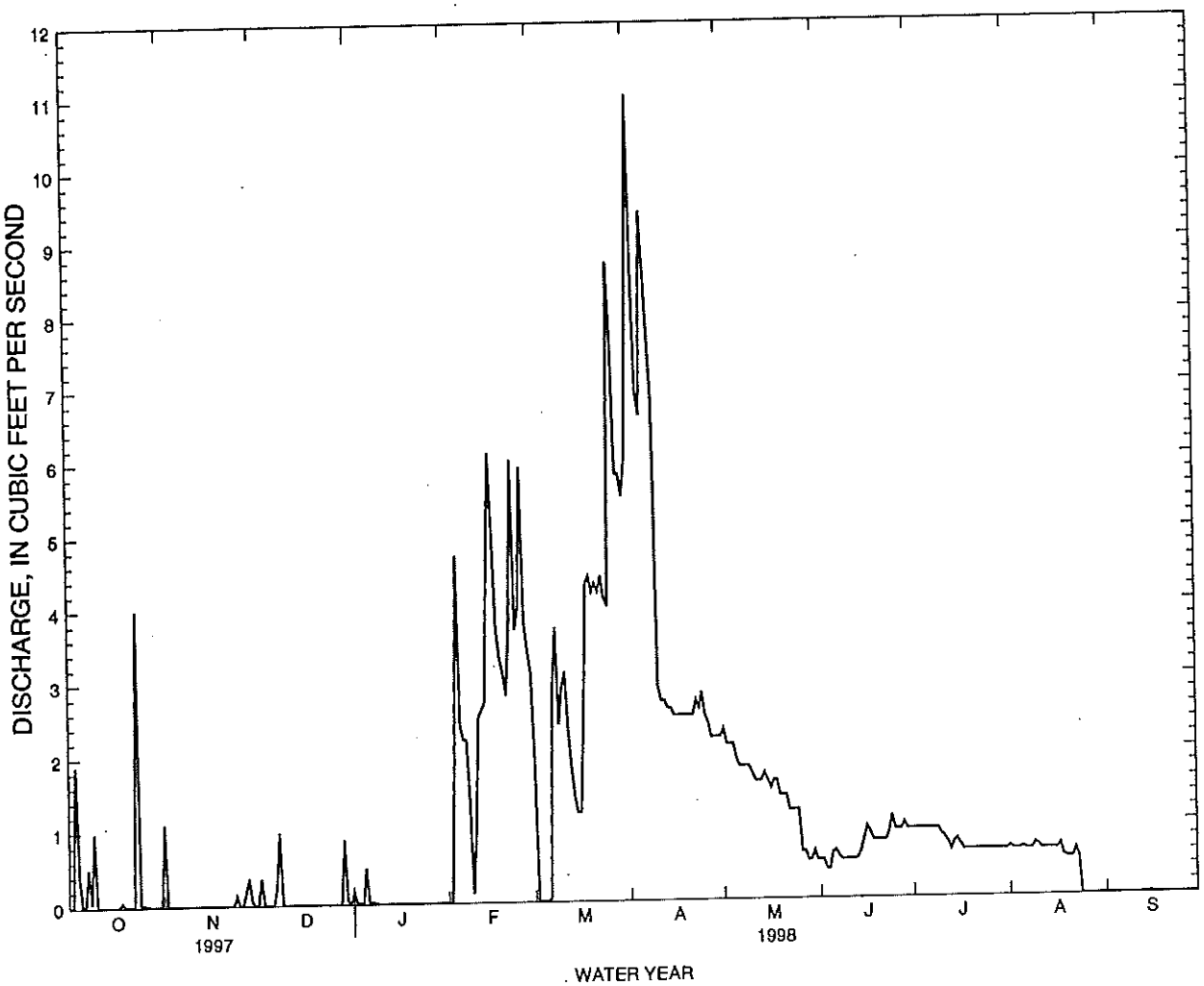
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1998, BY WATER YEAR (WY)

MEAN	12.2	5.88	4.31	6.13	8.47	7.40	8.46	9.39	14.9	11.1	11.2	14.1
MAX	37.3	35.7	24.8	31.4	32.3	36.0	34.7	34.4	38.7	36.8	37.0	36.1
(WY)	1951	1951	1984	1946	1991	1947	1954	1954	1953	1953	1970	1950
MIN	.002	.000	.000	.000	.000	.000	.000	.000	.000	.014	.000	.000
(WY)	1996	1938	1991	1939	1938	1939	1939	1963	1938	1980	1964	1989

HAWAII, ISLAND OF KAUAI

16062000 STABLE STORM DITCH NEAR LIHUE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1938 - 1998		
ANNUAL TOTAL	83.22		428.84		9.46		
ANNUAL MEAN	.23		1.17		22.1		1984
HIGHEST ANNUAL MEAN					.15		1994
LOWEST ANNUAL MEAN					71	Apr 3	1948
HIGHEST DAILY MEAN	7.4	Apr 6	11	Apr 2	.00	Oct 1	1937
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 1	.00	Oct 1	1937
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 9	.00	Oct 10			
ANNUAL RUNOFF (AC-FT)	165		851		6850		
10 PERCENT EXCEEDS	.56		3.5		33		
50 PERCENT EXCEEDS	.00		.61		.29		
90 PERCENT EXCEEDS	.00		.00		.00		



HAWAII, ISLAND OF KAUAI

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 upstream from mouth and 7.2 mi northwest of Lihue.

DRAINAGE AREA.--6.27 mi^2.

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. Elevation of gage is 500 ft (from topographic map). Prior to December 31, 1914, nonrecording gage at site 725 ft downstream at different datum. December 31, 1914 to May 10, 1934, water-stage recorder at site 75 ft upstream at present datum.

REMARKS.--Records computed by Clayton Yoshida. Records good. No diversion upstream.

AVERAGE DISCHARGE.--83 years (water years 1913-14, 1916-17, 1920-98), 48.4 ft^3/s (35,060 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft^3/s, November 12, 1955, gage height, 14.7 ft, from floodmarks, from rating curve extended above 2,700 ft^3/s; minimum, 6.8 ft^3/s, July 3, 13, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,900 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1030	436	*3.01				

Minimum discharge, 12 ft^3/s, March 14, 15, 19-22, 24-26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	113	35	56	26	13	24	44	21	59	28	34
2	22	32	85	45	17	13	33	23	21	58	22	69
3	105	26	39	36	16	13	23	21	29	47	19	72
4	90	24	32	33	15	13	16	31	25	73	22	59
5	53	23	29	59	15	13	14	20	32	46	34	39
6	38	22	32	37	15	13	28	18	23	42	25	30
7	44	21	115	31	15	17	27	17	20	54	22	26
8	33	20	159	29	14	18	49	20	21	40	21	24
9	57	19	59	28	14	15	101	43	23	42	34	25
10	38	18	68	26	14	15	64	55	37	38	38	55
11	32	19	43	25	14	16	39	54	33	41	23	29
12	29	20	37	24	14	13	34	38	25	34	23	37
13	33	19	33	23	13	13	42	32	37	34	29	36
14	26	18	30	23	14	12	41	52	45	48	22	31
15	25	17	33	22	22	12	27	40	71	57	23	28
16	24	17	30	21	23	12	23	32	65	35	32	26
17	23	16	36	22	15	12	20	106	37	30	21	25
18	25	29	48	27	13	12	19	104	30	29	19	24
19	31	20	43	41	13	12	18	59	28	27	18	26
20	23	19	39	24	13	11	17	57	30	26	17	25
21	25	17	30	21	19	12	23	44	46	25	32	30
22	25	16	27	20	54	12	47	35	45	24	37	43
23	129	20	26	19	19	12	35	34	86	23	66	33
24	42	76	25	18	16	12	50	42	79	22	26	25
25	30	51	25	18	21	11	31	40	68	22	21	63
26	29	54	25	17	17	21	26	32	63	23	19	35
27	28	68	24	17	15	32	33	28	54	21	21	27
28	27	103	48	17	14	16	24	25	116	21	38	31
29	25	90	133	16	---	17	19	24	83	21	35	28
30	24	50	82	16	---	20	18	25	102	21	24	24
31	24	---	41	16	---	27	---	22	---	20	21	---
TOTAL	1181	1057	1511	827	490	460	965	1217	1395	1103	832	1059
MEAN	38.1	35.2	48.7	26.7	17.5	14.8	32.2	39.3	46.5	35.6	26.8	35.3
MAX	129	113	159	59	54	32	101	106	116	73	66	72
MIN	22	16	24	16	13	11	14	17	20	20	17	24
AC-FT	2340	2100	3000	1640	972	912	1910	2410	2770	2190	1650	2100

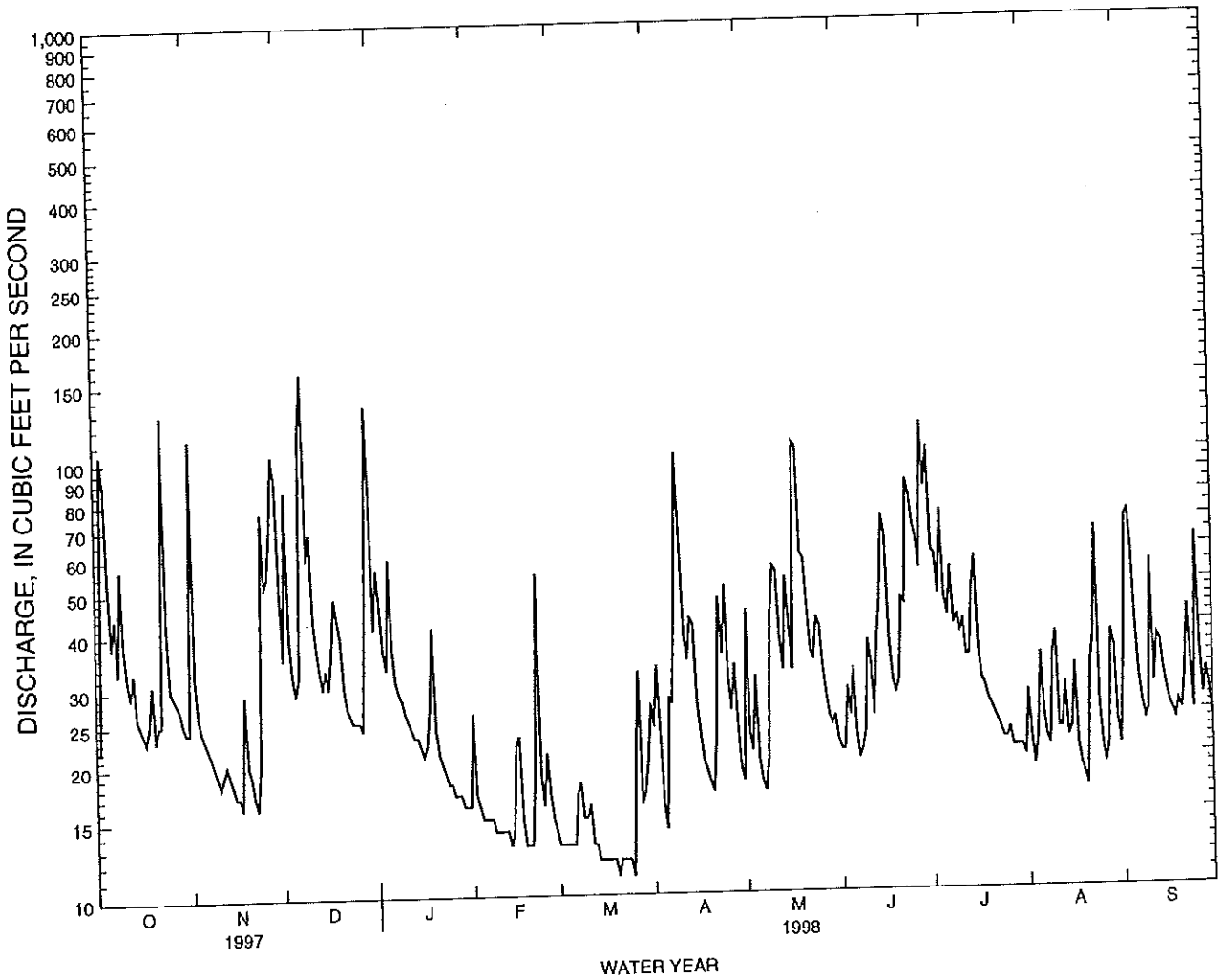
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1998, BY WATER YEAR (WY)

MEAN	41.7	61.2	60.2	59.3	48.2	56.3	56.8	47.2	33.2	38.5	39.9	37.1
MAX	94.6	226	157	392	197	270	173	144	84.9	78.4	111	112
(WY)	1983	1991	1988	1921	1994	1982	1927	1967	1978	1980	1948	1994
MIN	12.4	16.8	12.3	11.0	8.88	11.0	10.6	9.81	13.0	12.3	11.5	11.9
(WY)	1954	1934	1964	1986	1986	1970	1926	1926	1969	1926	1984	1953

HAWAII, ISLAND OF KAUAI

16068000 EAST BRANCH OF NORTH FORK WAILUA RIVER NEAR LIHUE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1912 - 1998	
ANNUAL TOTAL	18927		12097		48.4	
ANNUAL MEAN	51.9		33.1		95.5	1982
HIGHEST ANNUAL MEAN					21.3	1984
LOWEST ANNUAL MEAN					2570	Feb 13 1994
HIGHEST DAILY MEAN	564	Jan 4	159	Dec 8	7.0	Jul 8 1926
LOWEST DAILY MEAN	16	Nov 17	11	Mar 20	8.2	Mar 5 1986
ANNUAL SEVEN-DAY MINIMUM	18	Nov 11	12	Mar 19		
ANNUAL RUNOFF (AC-FT)	37540		23990		35060	
10 PERCENT EXCEEDS	102		59		84	
50 PERCENT EXCEEDS	33		26		31	
90 PERCENT EXCEEDS	22		15		16	



HAWAII, ISLAND OF KAUAI

16069000 WAILUA DITCH NEAR KAPAA

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

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

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

REMARKS.--Records computed by Roy Taogoshi. Records good. Ditch diverts water from North Fork Wailua River to reservoir, 2,000 ft upstream and thence to fields for irrigation of sugarcane in vicinity of Kapaa.

AVERAGE DISCHARGE.--61 years (water years 1938-98), 15.9 ft^3/s (11,510 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 63 ft^3/s, June 4, 1937; no flow on many days.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 27 ft^3/s, September 4-7: minimum daily, 0.06 ft^3/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	4.4	7.5	5.3	6.3	6.2	6.1	6.1	1.7	18	24
2	11	12	4.4	7.6	5.3	6.3	6.2	6.2	4.7	1.5	18	24
3	11	12	4.4	7.6	5.2	6.3	6.6	6.2	1.9	.74	18	26
4	9.5	12	4.4	7.6	5.1	6.3	6.6	6.3	1.8	.43	18	27
5	2.6	11	4.4	7.7	5.1	6.5	6.5	6.3	3.0	.24	18	27
6	.23	11	4.3	7.7	5.1	6.5	6.5	6.3	4.4	.16	18	27
7	.17	11	4.2	7.5	5.1	6.5	6.5	6.3	4.3	.15	18	27
8	.15	11	4.2	7.4	5.3	6.5	6.5	6.3	7.9	.06	18	26
9	.11	11	4.4	7.3	5.3	6.5	6.5	6.3	11	.09	18	26
10	.15	11	4.4	7.3	5.6	6.5	6.5	6.2	11	4.4	18	26
11	1.6	10	4.4	7.2	5.6	6.5	6.5	6.2	11	14	18	26
12	5.6	10	4.4	7.0	5.6	6.5	6.5	6.3	11	16	18	26
13	6.0	10	4.4	6.9	5.6	6.5	6.5	6.5	11	17	18	26
14	6.4	10	4.4	6.9	5.6	6.6	6.4	6.5	11	17	18	26
15	6.8	9.8	4.3	6.7	5.8	6.6	6.3	6.5	11	18	18	26
16	7.1	9.6	3.9	6.6	5.8	6.6	6.3	6.8	10	18	18	20
17	7.1	9.3	3.9	6.5	5.8	6.6	6.2	6.9	10	18	18	12
18	6.7	9.2	3.9	6.4	5.8	6.6	6.2	6.9	10	19	19	13
19	7.6	9.1	4.1	6.3	5.8	6.6	6.2	6.9	9.9	19	19	13
20	7.7	8.9	4.4	6.2	6.0	6.6	6.2	6.9	9.7	19	19	13
21	8.4	8.7	4.6	6.2	6.0	6.6	6.1	6.9	9.4	19	20	14
22	9.2	8.6	4.7	6.2	6.0	6.6	6.0	6.9	9.2	19	21	14
23	10	8.4	4.7	6.1	6.1	6.6	5.8	6.9	9.1	19	21	14
24	11	8.2	4.9	5.9	6.2	6.6	6.0	6.8	11	19	22	14
25	12	8.1	5.3	5.8	6.2	6.5	6.0	6.8	14	19	22	18
26	12	6.2	6.0	5.8	6.2	6.5	5.9	6.8	14	19	23	24
27	13	4.2	6.4	5.8	6.2	6.4	5.8	6.7	13	19	23	24
28	13	4.4	6.5	5.7	6.3	6.3	6.0	6.5	11	19	23	21
29	12	4.4	6.8	5.6	---	6.2	6.0	6.3	4.2	19	23	16
30	12	4.4	7.0	5.5	---	6.2	6.0	6.2	2.6	18	23	16
31	12	---	7.4	5.4	---	6.2	---	6.1	---	18	23	---
TOTAL	234.11	275.5	149.9	205.9	159.0	200.6	187.5	201.8	258.2	391.47	607	636
MEAN	7.55	9.18	4.84	6.64	5.68	6.47	6.25	6.51	8.61	12.6	19.6	21.2
MAX	13	12	7.4	7.7	6.3	6.6	6.6	6.9	14	19	23	27
MIN	.11	4.2	3.9	5.4	5.1	6.2	5.8	6.1	1.8	.06	18	12
AC-FT	464	546	297	408	315	398	372	400	512	776	1200	1260

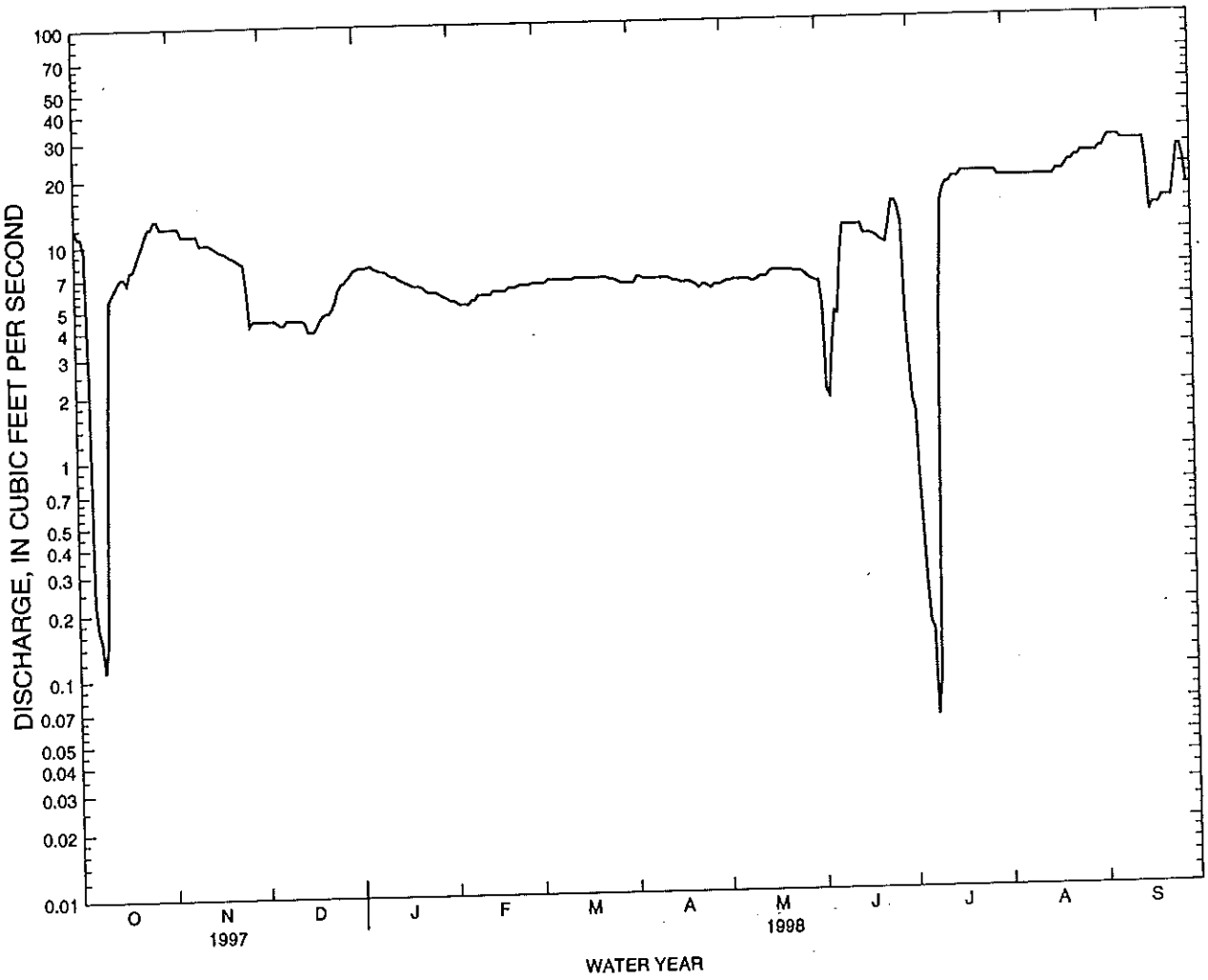
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1998, BY WATER YEAR (WY)

MEAN	18.7	12.2	9.09	10.5	11.7	12.4	13.4	16.4	21.0	21.8	21.8	22.5
MAX	35.2	28.5	33.3	35.3	37.8	27.3	28.8	40.5	40.0	46.5	48.6	53.5
(WY)	1958	1984	1938	1938	1940	1980	1938	1938	1937	1938	1939	1938
MIN	2.80	.19	.009	.20	.071	.41	.90	1.08	2.29	7.09	5.72	3.89
(WY)	1969	1965	1955	1968	1969	1956	1963	1965	1997	1997	1954	1946

HAWAII, ISLAND OF KAUAI

16069000 WAILUA DITCH NEAR KAPAA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1937 - 1998	
ANNUAL TOTAL	2028.52		3506.98			
ANNUAL MEAN	5.56		9.61		15.9	
HIGHEST ANNUAL MEAN					32.9	1938
LOWEST ANNUAL MEAN					5.95	1997
HIGHEST DAILY MEAN	16	Aug 29	27	Sep 4	63	Jun 4 1937
LOWEST DAILY MEAN	.08	Jun 12	.06	Jul 8	.00	May 15 1940
ANNUAL SEVEN-DAY MINIMUM	.11	Jun 7	.27	Jul 3	.00	May 15 1940
ANNUAL RUNOFF (AC-FT)	4020		6960		11510	
10 PERCENT EXCEEDS	12		19		31	
50 PERCENT EXCEEDS	3.9		6.6		16	
90 PERCENT EXCEEDS	1.9		4.4		.93	



HAWAII, ISLAND OF KAUAI

16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA

LOCATION.--Lat 22°04'44", long 159°23'55", Hydrologic Unit 20070000, on left bank 0.4 mi upstream from mouth, 0.6 mi northeast of Wailua Reservoir, and 4.9 mi west of Kapaa.

DRAINAGE AREA.--0.65 mi^2.

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 above mean sea level (by stadia survey).

REMARKS.--Records computed by Roy Taogoshi. Records good. Recording rain gage located at station.

AVERAGE DISCHARGE.--38 years (water years 1961-98), 2.64 ft^3/s (1,910 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,060 ft^3/s, December 14, 1991, gage height, 6.60 ft, from rating curve extended above 415 ft^3/s on basis of slope-area measurement at gage height 5.01 ft; minimum, 0.09 ft^3/s, September 27-30, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 70 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 28	2315	*27	*1.69				

Minimum discharge, 0.60 ft^3/s April 4, 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.7	1.1	5.4	1.2	.87	.69	.73	.85	1.8	1.1	.82
2	1.2	1.2	1.2	3.2	1.1	.85	.70	.65	.90	1.8	1.0	1.0
3	2.5	.99	1.1	2.5	1.1	.85	.68	.61	.92	1.7	1.0	1.3
4	1.8	.96	1.1	2.3	1.0	.78	.65	.64	.90	2.2	.99	1.5
5	1.6	.92	1.1	3.7	.99	.78	.64	.61	.96	1.7	1.1	1.1
6	1.6	.92	1.1	2.4	.99	.81	.76	.61	.85	1.7	1.0	.94
7	1.5	.92	1.7	2.2	.99	2.0	.69	.61	.85	1.8	.94	.92
8	1.4	.92	3.3	2.0	.99	1.6	.78	.61	.85	1.6	.92	.90
9	1.4	.92	2.0	2.0	.99	1.1	1.0	.70	.85	1.4	1.2	.91
10	1.4	.88	2.1	1.9	.99	.89	.89	.90	.91	1.4	1.1	1.1
11	1.3	.92	1.7	1.9	.98	.85	.75	.90	.93	1.5	.99	.90
12	1.3	.92	1.6	1.8	.92	.81	.70	.76	.89	1.3	.95	.92
13	1.5	.92	1.5	1.8	.92	.78	.79	.72	.98	1.3	.91	1.0
14	1.3	.92	1.4	1.7	.99	.78	.95	.83	1.0	1.4	.90	.96
15	1.2	.85	1.5	1.6	1.0	.78	.74	.77	1.0	2.0	.91	.92
16	1.2	.85	1.4	1.6	.96	.78	.67	.73	.96	1.4	.92	.92
17	1.3	.85	1.5	1.6	.92	.76	.65	1.2	.90	1.3	.86	.97
18	1.2	1.3	1.9	1.5	.92	.72	.61	2.0	.85	1.3	.85	.94
19	1.3	1.0	1.6	1.5	.92	.72	.70	1.5	.85	1.2	.85	.82
20	1.1	.93	1.7	1.5	.87	.70	.65	1.2	.85	1.2	.82	.82
21	1.2	.88	1.4	1.3	.92	.67	.68	1.1	.85	1.2	.88	.80
22	1.2	.85	1.4	1.3	1.2	.66	.89	.99	.96	1.1	.99	.91
23	2.0	.89	1.3	1.3	.98	.64	.74	.95	1.1	1.1	1.3	.85
24	1.6	1.4	1.3	1.2	.93	.61	.86	1.0	1.5	1.1	.90	.85
25	1.3	1.1	1.4	1.2	1.0	.64	.73	1.0	1.2	1.1	.85	.85
26	1.2	1.1	1.3	1.2	.94	.78	.69	.94	1.1	1.1	.84	.86
27	1.2	1.1	1.3	1.1	.92	.82	.70	.90	1.1	1.1	.86	.81
28	1.2	1.7	3.0	1.1	.92	.69	.64	.85	2.6	1.0	.92	.86
29	1.1	1.6	5.2	1.1	---	.66	.61	.88	1.8	1.0	.93	.79
30	1.1	1.3	3.2	1.1	---	.64	.61	.91	2.2	1.0	.84	.74
31	1.1	---	2.2	1.1	---	.70	---	.86	---	1.0	.78	---
TOTAL	42.5	31.71	54.6	57.1	27.55	25.72	21.84	27.66	32.46	42.8	29.40	27.98
MEAN	1.37	1.06	1.76	1.84	.98	.83	.73	.89	1.08	1.38	.95	.93
MAX	2.5	1.7	5.2	5.4	1.2	2.0	1.0	2.0	2.6	2.2	1.3	1.5
MIN	1.1	.85	1.1	1.1	.87	.61	.61	.61	.85	1.0	.78	.74
AC-FT	84	63	108	113	55	51	43	55	64	85	58	55

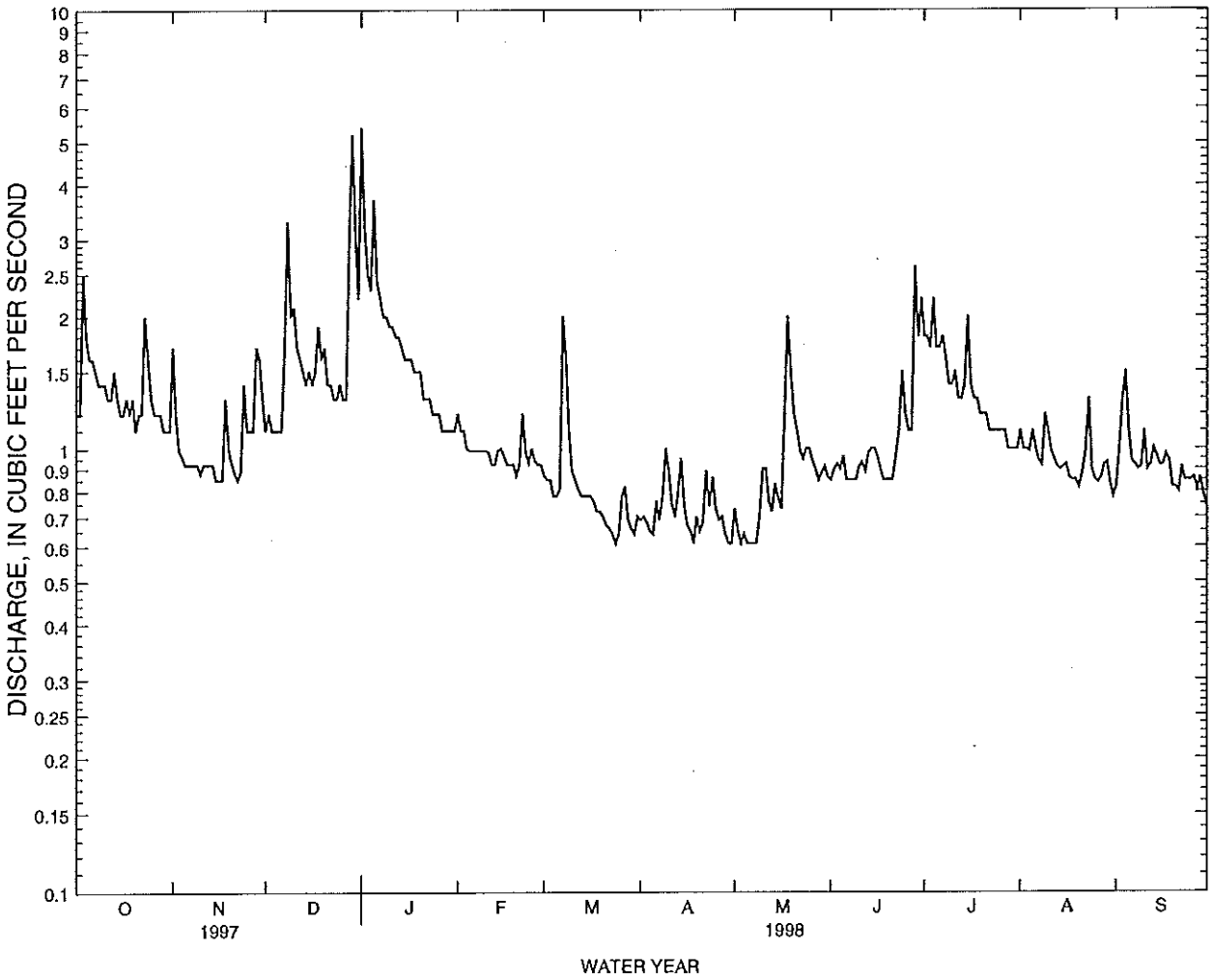
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

MEAN	2.26	4.02	3.86	3.23	2.60	2.86	3.22	2.82	1.84	1.69	1.65	1.58
MAX	8.29	14.3	11.0	12.4	10.8	14.7	11.8	9.66	5.68	3.80	4.24	4.67
(WY)	1961	1966	1992	1989	1994	1982	1982	1965	1980	1989	1982	1980
MIN	.42	.59	.56	.58	.50	.50	.73	.62	.29	.59	.36	.38
(WY)	1985	1964	1963	1977	1986	1978	1998	1966	1968	1968	1984	1975

HAWAII, ISLAND OF KAUAI

16071500 LEFT BRANCH OPAEKAA STREAM NEAR KAPAA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1960 - 1998	
ANNUAL TOTAL	1068.98		421.32			
ANNUAL MEAN	2.93		1.15		2.64	
HIGHEST ANNUAL MEAN					5.72	1982
LOWEST ANNUAL MEAN					.92	1984
HIGHEST DAILY MEAN	28	May 8	5.4	Jan 1	218	Dec 14 1991
LOWEST DAILY MEAN	.85	Nov 15	.61	Mar 24	.09	Sep 28 1968
ANNUAL SEVEN-DAY MINIMUM	.89	Nov 11	.62	May 2	.10	Jun 6 1968
ANNUAL RUNOFF (AC-FT)	2120		836		1910	
10 PERCENT EXCEEDS	5.6		1.7		4.5	
50 PERCENT EXCEEDS	2.1		.99		1.7	
90 PERCENT EXCEEDS	1.1		.71		.69	



HAWAII, ISLAND OF KAUAI

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 northwest of Kealia, and 4.0 mi northwest of Kapaa.

PERIOD OF RECORD.--December 1936 to September 1998 (discontinued).

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

REMARKS.--Records computed by Clayton Yoshida. Records good. Ditch diverts water from Makaleha Stream for irrigation of sugarcane in vicinity of Kealia.

AVERAGE DISCHARGE.--61 years (water years 1938-98), 5.95 ft^3/s (4,310 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 31 ft^3/s, August 1, 1961, June 30, 1982; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 4.1 ft^3/s, January 2; minimum daily, no flow September 9-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	.87	.47	3.5	.18	.06	.53	.45	.40	.86	.08	.06
2	.45	.79	.47	4.1	.14	.06	.54	.43	.40	.56	.11	.06
3	.59	.76	.41	1.5	.14	.06	.52	.43	.40	.52	.15	.02
4	.68	.74	.40	.80	.13	.18	.49	.44	.36	.56	.14	.36
5	.69	.77	.36	.62	.08	.48	.49	.40	.39	.47	.11	.19
6	.61	.78	.35	.44	.08	1.5	.56	.41	.37	.41	.11	.10
7	.55	.74	.41	.35	.09	1.1	.49	.41	.36	.42	.11	.04
8	.54	.77	1.3	.31	.11	.89	.57	.40	.37	.34	.08	.02
9	.56	.76	.73	.28	.09	.84	.68	.42	.36	.28	.10	.00
10	.70	.77	.69	.26	.08	.72	.71	.51	.36	.20	.16	.00
11	.93	.72	.43	.24	.08	.67	.61	.53	.36	.24	.14	.00
12	.98	.69	.35	.21	.06	.64	.57	.52	.35	.23	.14	.05
13	1.1	.67	.27	.20	.06	.64	.54	.48	.27	.17	.24	.10
14	.94	.68	.22	.20	.02	.62	.54	.47	.36	.24	.14	.13
15	.91	.71	.18	.18	.05	.52	.54	.49	.35	.81	.15	.14
16	.90	.69	.17	.17	.06	.60	.52	.46	.40	.49	.15	.14
17	.86	.65	.16	.17	.06	.56	.47	.68	.35	.33	.13	.14
18	.86	.68	.64	.17	.07	.49	.45	1.6	.32	.25	.11	.16
19	.90	.65	.59	.14	.06	.46	.43	1.2	.32	.17	.09	.16
20	.86	.61	.49	.14	.06	.48	.43	.83	.32	.07	.08	.56
21	.82	.59	.32	.14	.06	.53	.49	.64	.32	.15	.21	.59
22	.93	.58	.27	.14	.13	.57	.56	.54	.32	.11	.14	.58
23	.99	.49	.23	.14	.08	.58	.54	.49	.38	.08	.57	.50
24	.94	.53	.19	.14	.06	.52	.51	.49	.51	.10	.31	.54
25	.87	.53	.17	.14	.06	.50	.46	.47	.54	.17	.21	.54
26	.87	.49	.16	.14	.06	.52	.45	.35	.60	.14	.17	.52
27	.85	.49	.11	.15	.06	.56	.46	.32	.54	.16	.10	.54
28	.83	.58	.13	.17	.06	.56	.44	.42	1.0	.26	.08	.48
29	.80	.47	.52	.17	---	.54	.40	.43	.95	.19	.08	.38
30	.74	.41	.81	.14	---	.54	.40	.36	1.5	.18	.08	.63
31	.74	---	.55	.13	---	.53	---	.41	---	.13	.07	---
TOTAL	24.44	19.66	12.55	15.58	2.27	17.52	15.39	16.48	13.83	9.29	4.54	7.73
MEAN	.79	.66	.40	.50	.081	.57	.51	.53	.46	.30	.15	.26
MAX	1.1	.87	1.3	4.1	.18	1.5	.71	1.6	1.5	.86	.57	.63
MIN	.45	.41	.11	.13	.02	.06	.40	.32	.27	.07	.07	.00
AC-FT	48	39	25	31	4.5	35	31	33	27	18	9.0	15

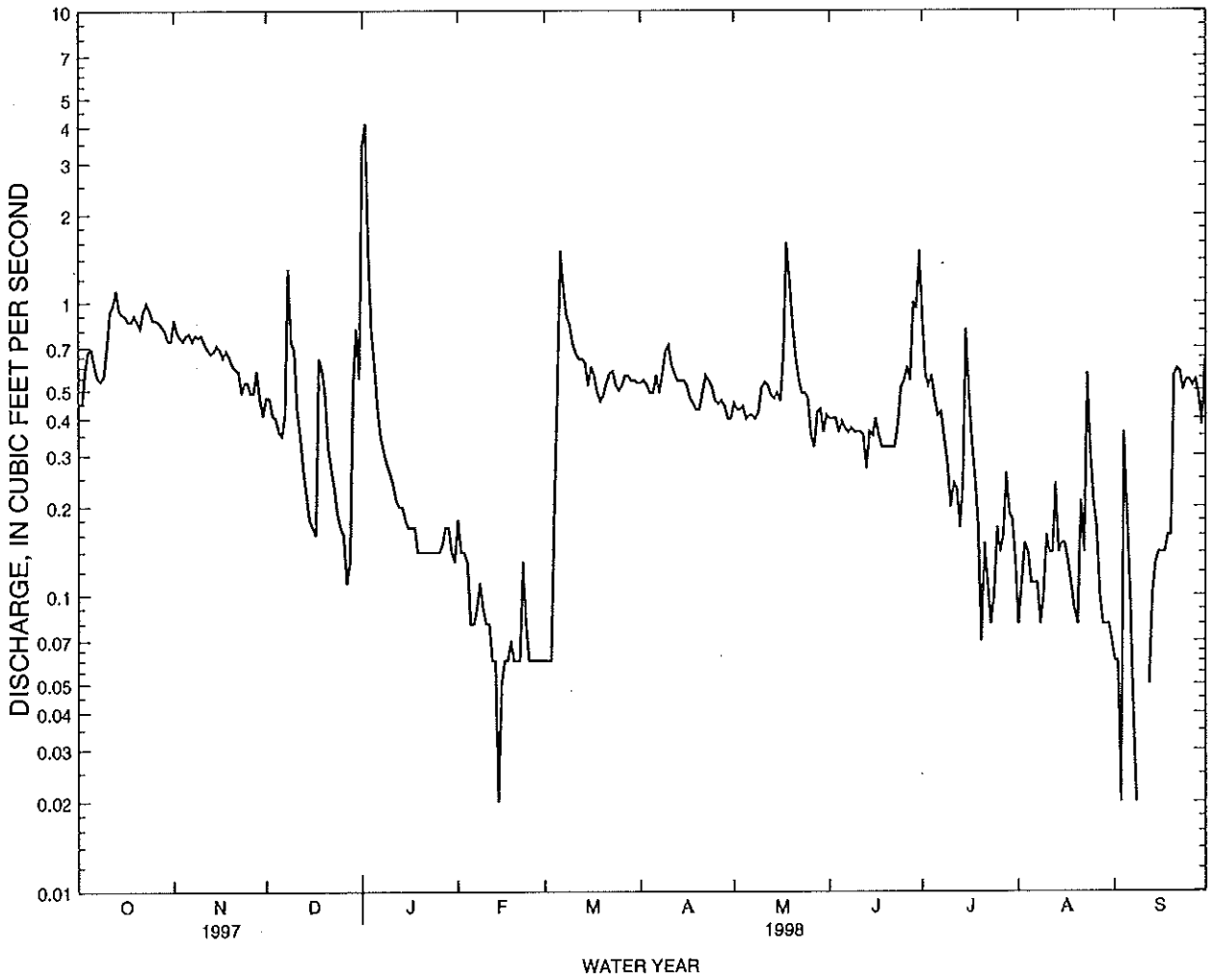
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 1998, BY WATER YEAR (WY)

MEAN	7.56	4.80	3.28	3.30	4.15	4.36	5.06	6.06	7.89	8.44	8.26	7.86
MAX	13.7	11.8	10.1	9.48	12.7	13.0	15.7	17.1	16.8	17.1	16.4	14.0
(WY)	1984	1954	1939	1983	1961	1961	1960	1956	1956	1958	1955	1969
MIN	.031	.003	.000	.000	.013	.028	.027	.030	.009	.005	.000	.007
(WY)	1995	1995	1995	1995	1993	1992	1992	1992	1993	1994	1994	1993

HAWAII, ISLAND OF KAUAI

16077000 MAKALEHA DITCH NEAR KEALIA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1937 - 1998	
ANNUAL TOTAL	244.01		159.28			
ANNUAL MEAN	.67		.44		5.95	
HIGHEST ANNUAL MEAN					10.0	1961
LOWEST ANNUAL MEAN					.042	1994
HIGHEST DAILY MEAN	7.4	Jan 4	4.1	Jan 2	31	Aug 1 1961
LOWEST DAILY MEAN	.02	Jul 30	.00	Sep 9	.00	Jan 11 1958
ANNUAL SEVEN-DAY MINIMUM	.04	Jul 27	.03	Sep 6	.00	Dec 6 1959
ANNUAL RUNOFF (AC-FT)	484		316		4310	
10 PERCENT EXCEEDS	1.1		.80		13	
50 PERCENT EXCEEDS	.52		.41		6.0	
90 PERCENT EXCEEDS	.15		.08		.11	



HAWAII, ISLAND OF KAUAI

16079000 KAPAHI DITCH NEAR KEALIA

LOCATION.--Lat 22°06′09″, long 159°22′28″, Hydrologic Unit 20070000, on right bank 500 ft downstream from intake, and 4.0 mi 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 above mean sea level (by stadia survey). Prior to November 26, 1936, at site 61 ft upstream at datum 2.52 ft higher.

REMARKS.--Records computed by Clayton Yoshida. Records good. Ditch diverts water from Kapaa Stream for irrigation of sugarcane in vicinity of Kapaa.

AVERAGE DISCHARGE.--80 years (water years 1918-20, 1922-98), 6.20 ft^3/s (4,490 acre-ft/yr).

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

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 18 ft^3/s, October 23; minimum daily, 0.60 ft^3/s, June 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	9.5	7.4	15	11	7.1	14	10	9.2	5.7	1.1	1.5
2	6.3	7.6	7.8	13	9.7	6.9	15	9.5	10	8.2	1.0	1.6
3	7.4	6.8	6.8	12	8.6	6.9	12	9.5	11	7.8	1.0	1.6
4	7.4	6.5	6.6	11	9.3	6.6	8.4	10	11	8.1	.99	1.8
5	6.9	6.2	6.4	11	8.6	5.4	7.8	9.0	12	7.7	.95	1.7
6	6.8	5.9	6.5	8.3	8.3	6.5	15	8.2	11	7.6	.95	1.7
7	6.7	5.7	7.6	6.6	8.5	7.7	15	8.2	9.9	7.8	.95	1.7
8	6.5	5.5	7.4	6.5	8.5	9.4	17	8.8	10	7.4	.95	1.7
9	6.2	5.1	6.5	6.4	8.5	8.0	17	10	11	7.5	1.0	1.7
10	5.0	4.8	6.6	6.3	8.4	5.9	16	10	12	7.3	4.8	1.8
11	5.0	4.3	6.2	6.2	8.3	5.9	14	10	14	7.2	6.9	1.9
12	4.9	3.3	6.1	6.2	8.4	5.2	12	9.9	8.7	7.0	6.9	1.8
13	5.1	3.2	6.0	6.3	8.4	5.2	12	9.6	7.3	7.0	6.9	1.8
14	4.9	3.2	5.9	6.2	10	4.9	7.8	10	7.5	7.4	6.8	1.7
15	4.9	3.1	6.3	5.9	12	4.8	7.4	10	7.7	7.6	7.0	1.7
16	4.9	3.1	6.3	6.0	12	4.9	7.0	9.7	7.6	7.1	7.2	1.6
17	4.9	4.9	8.2	6.6	10	5.1	6.8	11	7.3	3.7	6.8	1.5
18	5.0	7.9	12	7.4	9.4	5.1	6.7	10	7.1	1.5	6.7	1.5
19	5.0	7.7	11	7.5	8.6	5.1	6.7	9.7	7.0	1.1	6.6	1.5
20	4.7	8.1	11	7.1	7.2	5.2	6.7	9.1	7.1	1.0	6.5	1.5
21	9.1	7.4	11	6.9	9.3	5.4	8.8	8.2	7.5	1.4	6.9	1.4
22	13	7.5	9.9	6.7	13	5.8	13	7.8	7.4	1.6	6.8	1.4
23	18	8.3	9.7	6.6	10	7.1	12	7.9	7.8	1.4	4.9	1.3
24	14	8.9	9.4	6.6	10	5.7	12	8.2	7.6	1.5	2.8	1.2
25	12	8.5	9.6	6.6	11	5.8	11	7.1	7.7	1.6	1.8	1.3
26	13	8.7	9.5	6.7	9.3	13	10	6.1	4.2	1.5	1.7	1.3
27	11	9.1	9.4	6.9	7.7	13	11	5.9	.60	1.4	1.7	1.4
28	10	9.0	11	6.9	7.3	10	10	5.8	1.0	1.3	1.7	1.5
29	8.2	8.6	15	6.6	---	12	9.1	8.9	.95	1.3	1.6	1.4
30	7.2	7.9	14	7.4	---	12	8.3	10	1.2	1.2	1.4	1.4
31	8.3	---	13	7.8	---	14	---	9.9	---	1.1	1.4	---
TOTAL	238.7	196.3	270.1	237.2	261.3	225.6	329.5	278.0	234.35	141.0	114.69	46.9
MEAN	7.70	6.54	8.71	7.65	9.33	7.28	11.0	8.97	7.81	4.55	3.70	1.56
MAX	18	9.5	15	15	13	14	17	11	14	8.2	7.2	1.9
MIN	4.7	3.1	5.9	5.9	7.2	4.8	6.7	5.8	.60	1.0	.95	1.2
AC-FT	473	389	536	470	518	447	654	551	465	280	227	93

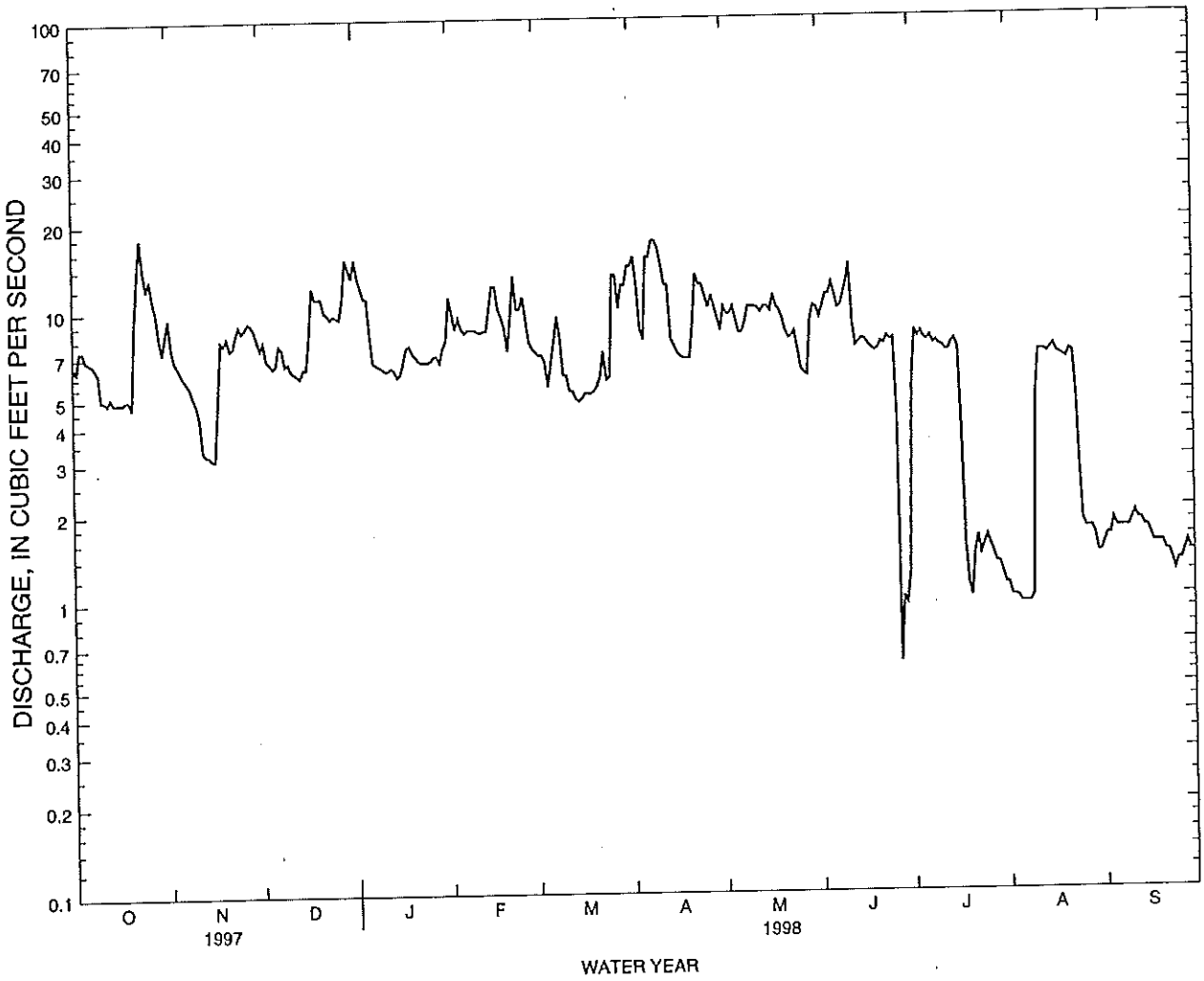
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1998, BY WATER YEAR (WY)

MEAN	6.00	5.13	4.61	4.44	4.88	5.63	6.50	7.69	7.57	8.14	8.42	6.96
MAX	26.0	21.8	27.5	22.9	19.4	22.6	21.2	28.0	26.1	33.6	30.0	25.8
(WY)	1919	1919	1922	1918	1919	1919	1922	1918	1918	1918	1918	1920
MIN	.27	.044	.073	.012	.042	.22	.27	.32	1.57	1.66	1.88	.72
(WY)	1961	1952	1949	1943	1956	1968	1945	1965	1962	1987	1995	1946

HAWAII, ISLAND OF KAUAI

16079000 KAPAHI DITCH NEAR KEALIA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1918 - 1998	
ANNUAL TOTAL	2182.75		2573.64			
ANNUAL MEAN	5.98		7.05		6.20	
HIGHEST ANNUAL MEAN					21.0	1918
LOWEST ANNUAL MEAN					2.23	1965
HIGHEST DAILY MEAN	18	Oct 23	18	Oct 23	94	Oct 25 1926
LOWEST DAILY MEAN	.10	Jan 20	.60	Jun 27	.00	Jun 4 1922
ANNUAL SEVEN-DAY MINIMUM	.26	Jan 6	.97	Aug 2	.00	Nov 13 1925
ANNUAL RUNOFF (AC-FT)	4330		5100		4490	
10 PERCENT EXCEEDS	9.3		12		15	
50 PERCENT EXCEEDS	6.7		7.1		4.5	
90 PERCENT EXCEEDS	.85		1.5		.25	



HAWAII, ISLAND OF KAUAI

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 below wasteway gates, and 4.8 mi northwest of Kealia.

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

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

REMARKS.--Records computed by Clayton Yoshida. Records good. Ditch diverts water from Anahola Stream to Kaneha Reservoir, where it is stored for irrigation. Floods are sometimes diverted upstream by Anahola Ditch wasteway.

AVERAGE DISCHARGE.--74 years (water years, 1923-25, 1928-98), 4.13 ft^3/s (2,990 acre-ft/yr).

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

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 5.9 ft^3/s, January 1; minimum daily, 0.41 ft^3/s, September 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.5	1.9	5.9	2.4	1.4	2.2	1.7	1.4	1.4	2.1	2.7
2	1.7	1.9	2.2	3.0	1.7	1.4	2.4	1.4	1.4	1.6	1.5	4.2
3	2.0	1.9	1.9	2.2	1.7	1.4	1.9	1.6	1.6	1.5	1.3	4.8
4	1.7	1.9	1.9	2.1	2.1	1.4	1.7	1.6	1.5	1.9	1.3	3.7
5	1.6	1.9	1.8	2.1	1.6	1.4	1.7	1.4	1.8	1.5	1.6	2.9
6	1.7	1.9	1.9	2.0	1.6	1.4	2.5	1.4	1.5	1.5	1.6	2.6
7	1.8	1.9	4.3	1.9	1.6	1.9	2.5	1.4	1.5	2.0	1.6	2.5
8	1.7	1.9	5.5	1.8	1.6	1.6	2.6	1.6	1.6	1.8	1.8	2.4
9	4.2	2.1	2.9	1.8	1.6	1.5	2.5	2.0	1.7	1.9	1.9	2.7
10	4.8	1.9	3.0	1.8	1.6	1.5	1.8	1.8	2.0	1.8	2.3	3.1
11	3.8	2.1	2.2	1.8	1.5	1.6	1.7	1.7	2.0	1.8	2.0	2.9
12	3.8	2.3	2.0	1.8	1.5	1.6	1.6	1.6	1.9	1.7	1.8	2.9
13	3.8	2.0	1.9	1.8	1.5	1.5	1.7	1.5	2.1	1.8	2.0	3.2
14	2.8	1.9	1.8	1.7	2.0	1.5	1.8	1.6	1.5	2.1	2.0	3.0
15	2.7	1.9	2.0	1.7	2.2	1.5	1.7	1.6	1.6	2.3	2.2	2.9
16	2.6	1.9	2.0	1.7	1.5	1.5	1.6	1.5	1.4	1.5	2.7	3.1
17	2.5	1.9	2.0	2.3	1.3	1.5	1.6	2.4	1.4	1.5	2.1	2.8
18	2.7	2.4	2.2	2.3	1.2	1.5	1.6	2.4	1.4	1.5	2.1	2.6
19	2.8	2.0	1.8	2.7	1.2	1.5	1.6	1.5	1.4	1.5	2.1	2.9
20	2.4	2.4	2.1	1.9	1.2	1.4	1.6	1.4	1.5	1.5	2.0	3.3
21	2.6	1.9	1.7	1.8	1.7	1.5	2.2	1.4	1.8	1.5	2.4	3.4
22	2.8	1.9	1.8	1.7	1.8	1.5	1.8	1.4	1.5	1.5	2.6	3.1
23	3.1	2.2	1.9	1.7	1.2	2.0	1.5	1.3	1.7	1.5	3.8	2.7
24	2.0	2.7	1.7	1.7	1.3	1.5	1.7	1.4	1.4	1.6	2.8	2.5
25	1.9	2.1	1.9	1.7	1.4	1.4	1.5	1.5	1.6	1.7	2.6	1.4
26	2.0	2.5	1.9	1.7	1.4	2.4	1.7	1.3	1.5	1.7	2.5	.42
27	2.2	2.9	1.8	1.8	1.4	2.2	1.4	1.2	1.5	1.7	2.8	.41
28	2.3	2.7	2.1	1.8	1.4	1.9	1.2	1.2	2.4	1.7	3.3	.59
29	2.0	2.7	2.6	1.6	---	2.0	1.2	1.3	1.7	2.3	2.7	.51
30	2.0	2.1	2.1	1.6	---	2.0	1.2	1.4	1.9	2.2	2.5	.51
31	2.3	---	1.9	1.6	---	2.6	---	1.4	---	2.1	2.3	---
TOTAL	77.9	64.3	68.7	63.0	44.2	51.0	53.7	47.9	49.2	53.6	68.3	76.74
MEAN	2.51	2.14	2.22	2.03	1.58	1.65	1.79	1.55	1.64	1.73	2.20	2.56
MAX	4.8	2.9	5.5	5.9	2.4	2.6	2.6	2.4	2.4	2.3	3.8	4.8
MIN	1.6	1.9	1.7	1.6	1.2	1.4	1.2	1.2	1.4	1.4	1.3	.41
AC-FT	155	128	136	125	88	101	107	95	98	106	135	152

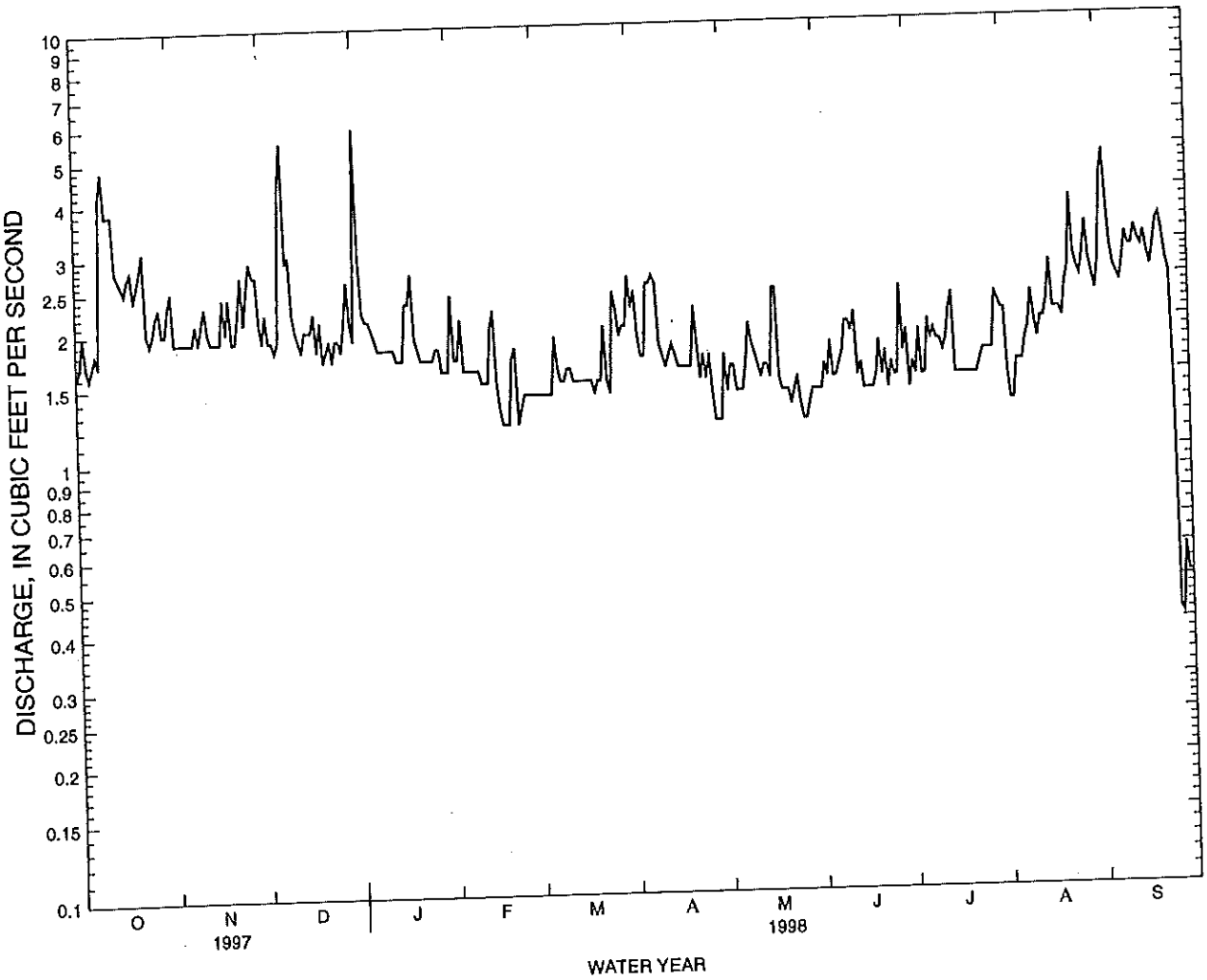
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 1998, BY WATER YEAR (WY)

MEAN	4.49	3.39	2.12	2.27	3.14	3.52	4.54	4.75	4.70	6.11	5.40	4.80
MAX	12.1	9.93	7.96	10.8	16.1	11.1	12.5	11.1	11.5	11.4	11.8	10.0
(WY)	1987	1950	1987	1975	1989	1986	1986	1986	1952	1969	1951	1941
MIN	.007	.004	.002	.003	.004	.000	.001	.009	.000	.003	.005	.002
(WY)	1995	1992	1961	1933	1969	1993	1993	1993	1993	1993	1993	1991

HAWAII, ISLAND OF KAUAI

16088000 ANAHOLA DITCH ABOVE KANEHA RESERVOIR, NEAR KEALIA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1922 - 1998	
ANNUAL TOTAL	481.45		718.54			
ANNUAL MEAN	1.32		1.97		4.13	
HIGHEST ANNUAL MEAN					8.00	1987
LOWEST ANNUAL MEAN					.13	1992
HIGHEST DAILY MEAN	18	Jan 4	5.9	Jan 1	62	Nov 12 1947
LOWEST DAILY MEAN	.10	Jul 24	.41	Sep 27	.00	Dec 11 1923
ANNUAL SEVEN-DAY MINIMUM	.13	Jul 23	.91	Sep 24	.00	Dec 15 1923
ANNUAL RUNOFF (AC-FT)	955		1430		2990	
10 PERCENT EXCEEDS	2.5		2.7		10	
50 PERCENT EXCEEDS	.94		1.8		2.8	
90 PERCENT EXCEEDS	.22		1.4		.03	



HAWAII, ISLAND OF KAUAI

16097500 HALAULANI STREAM AT ALTITUDE 400 FT, NEAR KILAUEA

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

DRAINAGE AREA.--1.19 mi^2, revised (Drainage area of 1.9 mi^2 published in the data report for water years 1977-94 was in error; the correct figure is 1.19 mi^2).

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

REVISED RECORDS.--WSP 2137: Drainage area. WDR HI-95-1: Drainage area.

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

REMARKS.--Records computed by Clayton Yoshida. Records good.

AVERAGE DISCHARGE.--40 years (water years 1959-98), 12 ft^3/s (8,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,140 ft^3/s, February 13, 1994, gage height, 9.76 ft; minimum, 1.8 ft^3/s, September 6-8, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 580 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug. 23	0100	*210	*2.97				

Minimum discharge, 3.8 ft^3/s, March 13, 18-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	9.3	7.2	20	7.8	4.7	8.1	15	5.5	16	16	5.3
2	6.4	5.8	8.2	13	4.9	4.5	8.0	7.2	5.8	16	8.5	24
3	29	5.4	6.4	8.6	4.6	4.4	6.5	9.2	6.9	12	6.1	25
4	31	5.1	5.8	7.6	5.6	4.4	4.9	8.3	5.8	25	5.5	18
5	15	5.0	5.5	7.4	4.6	4.3	4.6	6.3	7.5	11	7.4	9.1
6	12	4.9	5.8	6.8	4.4	4.3	7.0	5.8	5.6	9.1	6.6	7.1
7	14	4.8	55	6.3	4.4	5.9	11	5.6	5.2	10	5.8	6.4
8	9.2	4.7	61	6.0	4.3	5.0	13	9.5	6.9	8.6	9.3	6.0
9	13	4.7	22	5.8	4.3	4.3	20	19	5.8	9.5	14	7.1
10	8.6	4.5	25	5.6	4.2	4.7	13	20	7.0	8.7	15	7.3
11	7.2	4.7	9.9	5.4	4.2	4.7	8.9	19	8.0	11	9.3	6.0
12	7.2	4.8	8.1	5.2	4.2	4.2	7.0	15	6.2	7.9	7.6	6.9
13	11	5.1	7.2	5.1	4.8	4.1	8.1	12	8.8	7.5	7.9	7.1
14	6.8	4.5	6.7	5.0	6.7	4.0	7.2	18	15	11	8.8	6.3
15	6.3	4.4	6.6	4.9	15	3.9	6.7	13	19	16	8.9	5.8
16	6.1	4.4	7.5	4.8	7.3	3.9	5.7	10	13	8.1	16	6.2
17	5.9	4.3	8.2	12	5.1	3.9	5.3	51	8.5	7.2	7.2	6.2
18	5.7	6.6	15	19	4.7	3.8	5.1	41	7.2	6.6	6.4	5.9
19	5.8	5.4	7.8	27	4.5	3.8	4.9	16	6.7	6.3	6.0	6.6
20	5.5	7.1	9.5	8.9	4.4	3.8	4.8	13	7.5	6.1	5.8	7.5
21	5.6	4.8	6.7	6.9	11	3.8	39	10	15	6.1	6.0	7.0
22	5.8	4.6	6.9	6.7	15	4.0	13	8.2	13	5.7	9.9	16
23	17	5.1	7.0	6.1	7.0	3.9	8.9	8.1	26	5.4	21	8.0
24	7.2	16	6.1	5.7	6.0	3.8	13	9.1	23	5.4	7.0	6.5
25	5.9	7.3	6.5	5.4	6.3	3.9	7.7	12	21	5.4	6.2	9.9
26	6.7	7.9	6.5	5.2	5.4	5.3	19	7.8	15	5.5	5.7	6.9
27	6.1	23	6.1	5.2	5.0	5.1	19	7.1	13	5.1	5.5	6.2
28	7.0	16	11	5.0	4.9	4.0	9.1	6.5	41	5.1	6.4	6.6
29	5.7	20	26	4.8	---	4.2	7.3	6.2	27	7.5	6.7	6.0
30	5.5	9.4	18	4.7	---	5.0	6.5	6.2	32	6.0	6.3	5.7
31	5.7	---	11	4.7	---	14	---	5.7	---	5.8	5.4	---
TOTAL	290.0	219.6	400.2	244.8	170.6	143.6	302.3	400.8	387.9	276.6	264.2	258.6
MEAN	9.35	7.32	12.9	7.90	6.09	4.63	10.1	12.9	12.9	8.92	8.52	8.62
MAX	31	23	61	27	15	14	39	51	41	25	21	25
MIN	5.5	4.3	5.5	4.7	4.2	3.8	4.6	5.6	5.2	5.1	5.4	5.3
AC-FT	575	436	794	486	338	285	600	795	769	549	524	513

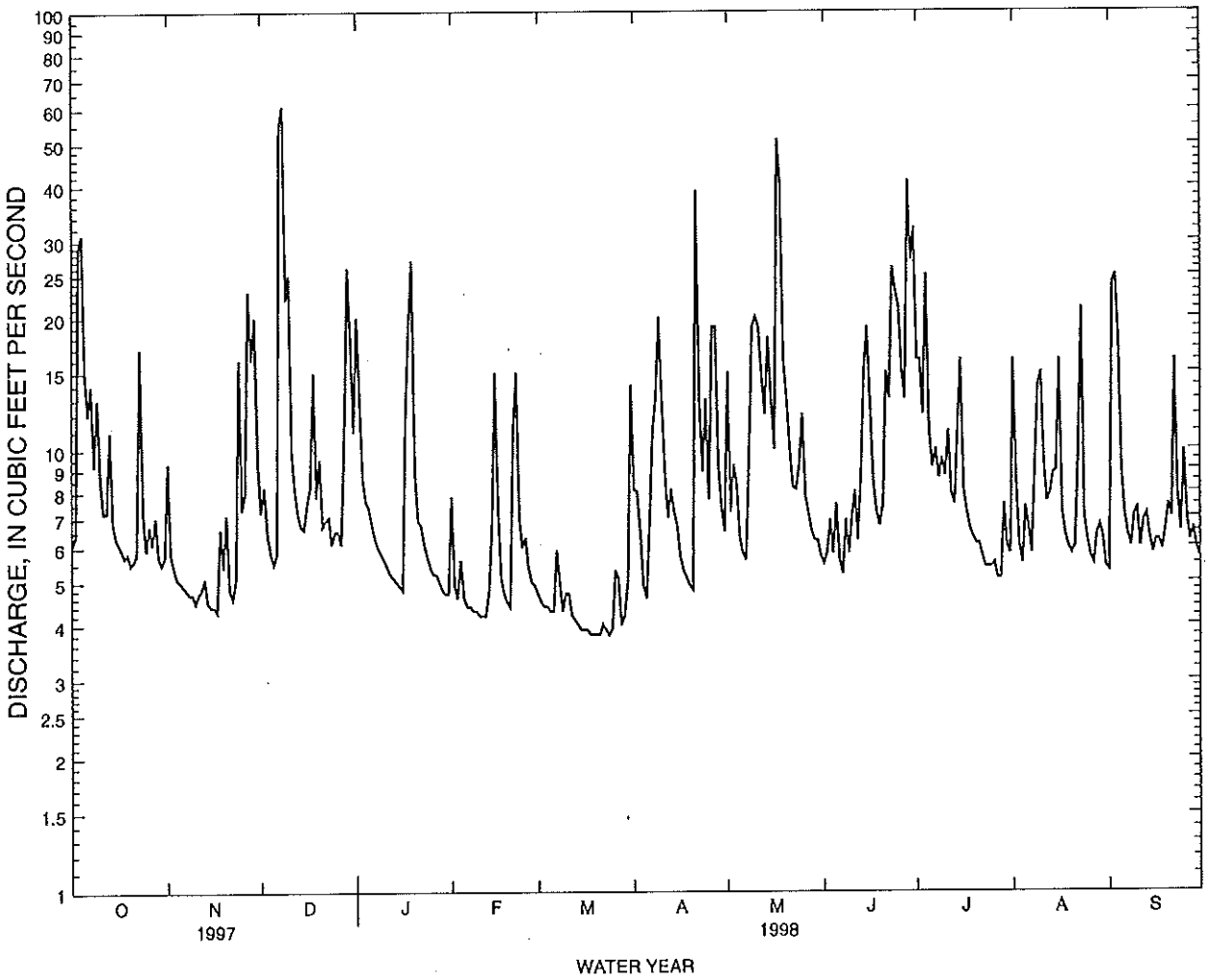
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1998, BY WATER YEAR (WY)

MEAN	10.4	16.7	14.0	11.7	11.5	13.7	15.1	12.2	8.66	11.4	10.3	8.48
MAX	24.6	49.7	43.1	28.4	54.8	42.7	35.1	22.5	29.1	27.1	23.7	15.7
(WY)	1983	1996	1988	1989	1994	1982	1971	1965	1978	1989	1991	1994
MIN	4.40	5.73	3.79	3.45	3.20	4.15	5.06	5.62	4.27	5.05	3.95	3.93
(WY)	1985	1977	1986	1986	1986	1995	1992	1995	1959	1975	1973	1975

HAWAII, ISLAND OF KAUAI

16097500 HALAULANI STREAM AT ALTITUDE 400 FT, NEAR KILAUEA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1958 - 1998	
ANNUAL TOTAL	4924.1		3359.2			
ANNUAL MEAN	13.5		9.20		12.0	
HIGHEST ANNUAL MEAN					19.6	1982
LOWEST ANNUAL MEAN					7.01	1984
HIGHEST DAILY MEAN	265	Jan 4	61	Dec 8	879	Feb 13 1994
LOWEST DAILY MEAN	4.3	Nov 17	3.8	Mar 18	1.9	Sep 5 1968
ANNUAL SEVEN-DAY MINIMUM	4.6	Nov 11	3.8	Mar 15	2.4	Sep 2 1968
ANNUAL RUNOFF (AC-FT)	9770		6660		8700	
10 PERCENT EXCEEDS	26		16		21	
50 PERCENT EXCEEDS	7.5		6.7		7.5	
90 PERCENT EXCEEDS	5.3		4.6		4.6	



HAWAII, ISLAND OF KAUAI

16103000 HANALEI RIVER NEAR HANALEI

LOCATION.--Lat 22°11′31″, long 159°27′57″, Hydrologic Unit 20070000, on right bank 2.6 mi southeast of Hanalei School, and 4.9 mi upstream from mouth.

DRAINAGE AREA.--19.1 mi^2.

PERIOD OF RECORD.--January 1912 to November 1919, water years 1962-63 (annual maximum), 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 above mean sea level (by stadia survey). January 1, 1912 to November 20, 1919, nonrecording gage at site 0.2 mi upstream at different datum. January 26 to December 26, 1962, crest-stage gage at present site and datum.

REMARKS.--Records computed by Clayton Yoshida. Records fair except for flows greater than 360 ft^3/s, which are poor. Since 1925, Hanalei tunnel (station 16100000) has diverted water from Hanalei River and its tributary Kaapoko Stream upstream of the station to North Branch of North Fork Wailua River for irrigation.

AVERAGE DISCHARGE (since diversion to Hanalei tunnel).--35 years (water years 1964-98), 215 ft^3/s (155,600) acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,600 ft^3/s, November 3, 1995, gage height, 15.81 ft, from rating curve extended above 26,600 ft^3/s; minimum, 31 ft^3/s, September 30, October 1, 2, 5, 12, 13, November 3, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 9,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug. 23	0200	*3,540	*6.56				

Minimum discharge, 71 ft^3/s, March 19-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	722	176	175	230	93	221	330	106	244	266	163
2	116	183	390	154	103	91	335	174	113	233	151	474
3	501	136	202	137	91	88	275	232	153	197	100	539
4	544	119	154	130	108	87	142	217	125	344	98	325
5	297	114	134	270	89	85	121	147	197	193	174	194
6	214	105	150	165	86	86	192	128	120	177	137	141
7	278	100	602	130	84	95	201	123	100	238	113	122
8	185	109	862	118	84	93	295	158	138	170	165	109
9	200	136	355	111	83	84	675	326	134	184	220	118
10	158	95	383	106	81	91	525	366	179	165	214	348
11	135	109	223	102	81	96	334	391	152	212	159	141
12	129	119	178	99	80	80	290	341	119	144	132	150
13	146	114	149	97	82	78	316	257	150	147	174	162
14	115	94	136	94	99	76	298	322	224	225	145	128
15	107	87	139	92	247	76	200	264	323	266	154	112
16	103	84	137	91	218	77	164	208	240	146	240	110
17	99	82	164	179	110	76	142	685	145	127	163	102
18	103	143	160	194	94	74	129	684	122	116	137	104
19	112	110	150	219	88	73	123	384	119	110	110	115
20	93	158	166	136	85	72	116	404	129	104	104	154
21	117	96	119	112	224	78	260	291	235	104	171	200
22	184	91	164	105	378	78	249	207	280	95	230	242
23	603	135	130	100	154	89	245	188	511	91	510	150
24	190	451	111	95	143	75	500	223	510	91	168	108
25	136	408	121	92	181	77	240	266	343	93	121	164
26	136	282	120	91	119	141	223	194	279	93	103	146
27	133	405	126	102	104	186	224	153	222	88	122	98
28	138	434	138	99	98	111	197	135	481	84	196	119
29	109	496	508	88	---	123	148	127	388	96	166	100
30	104	255	392	86	---	142	132	151	437	99	126	95
31	119	---	186	85	---	204	---	115	---	99	101	---
TOTAL	5712	5972	7125	3854	3624	2975	7512	8191	6774	4775	5170	5233
MEAN	184	199	230	124	129	96.0	250	264	226	154	167	174
MAX	603	722	862	270	378	204	675	685	511	344	510	539
MIN	93	82	111	85	80	72	116	115	100	84	98	95
AC-FT	11330	11850	14130	7640	7190	5900	14900	16250	13440	9470	10250	10380

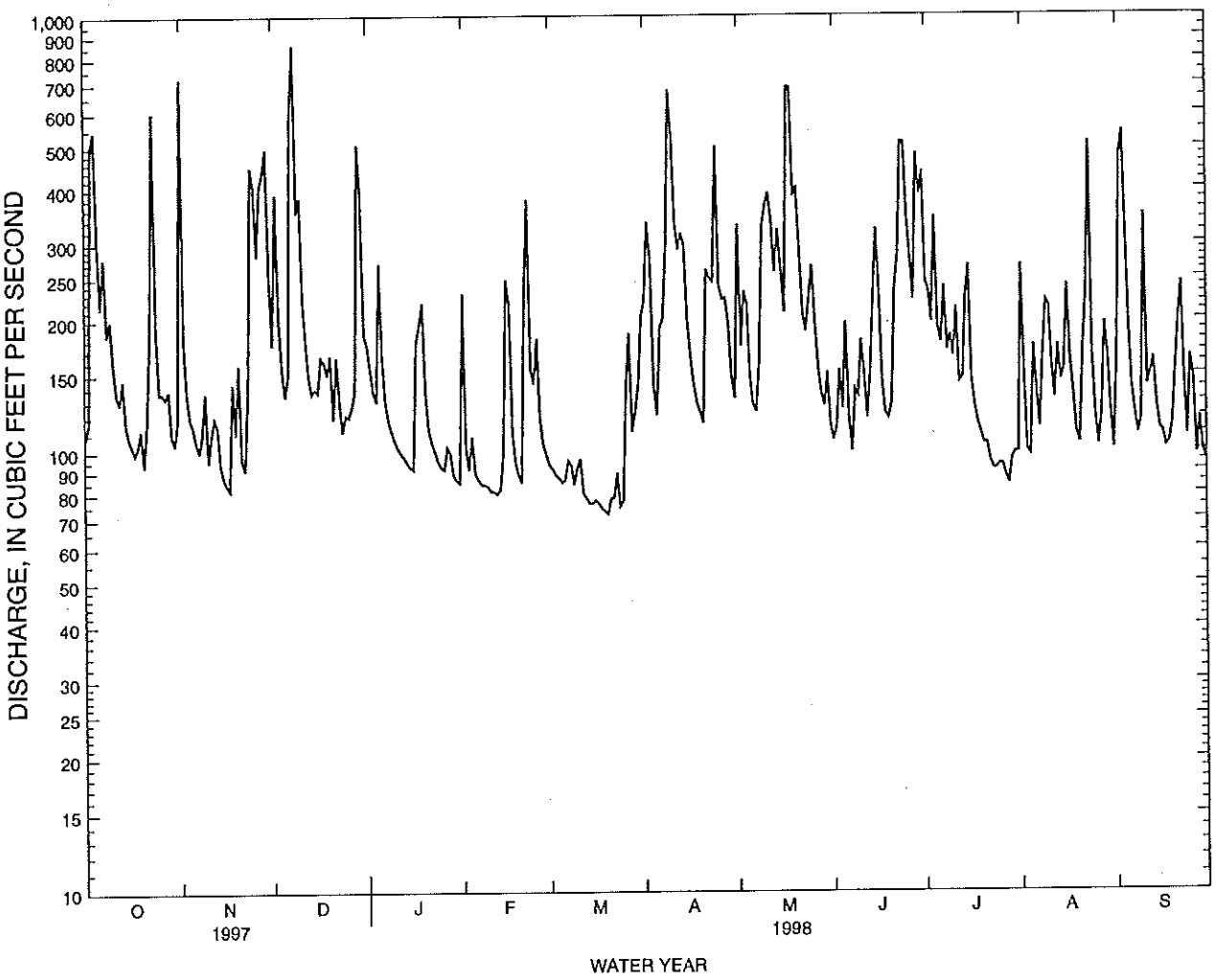
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

MEAN	182	310	244	218	221	270	292	219	147	186	158	144
MAX	466	793	596	614	617	1096	781	626	568	418	413	523
(WY)	1983	1991	1968	1989	1989	1982	1974	1967	1978	1989	1982	1994
MIN	44.0	72.8	59.6	49.5	42.8	56.4	76.3	73.5	57.5	62.6	42.1	35.7
(WY)	1985	1964	1984	1986	1978	1970	1966	1984	1975	1984	1973	1975

HAWAII, ISLAND OF KAUAI

16103000 HANALEI RIVER NEAR HANALEI--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1962 - 1998	
ANNUAL TOTAL	90785		66917			
ANNUAL MEAN	249		183		215	
HIGHEST ANNUAL MEAN					408	1982
LOWEST ANNUAL MEAN					92.7	1984
HIGHEST DAILY MEAN	2760	Jan 4	862	Dec 8	8340	May 22 1967
LOWEST DAILY MEAN	82	Nov 17	72	Mar 20	31	Nov 3 1975
ANNUAL SEVEN-DAY MINIMUM	94	Feb 15	75	Mar 14	33	Sep 19 1975
ANNUAL RUNOFF (AC-FT)	180100		132700		155600	
10 PERCENT EXCEEDS	463		343		417	
50 PERCENT EXCEEDS	154		139		121	
90 PERCENT EXCEEDS	109		89		60	



HAWAII, ISLAND OF KAUAI

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 upstream from Wainiha power plant intake, and 6.0 mi southwest of Hanalei.

DRAINAGE AREA.--10.2 mi^2.

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

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

GAGE.--Water-stage recorder. Elevation of gage is 960 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records fair. No diversion upstream.

AVERAGE DISCHARGE.--43 years (water years 1953-55, 1959-98), 138 ft^3/s (100,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft^3/s, April 19, 1974, gage height, 9.47 ft, from rating curve extended above 1,100 ft^3/s on basis of slope-area measurement at gage height 7.72 ft; minimum, 32 ft^3/s, October 21-23, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 3,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Aug. 23	0130	5,200	5.76	No other peak greater than base discharge.			

Minimum discharge, 43 ft^3/s, March 16, 19, 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	571	109	80	83	51	181	281	58	134	144	165
2	80	130	394	71	56	50	253	120	85	132	81	226
3	605	84	178	88	52	49	192	114	116	103	67	251
4	309	70	102	73	52	48	87	146	73	261	68	166
5	173	65	77	265	51	48	68	88	162	117	157	93
6	123	60	102	149	50	47	139	73	70	105	93	71
7	167	58	306	98	49	48	160	77	59	156	71	63
8	90	60	786	74	49	48	227	107	123	100	79	60
9	77	69	153	65	49	47	794	217	118	110	152	81
10	78	57	136	61	49	50	455	227	153	106	107	221
11	64	76	94	58	49	53	237	224	111	205	100	79
12	63	72	107	57	48	46	303	201	94	93	88	93
13	65	88	77	56	49	46	268	152	166	108	128	134
14	58	59	68	55	59	45	222	223	191	183	89	91
15	56	55	81	54	112	45	109	171	245	194	99	79
16	54	55	88	54	93	45	84	106	163	89	141	73
17	54	54	132	86	56	45	67	460	84	72	89	78
18	63	94	109	142	52	44	60	446	68	65	76	81
19	67	66	97	112	50	44	64	204	66	62	64	87
20	55	106	141	69	49	44	59	201	97	60	62	160
21	136	68	68	60	94	46	116	138	160	61	128	158
22	195	68	65	58	264	61	140	99	197	57	259	136
23	246	143	66	62	100	81	134	126	382	56	620	119
24	94	485	59	55	114	57	335	158	343	57	124	66
25	84	316	86	53	136	66	97	190	219	66	83	107
26	108	214	86	52	63	175	83	113	185	72	70	137
27	94	362	108	54	55	197	82	78	144	66	114	62
28	102	466	82	57	53	113	96	65	377	57	122	81
29	69	321	410	52	---	125	73	62	276	75	97	72
30	66	142	279	51	---	114	66	126	258	89	85	72
31	67	---	115	50	---	184	---	63	---	76	65	---
TOTAL	3622	4534	4761	2371	2036	2162	5251	5056	4843	3187	3722	3362
MEAN	117	151	154	76.5	72.7	69.7	175	163	161	103	120	112
MAX	605	571	786	265	264	197	794	460	382	261	620	251
MIN	54	54	59	50	48	44	59	62	58	56	62	60
AC-FT	7180	8990	9440	4700	4040	4290	10420	10030	9610	6320	7380	6670

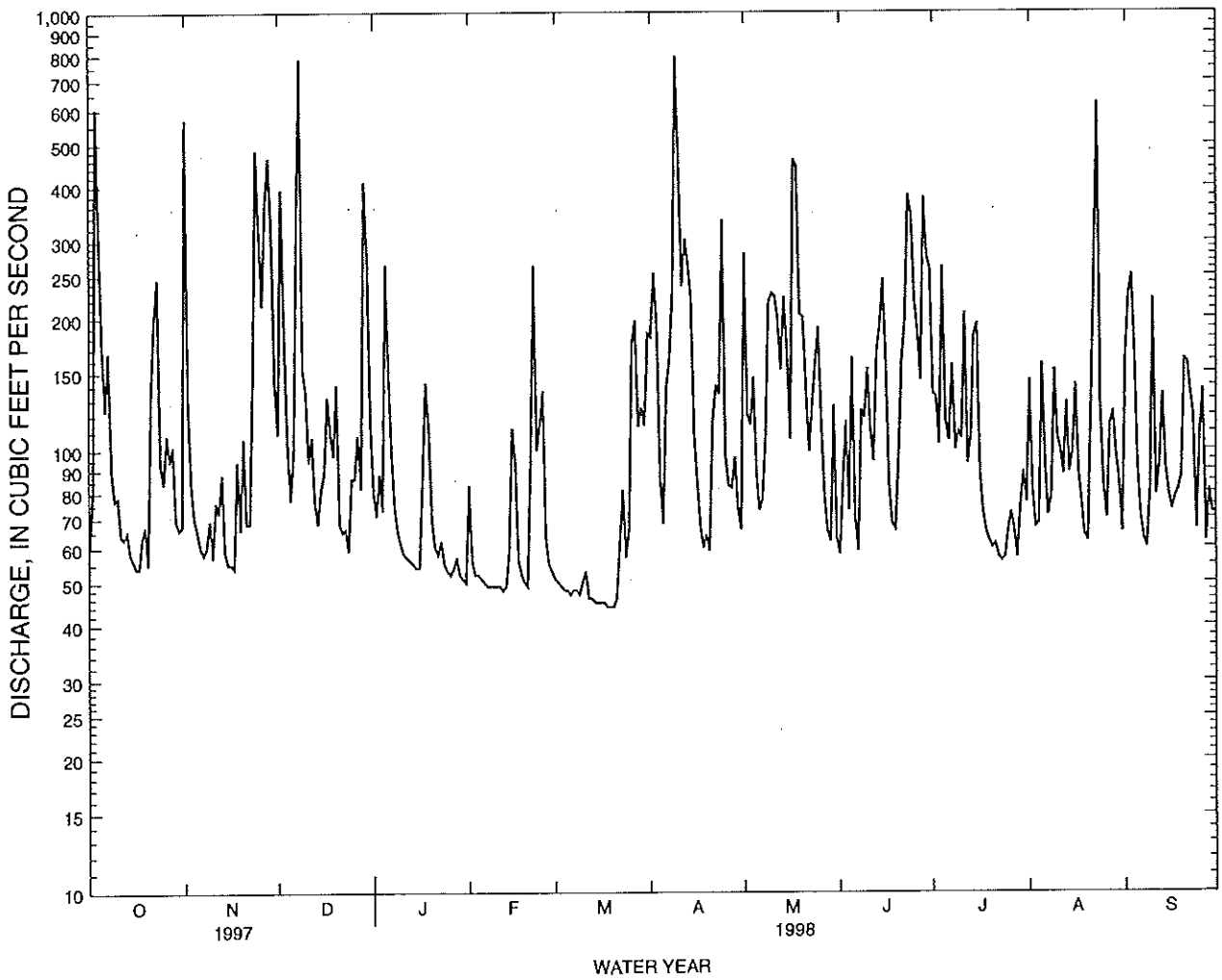
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1998, BY WATER YEAR (WY)

MEAN	114	187	166	143	142	170	174	124	102	131	114	95.8
MAX	228	414	384	371	492	611	504	238	187	315	272	249
(WY)	1983	1991	1968	1989	1969	1982	1971	1967	1978	1989	1982	1994
MIN	42.8	72.7	54.1	44.6	36.5	52.2	52.8	51.9	53.1	50.4	54.6	42.3
(WY)	1985	1964	1984	1986	1978	1970	1992	1966	1993	1984	1965	1965

HAWAII, ISLAND OF KAUAI

16108000 WAINIHA RIVER NEAR HANALEI--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1952 - 1998	
ANNUAL TOTAL	54583		44907			
ANNUAL MEAN	150		123		138	
HIGHEST ANNUAL MEAN					243	1982
LOWEST ANNUAL MEAN					84.8	1984
HIGHEST DAILY MEAN	1700	Jan 4	794	Apr 9	3650	Nov 21 1974
LOWEST DAILY MEAN	50	Feb 16	44	Mar 18	31	Sep 29 1965
ANNUAL SEVEN-DAY MINIMUM	52	Feb 14	45	Mar 14	33	Sep 24 1965
ANNUAL RUNOFF (AC-FT)	108300		89070		100100	
10 PERCENT EXCEEDS	304		231		262	
50 PERCENT EXCEEDS	88		87		79	
90 PERCENT EXCEEDS	58		52		49	



HAWAII, ISLAND OF KAUAI

16114000 LIMAHULI STREAM NEAR WAINIHA

LOCATION.--Lat 22°13′15″, long 159°34′48″, Hydrologic Unit 20070000, on left bank 0.2 mi upstream from intersection with Kuhio highway, and entrance to Haena State Park.

DRAINAGE AREA.--1.36 mi^2.

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorders and natural control. Elevation of gage is 160 ft above mean sea level, by altimeter.

REMARKS.--Records computed by Clayton Yoshida. Records fair. No diversion upstream of station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 760 ft^3/s, January 4, 1997, gage height, 4.60 ft; minimum, 3.5 ft^3/s, June 30, July 1, 2, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 300 ft^3/s and minimum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 8	0330	165	*2.57				

Minimum discharge, 5.9 ft^3/s, September 24-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	19	9.5	8.1	9.6	6.7	12	21	6.5	11	22	7.2
2	7.6	9.0	12	7.8	6.7	6.6	14	10	6.8	11	9.6	29
3	17	8.1	9.6	9.1	6.4	6.5	10	13	6.9	12	7.4	27
4	22	7.5	9.1	8.3	14	6.5	8.6	11	6.9	27	7.0	12
5	13	7.2	8.7	9.8	7.3	6.5	8.1	8.5	6.9	11	8.8	8.9
6	9.5	7.1	11	9.2	6.8	6.6	9.5	7.7	6.5	8.7	7.9	7.7
7	8.7	7.1	28	8.0	6.5	7.2	10	7.3	6.4	11	7.2	7.1
8	8.2	7.2	57	7.5	6.5	7.1	11	11	6.4	8.9	9.3	6.9
9	7.6	7.3	18	7.3	6.4	6.8	15	12	6.4	8.6	16	7.1
10	7.4	7.0	20	7.1	6.4	7.5	17	14	6.4	8.4	13	6.7
11	7.2	7.1	11	7.0	6.2	7.0	14	28	6.4	15	20	6.5
12	7.1	7.3	9.5	6.9	6.2	6.7	10	20	6.4	9.8	13	6.7
13	7.1	7.3	8.6	6.8	6.5	6.5	15	13	8.8	8.5	9.8	6.5
14	6.9	7.1	8.2	6.7	6.3	6.4	15	15	9.7	9.4	8.1	6.6
15	6.8	6.9	8.2	6.6	16	6.4	11	12	9.6	14	7.9	6.4
16	6.8	6.9	9.2	6.5	14	6.4	9.4	9.8	8.2	8.9	8.5	6.3
17	6.8	7.8	9.0	26	8.2	6.4	8.6	30	7.1	7.9	14	6.2
18	6.8	9.1	8.2	20	7.2	6.3	8.1	33	6.7	7.5	9.7	6.2
19	6.8	9.1	8.0	13	6.7	6.2	7.9	15	6.5	7.2	7.6	6.1
20	6.7	12	8.4	9.4	6.5	6.2	7.7	15	7.0	7.0	7.0	6.7
21	6.9	8.3	8.0	8.1	17	6.4	15	11	7.6	6.9	7.7	6.3
22	7.1	8.0	12	9.0	17	6.5	12	8.6	13	6.7	6.9	6.1
23	6.9	8.4	9.0	7.9	9.4	6.8	9.6	8.1	20	6.7	9.7	6.0
24	6.9	16	8.2	7.1	8.1	6.5	8.8	8.3	20	6.7	7.1	6.0
25	6.8	12	8.3	6.8	7.7	7.0	8.2	9.7	14	6.7	6.7	5.9
26	9.6	9.9	8.2	6.7	7.3	8.7	9.6	8.0	13	6.7	6.5	5.9
27	8.2	17	8.0	7.5	7.0	9.3	10	7.3	11	6.5	6.6	5.9
28	8.4	19	7.8	7.0	6.9	7.7	9.3	7.0	24	6.5	8.3	6.1
29	7.6	21	16	6.6	---	8.1	8.2	6.7	22	6.8	7.6	6.0
30	7.3	12	12	6.5	---	9.1	7.7	6.6	19	7.0	6.7	5.9
31	7.7	---	8.8	6.3	---	13	---	6.5	---	7.6	6.4	---
TOTAL	260.8	298.7	377.5	270.6	240.8	221.6	320.3	394.1	306.1	287.6	294.0	243.9
MEAN	8.41	9.96	12.2	8.73	8.60	7.15	10.7	12.7	10.2	9.28	9.48	8.13
MAX	22	21	57	26	17	13	17	33	24	27	22	29
MIN	6.7	6.9	7.8	6.3	6.2	6.2	7.7	6.5	6.4	6.5	6.4	5.9
AC-FT	517	592	749	537	478	440	635	782	607	570	583	484

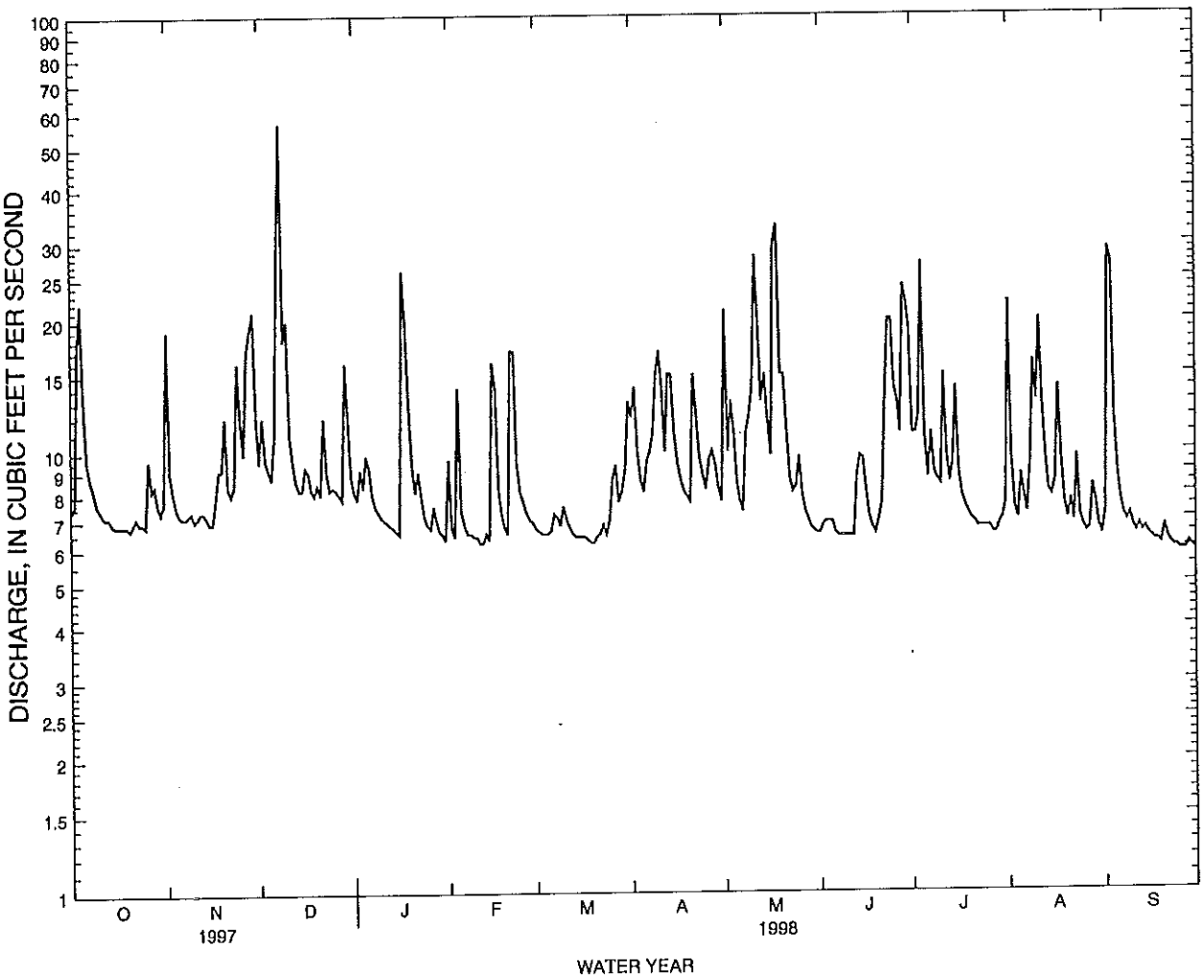
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

MEAN	8.25	10.1	11.1	11.8	8.37	9.13	16.2	13.2	8.96	8.81	7.95	8.16
MAX	9.62	12.5	12.6	23.8	12.0	15.7	32.6	22.4	12.2	9.28	9.84	9.32
(WY)	1996	1996	1997	1997	1996	1997	1997	1997	1996	1998	1995	1996
MIN	6.51	7.66	7.43	6.04	6.27	5.63	9.58	7.74	5.20	8.51	5.96	7.45
(WY)	1997	1995	1995	1995	1995	1995	1996	1995	1995	1996	1996	1997

HAWAII, ISLAND OF KAUAI

16114000 LIMAHULI STREAM NEAR WAINIHA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1995 - 1998	
ANNUAL TOTAL	4957.6		3516.0			
ANNUAL MEAN	13.6		9.63		10.2	
HIGHEST ANNUAL MEAN					13.5	1997
LOWEST ANNUAL MEAN					7.72	1995
HIGHEST DAILY MEAN	238	Jan 4	57	Dec 8	238	Jan 4 1997
LOWEST DAILY MEAN	4.8	Feb 21	5.9	Sep 25	3.7	Jul 1 1995
ANNUAL SEVEN-DAY MINIMUM	5.0	Feb 15	6.0	Sep 24	3.9	Jun 26 1995
ANNUAL RUNOFF (AC-FT)	9830		6970		7370	
10 PERCENT EXCEEDS	21		15		15	
50 PERCENT EXCEEDS	8.0		7.9		7.1	
90 PERCENT EXCEEDS	6.2		6.4		5.2	



Surface-Water Station Records for Oahu

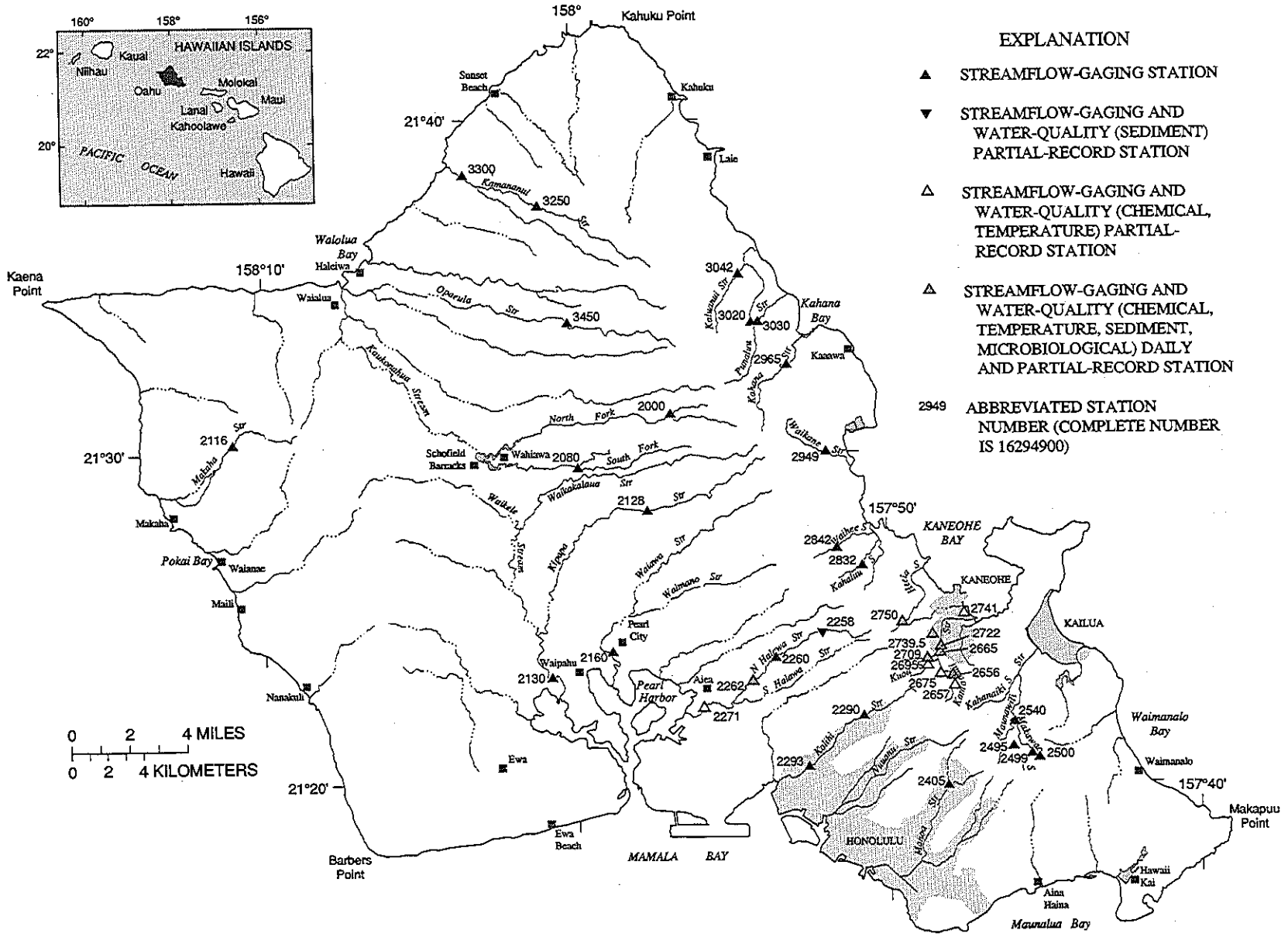


Figure 6. Locations of gaging, water-quality, and partial-record stations on Oahu.

HAWAII, ISLAND OF OAHU

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 upstream from Mauka ditch intake and Right Branch, and 4.5 mi northeast of Wahiawa.

DRAINAGE AREA.--1.38 mi^2.

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. Elevation of gage is 1,150 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Ben Shimizu. Records good.

AVERAGE DISCHARGE.--75 years (water years 1914-24, 1927-52, 1961-98), 16.3 ft^3/s (11,790 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,640 ft^3/s, October 28, 1981, gage height, 13.2 ft, from rating curve extended above 68 ft^3/s on basis of slope-area measurement at gage height, 12.46 ft; minimum, 0.12 ft^3/s, March 2, 13, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 8	2215	*1,340	*6.32	No other peak greater than base discharge.			

Minimum discharge, 0.21 ft^3/s, March 24-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	24	14	40	1.6	.67	3.0	21	7.4	19	3.9	4.3
2	3.4	4.7	6.2	8.7	1.5	.49	5.2	4.3	12	14	3.6	25
3	89	3.6	4.5	5.9	1.4	.42	6.1	4.9	20	20	3.7	11
4	40	3.2	3.6	5.1	1.3	.38	1.6	4.5	8.1	46	3.2	5.0
5	13	8.4	3.2	5.8	1.3	.36	7.6	3.0	23	23	5.7	4.0
6	9.3	3.4	3.2	4.4	1.1	.36	7.8	8.8	7.0	13	3.2	4.0
7	18	3.0	28	3.7	1.1	.36	15	5.1	5.7	12	3.6	3.4
8	77	5.1	11	3.5	1.0	.34	28	5.4	12	12	3.2	3.1
9	27	14	9.7	3.2	.94	.33	9.7	5.6	19	12	6.7	3.5
10	9.6	3.1	4.3	3.1	.88	.31	7.8	4.1	9.8	9.5	12	6.0
11	7.5	3.1	3.5	2.8	.83	.30	3.5	4.3	12	16	3.7	3.4
12	7.4	8.0	3.1	2.7	.75	.28	2.7	9.1	33	9.1	3.0	4.2
13	6.1	20	2.7	2.6	.66	.28	2.4	13	10	12	6.0	12
14	5.6	3.9	2.7	2.4	.65	.28	2.1	16	66	20	3.6	4.2
15	5.4	3.2	3.0	2.4	.65	.28	1.7	8.1	77	15	2.8	13
16	6.4	2.7	8.7	2.3	.60	.25	1.5	6.0	29	9.9	4.6	8.3
17	4.5	2.6	11	19	.59	.25	1.3	8.3	24	8.4	4.2	4.9
18	4.6	2.5	25	29	.56	.25	1.3	7.7	13	7.8	3.2	4.2
19	5.4	2.5	18	14	.51	.23	4.3	15	11	7.0	2.3	6.7
20	4.0	2.3	10	4.1	.48	.23	28	20	30	6.5	2.6	9.1
21	6.8	2.1	12	3.0	.45	.23	33	11	38	6.2	16	32
22	18	2.0	5.3	2.6	.75	.23	30	7.6	33	5.6	41	9.9
23	21	2.2	15	2.4	1.6	.27	40	6.0	21	5.3	13	11
24	6.6	3.0	7.6	2.3	.71	.24	21	5.0	129	5.0	9.3	13
25	9.2	21	11	2.1	8.0	.31	14	4.7	33	4.7	4.2	99
26	13	2.9	4.7	2.0	6.1	16	7.3	30	42	10	3.6	32
27	5.2	22	6.7	1.9	2.2	11	5.1	7.2	21	4.9	4.3	9.8
28	4.2	36	9.0	1.8	1.1	5.3	5.8	5.0	27	5.0	11	9.3
29	6.4	39	11	1.7	---	5.3	3.8	6.1	26	17	12	8.5
30	4.1	13	28	1.7	---	6.2	3.3	7.6	29	4.7	24	6.1
31	4.0	---	16	1.6	---	12	---	18	---	3.8	4.8	---
TOTAL	445.3	266.5	301.7	187.8	39.31	63.73	303.9	282.4	828.0	364.4	228.0	369.9
MEAN	14.4	8.88	9.73	6.06	1.40	2.06	10.1	9.11	27.6	11.8	7.35	12.3
MAX	89	39	28	40	8.0	16	40	30	129	46	41	99
MIN	3.4	2.0	2.7	1.6	.45	.23	1.3	3.0	5.7	3.8	2.3	3.1
AC-FT	883	529	598	373	78	126	603	560	1640	723	452	734

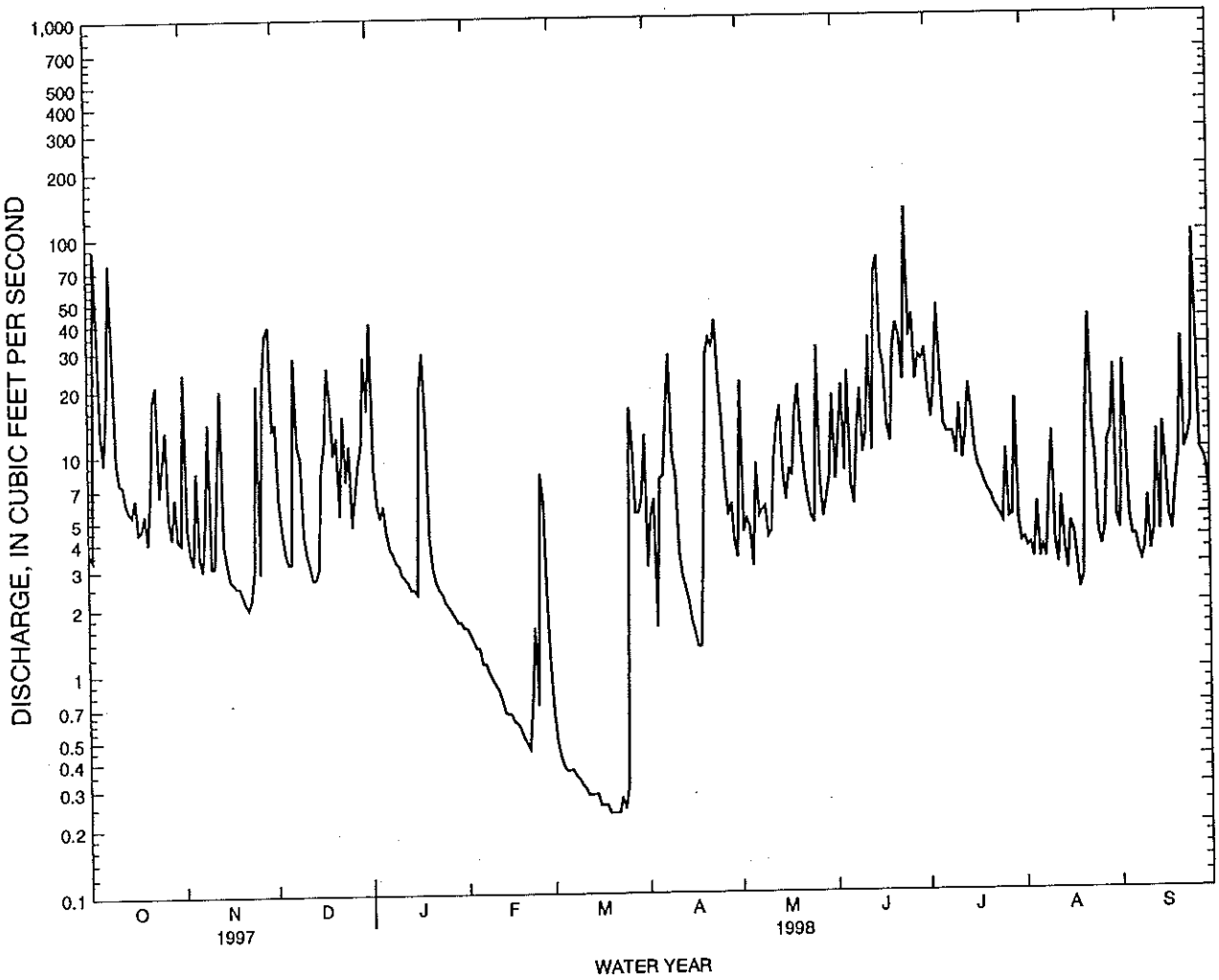
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1998, BY WATER YEAR (WY)

MEAN	13.2	17.4	15.0	14.4	12.6	18.9	19.8	16.2	13.5	18.5	18.2	15.2
MAX	32.7	76.5	48.9	126	117	74.4	58.6	53.3	31.3	48.0	50.1	79.1
(WY)	1942	1966	1988	1921	1932	1982	1963	1927	1963	1930	1931	1914
MIN	2.21	1.31	1.57	.36	.40	.28	1.38	.67	2.63	4.22	1.81	1.95
(WY)	1985	1934	1990	1986	1986	1983	1966	1992	1951	1951	1971	1975

HAWAII, ISLAND OF OAHU

16200000 NORTH FORK KAUKONAHUA STREAM ABOVE RIGHT BRANCH, NEAR WAHIAWA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1913 - 1998	
ANNUAL TOTAL	5158.7		3680.94			
ANNUAL MEAN	14.1		10.1		16.3	
HIGHEST ANNUAL MEAN					29.5	1932
LOWEST ANNUAL MEAN					9.11	1984
HIGHEST DAILY MEAN	163	Jul 22	129	Jun 24	975	Feb 27 1935
LOWEST DAILY MEAN	1.4	Feb 21	.23	Mar 19	.12	Mar 13 1941
ANNUAL SEVEN-DAY MINIMUM	2.1	Jan 22	.24	Mar 16	.13	Mar 5 1986
ANNUAL RUNOFF (AC-FT)	10230		7300		11790	
10 PERCENT EXCEEDS	36		24		36	
50 PERCENT EXCEEDS	7.1		5.4		7.1	
90 PERCENT EXCEEDS	2.6		.75		1.6	



HAWAII, ISLAND OF OAHU

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 east of Wahiawa Post Office, and 7.1 mi north of Waipahu.

DRAINAGE AREA.--4.04 mi^2.

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 above mean sea level (from USC&GS trig station).

REMARKS.--Records computed by Vaughn Kunishige. Records fair. Prior to 1960, water was diverted from reservoirs upstream of station for use at Schofield Barracks.

AVERAGE DISCHARGE.--36 years (water years 1961-62, 1965-98), 21.3 ft^3/s (15,420 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,460 ft^3/s, April 15, 1963, gage height, 11.33 ft, from rating curve extended above 1,100 ft^3/s on basis of computation of peak flow over dam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 9	0015	*570	*3.93				

Minimum discharge, no flow on March 22-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	33	23	48	1.2	.81	9.1	e30	e11	e24	5.8	4.8
2	5.4	9.3	11	16	1.1	.72	9.6	e6.0	e15	e18	5.5	15
3	186	4.3	8.2	7.3	.99	1.2	21	e6.5	e27	e32	5.1	19
4	88	3.6	5.3	6.1	.95	.46	4.7	e5.0	e13	e57	5.2	6.6
5	20	8.2	4.3	6.6	.91	.34	20	e4.0	e32	e32	11	4.7
6	15	5.6	4.0	7.6	.83	.32	7.4	e10	e10	e23	6.6	4.3
7	22	3.4	38	4.7	.78	.29	19	e6.0	e7.0	e22	12	4.9
8	23	3.1	25	4.0	.69	.28	13	e6.0	e15	e20	6.3	3.5
9	68	14	32	3.7	.58	.26	20	e7.0	e22	30	5.8	3.2
10	15	4.2	11	3.4	.54	.24	31	e5.0	e13	20	11	3.2
11	9.2	3.0	6.5	3.1	.54	.24	11	e4.5	e20	20	6.0	3.9
12	8.8	23	5.3	2.9	.54	.24	6.5	e10	e40	16	4.3	3.4
13	8.6	36	4.5	2.8	.54	.24	6.9	e13	e17	19	4.1	13
14	6.7	6.1	4.0	e2.6	.54	.21	6.5	e20	e80	33	6.5	7.1
15	6.6	3.7	4.0	e2.5	.54	.15	4.5	e15	e100	25	4.4	10
16	9.8	3.1	14	2.4	.60	.14	3.4	e12	e45	20	8.5	12
17	6.6	2.8	17	16	.54	.13	2.8	e8.0	e27	14	11	16
18	5.5	2.7	10	33	.44	.12	2.6	e13	e17	12	5.1	7.5
19	5.9	2.8	24	12	.42	.11	2.9	e27	e13	11	3.6	8.0
20	5.0	2.7	6.2	5.4	.40	.08	e30	e32	e32	10	3.4	6.0
21	8.5	2.2	17	3.3	.37	.05	e27	e15	e42	10	7.0	11
22	9.5	2.0	5.3	2.6	.39	.01	e40	e9.0	e33	8.8	9.3	11
23	9.6	1.9	20	2.4	1.1	.00	e35	e7.0	e30	8.4	13	7.2
24	7.5	3.1	11	2.2	1.5	.00	e25	e6.0	e180	8.0	10	5.5
25	6.2	33	14	1.9	.78	.01	e30	e5.2	e40	7.5	6.6	e60
26	18	6.5	8.5	1.8	.47	9.1	e17	e40	e50	9.2	4.5	e25
27	9.0	14	5.4	1.6	1.5	17	e7.5	e12	e28	7.9	10	e9.0
28	5.1	74	8.8	1.5	1.9	3.9	e8.0	e6.0	e32	6.4	13	e8.5
29	4.8	70	16	1.4	---	6.8	e5.0	e7.5	e28	26	7.7	e7.0
30	4.7	19	35	1.4	---	18	e3.8	e10	e33	9.4	10	e6.0
31	4.7	---	26	1.2	---	37	---	e23	---	7.0	5.7	---
TOTAL	608.7	400.3	424.3	211.4	21.68	98.45	430.2	380.7	1052.0	566.6	228.0	306.3
MEAN	19.6	13.3	13.7	6.82	.77	3.18	14.3	12.3	35.1	18.3	7.35	10.2
MAX	186	74	38	48	1.9	37	40	40	180	57	13	60
MIN	4.7	1.9	4.0	1.2	.37	.00	2.6	4.0	7.0	6.4	3.4	3.2
AC-FT	1210	794	842	419	43	195	853	755	2090	1120	452	608

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1998, BY WATER YEAR (WY)

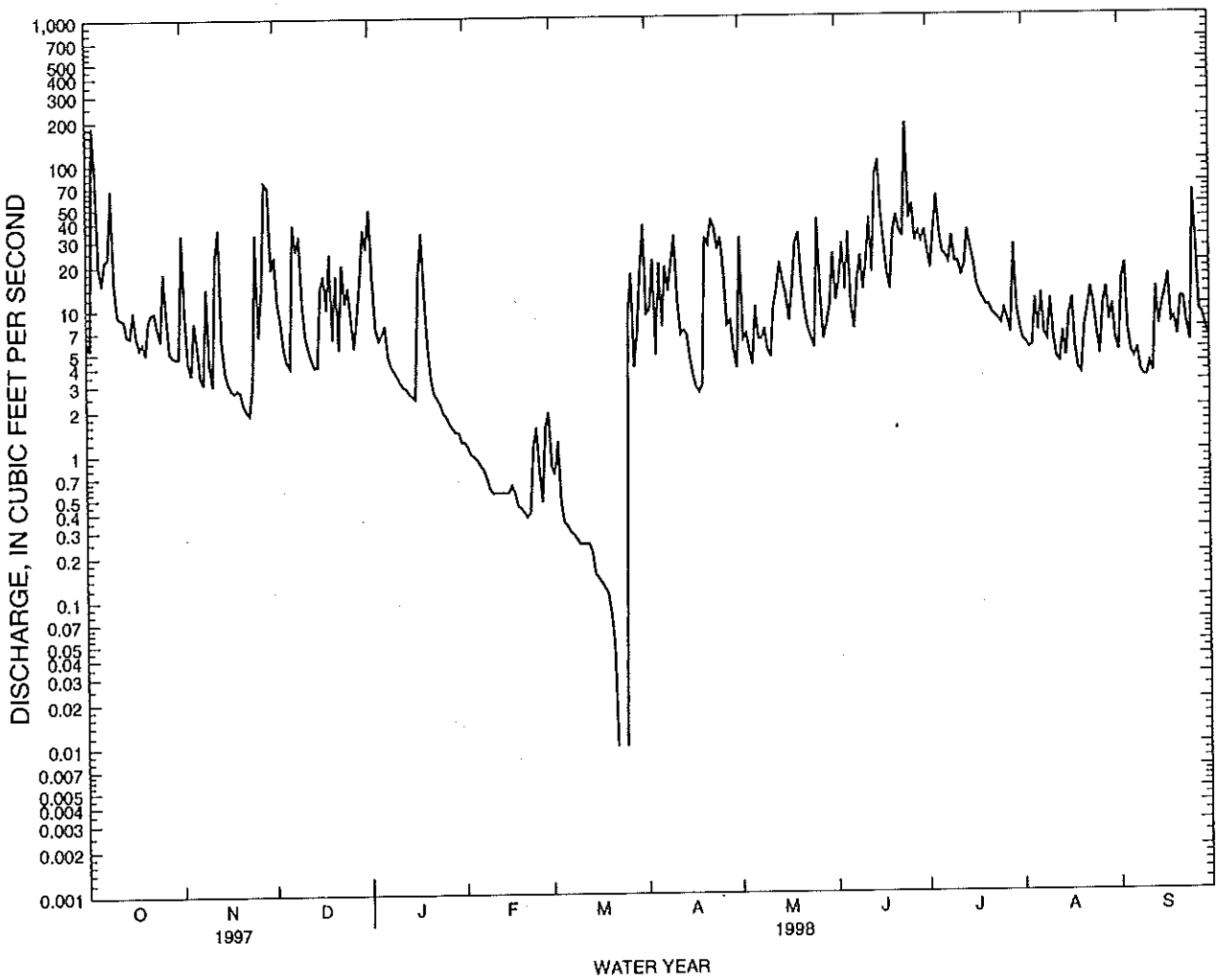
MEAN	17.2	28.0	21.7	19.6	16.4	26.5	30.2	20.9	17.4	26.2	18.3	14.7
MAX	38.0	107	61.7	55.2	99.7	104	90.1	64.9	46.2	60.9	53.7	35.7
(WY)	1967	1966	1988	1989	1969	1980	1963	1963	1987	1989	1967	1990
MIN	.32	3.54	2.07	.38	.11	.66	2.45	.51	3.40	4.25	3.04	1.43
(WY)	1985	1963	1990	1986	1986	1983	1992	1992	1968	1968	1971	1975

e Estimated

HAWAII, ISLAND OF OAHU

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

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1961 - 1998	
ANNUAL TOTAL	8375.8		4728.63			
ANNUAL MEAN	22.9		13.0		21.3	
HIGHEST ANNUAL MEAN					37.2	1982
LOWEST ANNUAL MEAN					11.1	1984
HIGHEST DAILY MEAN	345	Apr 3	186	Oct 3	1050	Feb 1 1969
LOWEST DAILY MEAN	1.9	Nov 23	.00	Mar 23	.00	Dec 24 1960
ANNUAL SEVEN-DAY MINIMUM	2.4	Feb 16	.04	Mar 19	.00	Jan 19 1977
ANNUAL RUNOFF (AC-FT)	16610		9380		15420	
10 PERCENT EXCEEDS	49		31		49	
50 PERCENT EXCEEDS	11		7.1		8.9	
90 PERCENT EXCEEDS	3.8		.59		1.8	



HAWAII, ISLAND OF OAHU

16211600 MAKAHA STREAM NEAR MAKAHA

LOCATION.--Lat 21°30′16″, long 158°10′59″, Hydrologic Unit 20060000, on right bank, 1.5 mi northeast of Kaneaki Heiau, and 3.4 mi northeast of Makaha.

DRAINAGE AREA.--2.31 mi^2.

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 above mean sea level (Waianae Plantation benchmark).

REMARKS.--Records computed by Vaughn Kunishige. Records good. Honolulu Board of Water Supply wells upstream of station may influence flows at gage. Recording rain gage located at station.

AVERAGE DISCHARGE.--39 years (water years 1960-98), 1.86 ft^3/s (1,350 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,680 ft^3/s, November 14, 1996, gage height, 9.54 ft, from high-water profile of slope-area measurement; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 17	1530	*23	*1.73				

Minimum discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	2.5	2.6	3.4	2.4	.33	.37	1.2	.24	.75	.01	.00
2	.02	.77	4.3	2.2	1.1	.33	.44	.97	.21	.58	.01	.11
3	.04	.69	4.2	1.6	.81	.33	1.2	1.1	.19	.48	.00	.01
4	.03	.49	2.2	2.3	1.4	.33	.68	1.1	.21	.37	.00	.01
5	.03	.41	1.6	2.0	.97	.31	.57	.84	.17	.41	.00	.00
6	.04	.35	1.5	2.0	.76	.28	.51	1.0	.12	.54	.00	.00
7	.15	.33	2.3	1.3	.66	.27	.48	.97	.11	.52	.00	.00
8	.20	.33	1.7	1.0	.60	.25	.44	.83	.10	.56	.00	.00
9	.33	1.1	1.4	.99	.56	.25	1.4	.71	.09	.59	.00	.00
10	.33	.58	1.0	.91	.56	.25	1.1	.65	.07	.46	.01	.00
11	1.0	.49	1.4	.83	.55	.24	1.4	.61	.07	.35	.04	.00
12	1.1	.43	1.0	.74	.47	.22	.80	.70	.07	.29	.06	.00
13	1.1	.55	.94	.68	.45	.21	.73	.90	.06	.30	.05	.00
14	.82	.53	.79	.64	.68	.19	.75	.88	.06	.29	.03	.00
15	.71	.46	.71	.60	.66	.18	.60	.92	.07	.32	.01	.00
16	.66	.37	.85	.58	.54	.17	.49	.72	.11	.35	.05	.00
17	.60	.29	1.1	6.8	.56	.15	.41	.59	.24	.28	.02	.00
18	.53	.27	.84	6.5	.48	.12	.35	.73	.25	.20	.00	.00
19	.47	.19	.69	3.6	.44	.12	.30	1.2	.22	.16	.00	.00
20	.40	2.0	.61	2.4	.41	.11	.27	.97	.20	.13	.01	.00
21	.31	.72	.56	1.7	.38	.12	.25	.78	.12	.09	.03	.00
22	.38	.60	.53	1.4	.74	.15	.21	.64	.33	.08	.03	.00
23	.35	.55	.50	1.8	.95	.14	.19	.58	.45	.07	.02	.00
24	.27	1.4	.47	1.1	.69	.13	.18	.64	.57	.05	.00	.00
25	.15	6.7	.45	.95	.54	.21	.49	.52	.61	.03	.00	.00
26	.12	1.7	.51	.86	.45	.42	1.0	.45	.56	.02	.00	.00
27	.13	2.0	.54	.81	.38	1.2	.90	.39	.60	.01	.00	.00
28	.16	3.8	.48	.83	.38	.75	1.6	.36	.58	.31	.00	.00
29	.41	2.0	.57	.81	---	.60	.91	.30	.77	.02	.00	.00
30	.40	1.8	8.7	.68	---	.54	.75	.27	1.0	.00	.00	.00
31	.06	---	6.5	.64	---	.44	---	.25	---	.00	.00	---
TOTAL	11.32	34.40	51.54	52.65	19.57	9.34	19.77	22.77	8.45	8.61	0.38	0.13
MEAN	.37	1.15	1.66	1.70	.70	.30	.66	.73	.28	.28	.012	.004
MAX	1.1	6.7	8.7	6.8	2.4	1.2	1.6	1.2	1.0	.75	.06	.11
MIN	.02	.19	.45	.58	.38	.11	.18	.25	.06	.00	.00	.00
AC-FT	22	68	102	104	39	19	39	45	17	17	.8	.3

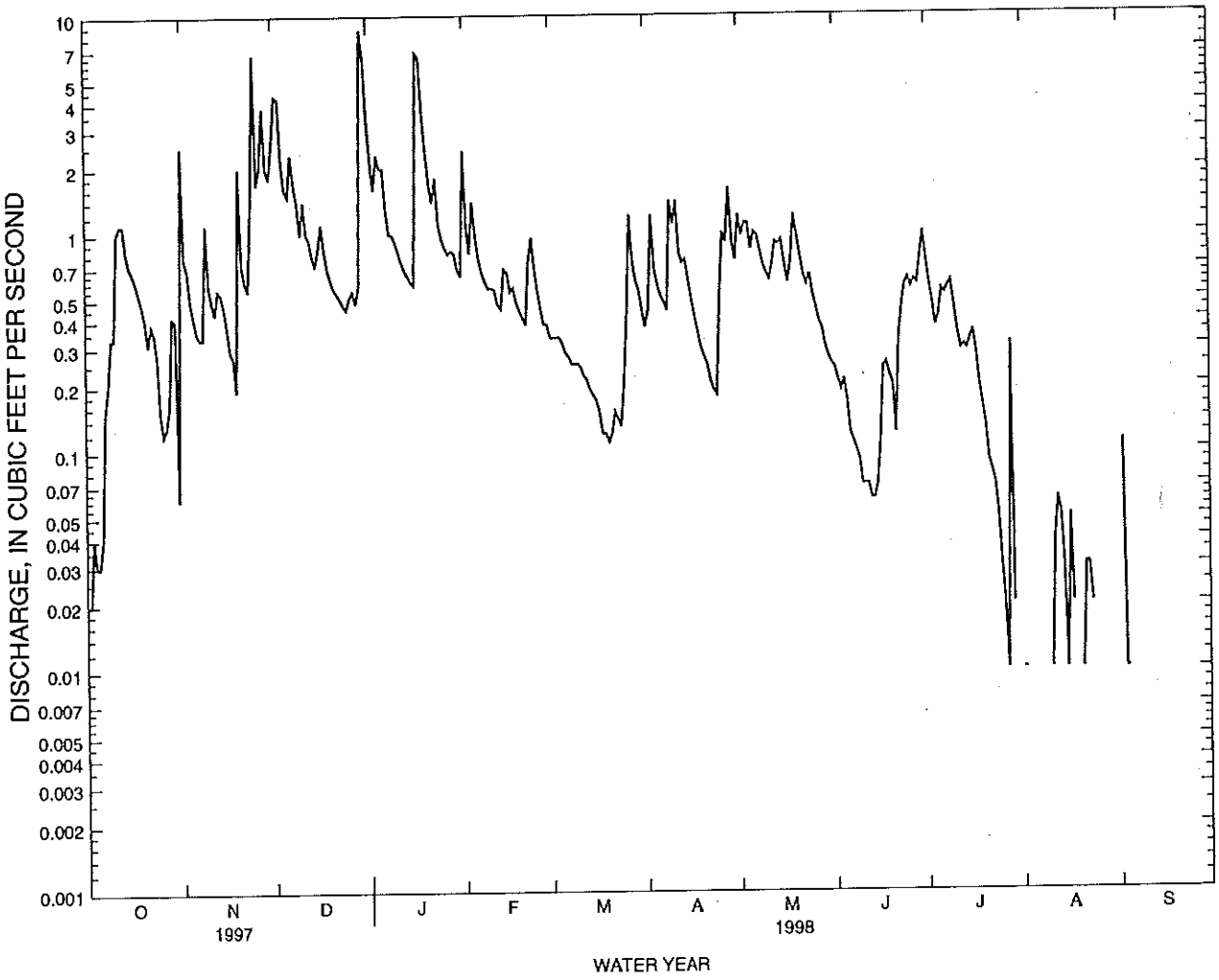
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1998, BY WATER YEAR (WY)

MEAN	.72	2.02	2.96	4.34	3.34	3.16	2.58	1.46	.63	.48	.36	.37
MAX	3.66	20.6	15.0	22.7	16.3	11.5	15.7	5.33	1.72	1.31	1.44	2.19
(WY)	1983	1997	1965	1982	1976	1962	1963	1965	1978	1986	1983	1974
MIN	.000	.000	.038	.22	.25	.18	.13	.13	.013	.005	.000	.000
(WY)	1976	1995	1995	1995	1995	1995	1993	1996	1995	1995	1995	1961

HAWAII, ISLAND OF OAHU

16211600 MAKAHA STREAM NEAR MAKAHA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1959 - 1998	
ANNUAL TOTAL	1001.53		238.93			
ANNUAL MEAN	2.74		.65		1.86	
HIGHEST ANNUAL MEAN					4.58	1997
LOWEST ANNUAL MEAN					.25	1995
HIGHEST DAILY MEAN	79	Jan 19	8.7	Dec 30	283	Feb 7 1976
LOWEST DAILY MEAN	.01	Sep 10	.00	Jul 30	.00	Sep 25 1960
ANNUAL SEVEN-DAY MINIMUM	.02	Sep 7	.00	Aug 3	.00	Aug 28 1961
ANNUAL RUNOFF (AC-FT)	1990		474		1350	
10 PERCENT EXCEEDS	5.4		1.4		3.5	
50 PERCENT EXCEEDS	.99		.44		.57	
90 PERCENT EXCEEDS	.15		.00		.05	



HAWAII, ISLAND OF OAHU

16212800 KIPAPA STREAM NEAR WAHIAWA

LOCATION.--Lat 21°28′13″, long 157°57′40″, Hydrologic Unit 20060000, on left bank 1,700 ft downstream from forest-reserve boundary, 4.9 mi southeast of Wahiawa Post Office, and 6.3 mi northeast of Waipahu.

DRAINAGE AREA.--4.29 mi^2.

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

GAGE.--Water-stage recorder. Elevation of gage is 690 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Ben Shimizu. Records fair except for August 10-25 with questionable unit value record and periods of no gage-height record which are poor. At times, a small amount of water is diverted from the gage pool for domestic use. Recording rain gage located at station.

AVERAGE DISCHARGE.--41 years (water years 1958-98), 10.8 ft^3/s (7,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,370 ft^3/s, March 21, 1991, gage height, 12.67 ft, from rating curve extended above 5,680 ft^3/s on basis of the shape of the rating; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 930 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 8	2100	*1,310	*7.69	No other peak greater than base discharge.			

Minimum discharge, no flow March 12-25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	e40	e4.0	e40	.62	.58	2.3	13	.62	9.0	.86	e1.2
2	1.4	e7.0	e8.0	e9.0	.66	.46	1.4	3.6	.62	6.6	.73	e.60
3	71	e2.5	e3.0	e5.5	.56	.37	2.8	1.7	2.2	5.8	.65	e.40
4	33	e1.7	e2.0	e3.0	.55	.30	1.4	1.9	2.2	36	.64	e.32
5	9.5	e8.0	e1.5	e7.0	.57	.33	3.8	1.4	5.1	12	.85	e.29
6	7.6	e3.0	e1.3	e3.0	.58	.27	2.9	1.7	2.5	6.8	.78	e.50
7	19	e1.8	e2.0	e2.0	.52	.12	2.0	3.9	1.2	5.5	.75	e.40
8	48	e3.0	e4.0	e1.3	.48	.08	2.2	1.8	4.4	4.7	.72	e.32
9	40	e6.0	e1.8	e1.0	.45	.13	3.6	1.2	4.7	4.9	.73	e.30
10	12	e3.0	e1.3	e1.0	.47	.17	10	.99	2.8	3.6	4.2	e.29
11	6.2	e2.0	e1.2	e.90	.48	.07	3.1	.97	1.8	3.2	2.2	e.28
12	5.0	e2.0	e1.0	e.80	.51	.00	1.7	1.9	10	2.7	1.0	e.35
13	3.4	e1.9	e.90	e.70	.50	.00	1.4	4.1	4.6	3.8	.80	e.30
14	2.6	e1.8	e.80	e.70	.60	.00	1.1	4.9	17	11	.66	e.30
15	2.4	e1.8	e.80	e.70	.74	.00	.85	3.1	22	4.2	.50	e.30
16	2.6	e1.6	e.75	1.0	.70	.00	.57	1.8	8.6	4.4	.44	e.28
17	2.2	e1.5	e.70	6.8	.69	.00	.45	1.4	4.5	2.1	.40	e.70
18	2.0	e1.4	e.80	11	.59	.00	.38	1.9	5.0	1.6	.34	e.50
19	2.2	e1.3	e1.6	5.4	.50	.00	.48	2.5	2.5	1.4	.44	e.70
20	1.9	e1.3	e1.2	2.3	.49	.00	5.4	2.8	12	1.3	.47	e1.5
21	2.0	e1.3	e1.0	1.6	.47	.00	5.7	2.2	50	1.2	.45	e.60
22	3.7	e1.3	e1.0	1.2	.73	.00	10	2.0	17	1.2	.64	e.40
23	9.2	e1.3	e1.2	1.1	1.2	.00	8.8	1.5	11	1.0	3.0	e.32
24	e1.8	e1.5	e1.1	1.1	1.0	.00	2.6	1.2	56	1.0	1.3	e.30
25	e1.7	e3.7	e2.0	.95	1.0	.00	3.1	.93	23	.95	.80	e.37
26	e3.0	e3.0	e1.3	.90	1.0	.48	3.3	.76	29	1.3	e1.0	e.30
27	e1.6	e7.0	e1.1	.87	.95	4.5	2.8	.60	21	1.3	e.65	e.60
28	e1.5	e45	e1.8	.83	.67	1.5	2.0	.58	23	1.0	e.50	e.35
29	e1.7	e8.0	e2.8	.87	---	.98	1.7	.54	21	2.2	e.40	e1.2
30	e1.5	e2.8	e3.0	.79	---	1.2	1.0	.51	15	1.9	e.32	e.45
31	e1.4	---	e7.0	.69	---	4.7	---	.48	---	1.2	e.30	---
TOTAL	302.8	167.5	61.95	114.00	18.28	16.24	88.83	67.86	380.34	144.85	27.52	14.72
MEAN	9.77	5.58	2.00	3.68	.65	.52	2.96	2.19	12.7	4.67	.89	.49
MAX	71	45	8.0	40	1.2	4.7	10	13	56	36	4.2	1.5
MIN	1.4	1.3	.70	.69	.45	.00	.38	.48	.62	.95	.30	.28
AC-FT	601	332	123	226	36	32	176	135	754	287	55	29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1998, BY WATER YEAR (WY)

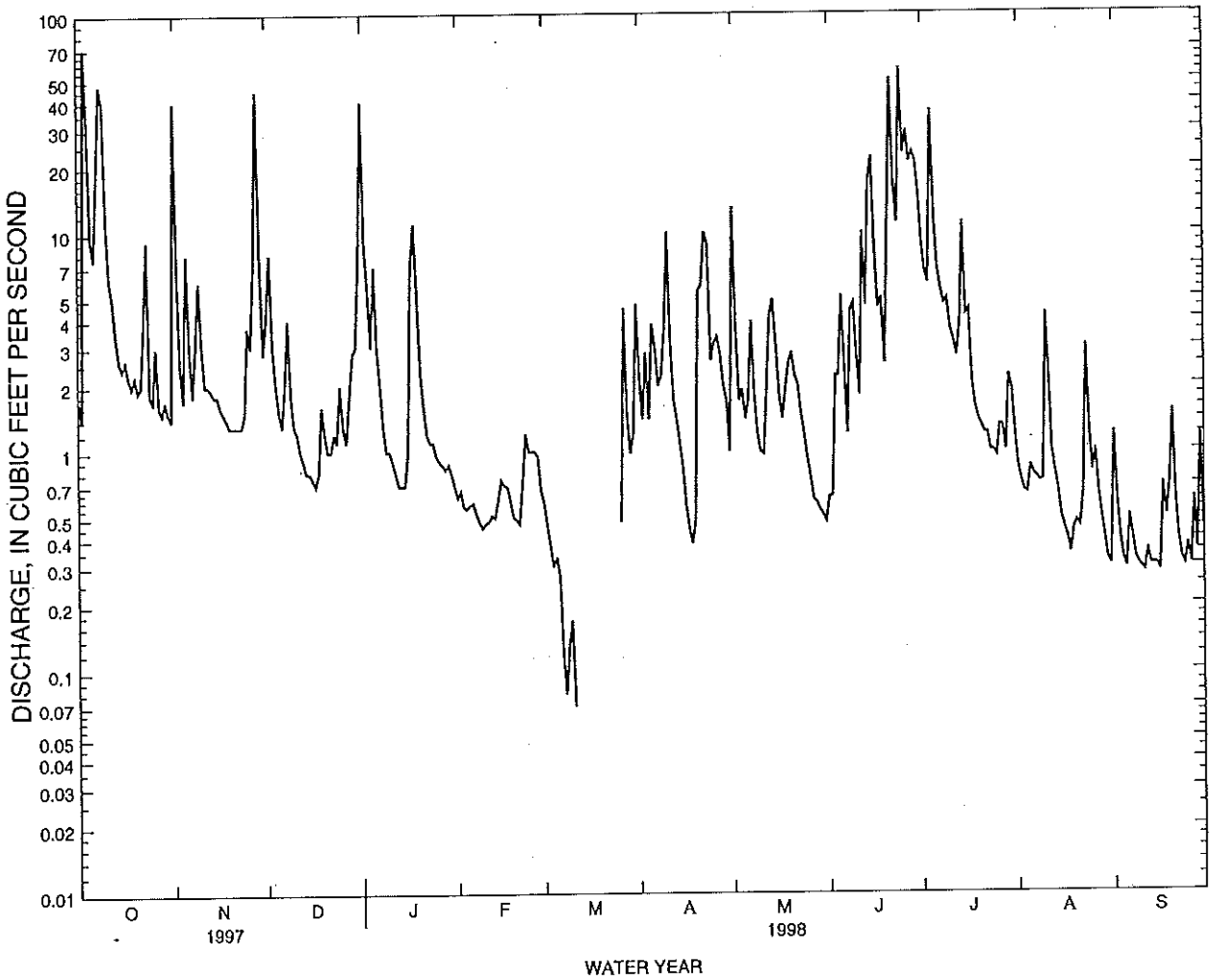
MEAN	10.1	14.9	12.2	11.0	9.92	16.2	14.9	9.17	5.84	9.88	8.21	6.10
MAX	49.6	61.8	42.2	32.1	54.4	98.4	60.9	34.0	21.9	28.1	37.5	23.6
(WY)	1982	1966	1988	1989	1969	1991	1963	1965	1978	1989	1958	1994
MIN	.84	.23	.83	.17	.19	.021	.33	.39	.16	.47	.30	.49
(WY)	1958	1963	1990	1977	1978	1983	1966	1992	1959	1968	1971	1998

e Estimated

HAWAII, ISLAND OF OAHU

16212800 KIPAPA STREAM NEAR WAHIAWA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1957 - 1998	
ANNUAL TOTAL	3142.54		1404.89			
ANNUAL MEAN	8.61		3.85		10.8	
HIGHEST ANNUAL MEAN					25.2	1982
LOWEST ANNUAL MEAN					3.85	1998
HIGHEST DAILY MEAN	146	Jan 3	71	Oct 3	852	Apr 15 1963
LOWEST DAILY MEAN	.38	Feb 21	.00	Mar 12	.00	Jun 18 1959
ANNUAL SEVEN-DAY MINIMUM	.56	Feb 16	.00	Mar 12	.00	Jun 18 1959
ANNUAL RUNOFF (AC-FT)	6230		2790		7800	
10 PERCENT EXCEEDS	19		8.2		24	
50 PERCENT EXCEEDS	3.0		1.3		2.8	
90 PERCENT EXCEEDS	1.2		.33		.35	



HAWAII, ISLAND OF OAHU

16213000 WAIKELE STREAM AT WAIPAHU

LOCATION.--Lat 21°23′11″, long 158°00′49″, Hydrologic Unit 20060000, on left bank 300 ft upstream from bridge on Highway 90, and 0.3 mi southwest of sugar refinery at Waipahu.

DRAINAGE AREA.--45.7 mi^2.

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 above mean sea level (by stadia survey). Prior to July 1, 1960, at site 300 ft downstream at datum 1.30 ft higher.

REMARKS.--Records computed by Ben Shimizu. Records good except for periods of no gage height record which are poor.

AVERAGE DISCHARGE.--45 years (water years 1953-59, 1961-98), 40.6 ft^3/s (29,410 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft^3/s, November 28, 1954, gage height, 14.82 ft, site and datum then in use, from rating curve extended above 730 ft^3/s on basis of slope-area measurement of peak flow; no flow for part of February 25, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 9	0100	*541	*3.74				

Minimum discharge, 15 ft^3/s on several days in August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	e100	e45	98	20	18	20	27	17	39	17	16
2	20	e37	e33	68	20	18	24	33	17	32	16	16
3	61	e25	e28	33	19	18	44	22	17	29	16	28
4	129	e22	e26	29	19	18	22	20	17	57	16	23
5	44	e32	e24	32	19	18	20	20	17	40	16	18
6	31	e24	e23	32	18	18	23	19	18	32	16	16
7	37	e22	e40	26	18	18	21	21	17	27	16	16
8	32	e21	e37	23	19	18	20	23	16	28	16	16
9	132	e27	e31	22	19	18	80	20	18	35	17	16
10	48	e22	e27	21	19	18	96	19	19	28	16	16
11	35	e21	e26	21	19	18	37	18	18	24	19	16
12	26	e21	24	21	19	18	31	22	17	23	18	16
13	26	e21	22	20	18	18	41	30	24	22	17	16
14	23	e20	21	20	18	18	24	28	25	28	16	16
15	22	e20	21	20	18	18	22	24	39	31	16	16
16	21	e20	21	20	18	18	20	22	38	31	15	16
17	21	e20	23	20	18	17	19	20	24	24	15	16
18	21	e19	25	39	18	17	19	19	21	21	17	16
19	e20	e19	29	30	18	17	18	20	21	20	16	16
20	e20	e19	28	25	18	18	18	20	20	19	16	16
21	e20	e19	26	22	18	18	20	21	136	18	16	16
22	e19	e18	27	21	19	18	21	22	66	18	15	16
23	e30	e18	23	21	19	18	38	20	45	17	16	17
24	e24	e18	22	20	19	18	26	19	79	17	15	16
25	e23	e18	28	19	18	18	21	18	69	17	15	16
26	e22	e17	24	19	18	18	20	18	48	17	16	15
27	e21	e40	22	19	19	18	22	18	69	16	15	15
28	e21	e105	23	19	19	18	20	17	52	16	15	16
29	e20	e40	42	19	---	18	19	17	86	16	22	16
30	e20	e32	59	19	---	18	18	17	56	19	17	15
31	e19	---	58	19	---	18	---	17	---	19	16	---
TOTAL	1030	857	908	837	521	555	844	651	1126	780	505	499
MEAN	33.2	28.6	29.3	27.0	18.6	17.9	28.1	21.0	37.5	25.2	16.3	16.6
MAX	132	105	59	98	20	18	96	33	136	57	22	28
MIN	19	17	21	19	18	17	18	17	16	16	15	15
AC-FT	2040	1700	1800	1660	1030	1100	1670	1290	2230	1550	1000	990

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1998, BY WATER YEAR (WY)

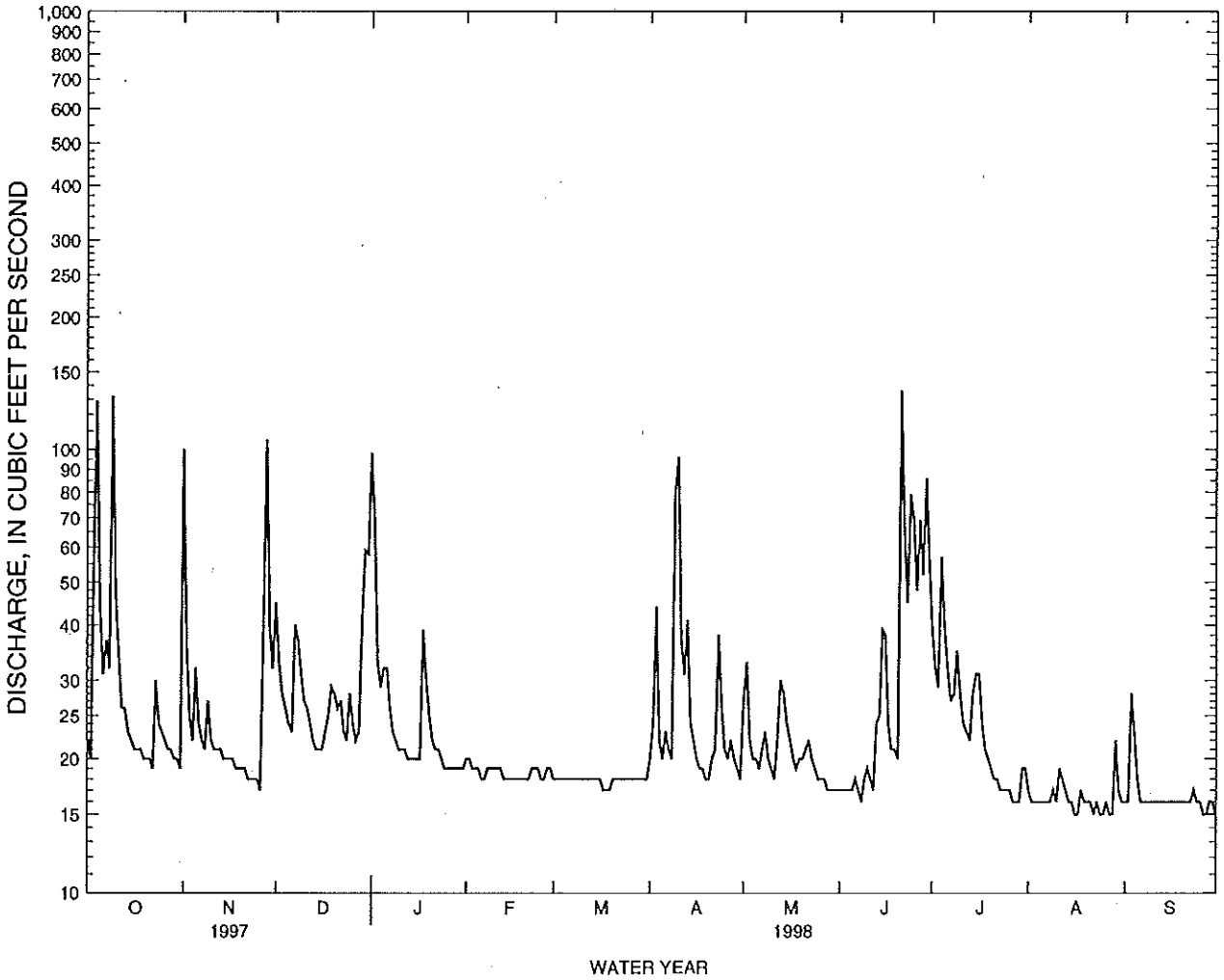
MEAN	33.0	50.4	49.5	60.6	54.4	54.4	49.7	32.8	24.3	29.5	26.0	22.6
MAX	97.8	198	146	222	179	195	235	99.3	51.5	76.8	90.0	68.1
(WY)	1992	1966	1966	1969	1955	1991	1963	1965	1980	1989	1958	1994
MIN	7.22	12.2	13.3	14.7	7.72	6.13	18.4	14.9	10.6	9.08	7.50	6.28
(WY)	1978	1954	1954	1986	1978	1978	1961	1954	1981	1985	1984	1975

e Estimated

HAWAII, ISLAND OF OAHU

16213000 WAIKELE STREAM AT WAIPAHU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1953 - 1998	
ANNUAL TOTAL	14676		9113			
ANNUAL MEAN	40.2		25.0		40.6	
HIGHEST ANNUAL MEAN					77.3	1969
LOWEST ANNUAL MEAN					18.5	1954
HIGHEST DAILY MEAN	1010	Jan 3	136	Jun 21	2590	Mar 21 1991
LOWEST DAILY MEAN	17	Nov 26	15	Aug 16	.61	Feb 25 1978
ANNUAL SEVEN-DAY MINIMUM	18	May 29	15	Aug 22	2.5	Feb 24 1978
ANNUAL RUNOFF (AC-FT)	29110		18080		29410	
10 PERCENT EXCEEDS	67		38		63	
50 PERCENT EXCEEDS	25		20		24	
90 PERCENT EXCEEDS	19		16		12	



HAWAII, ISLAND OF OAHU

16216000 WAIAWA STREAM NEAR PEARL CITY

LOCATION.--Lat 21°23′57″, long 157°58′51″, Hydrologic Unit 20060000, on left bank 100 ft upstream from lower bridge on Highway 90, 0.6 mi northwest of Pearl City, and 2.0 mi northeast of Waipahu.

DRAINAGE AREA.--26.4 mi^2.

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

REVISED RECORDS.--WSP 1569: Drainage area, WDR HI-90-1: 1982-89 (M).

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

REMARKS.--Records computed by Ben Shimizu. Records poor. Occasional small irrigation diversion and return flow upstream.

AVERAGE DISCHARGE.--46 years (water years 1953-98), 34.0 ft^3/s (24,640 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,900 ft^3/s, October 28, 1981, gage height, 22.46 ft, from rating curve extended above 1,100 ft^3/s on basis of slope-area measurements at gage heights 17.1 ft and 20.56 ft; minimum, 1.1 ft^3/s on several days in 1984 and 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 3	2045	*2,200	*8.70				

Minimum discharge, 1.3 ft^3/s, August 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	169	25	166	2.0	1.6	2.1	2.4	1.8	67	1.9	1.7
2	5.7	15	11	26	2.0	1.6	3.2	2.2	1.7	28	1.9	1.7
3	340	5.5	5.5	4.7	2.0	1.7	2.3	2.2	1.7	15	2.0	1.8
4	134	4.8	4.4	3.4	2.0	1.7	1.9	2.2	1.7	131	1.9	1.7
5	50	17	4.3	8.5	2.0	1.6	1.8	2.1	1.7	48	1.7	1.7
6	30	7.8	4.3	4.4	2.0	1.6	1.9	2.1	3.9	22	1.5	2.0
7	40	5.2	11	3.2	2.0	1.6	1.9	2.1	2.0	9.1	1.7	2.3
8	21	5.5	11	3.2	2.0	2.3	2.0	e2.2	1.7	6.5	1.9	2.3
9	110	12	8.3	3.2	2.0	1.9	14	2.3	1.7	25	1.9	2.2
10	26	5.8	4.9	2.9	2.0	1.9	32	1.9	1.8	14	1.9	2.2
11	31	5.1	3.9	2.7	1.9	1.9	8.1	1.9	1.8	6.1	1.8	2.1
12	12	5.4	3.8	2.6	1.9	1.9	4.8	2.5	1.8	3.6	2.2	2.0
13	6.8	5.0	4.0	2.6	1.9	1.9	4.5	7.0	3.5	3.2	1.7	1.9
14	6.0	4.7	4.0	2.5	1.8	1.9	2.3	12	14	9.3	1.6	1.9
15	5.7	4.6	4.1	2.4	1.8	1.9	2.2	11	66	15	1.5	1.8
16	5.9	4.5	4.3	2.4	1.8	1.9	2.2	5.6	48	12	1.5	1.8
17	6.0	4.4	4.1	2.4	1.8	2.0	2.2	3.2	12	6.7	1.4	1.8
18	5.7	4.4	4.1	7.0	1.8	2.0	2.1	2.4	9.9	5.3	1.4	1.8
19	5.5	4.1	4.5	5.6	1.8	1.8	2.1	2.1	6.2	3.8	1.4	1.8
20	5.7	4.1	3.8	3.8	1.8	1.7	2.1	1.9	4.4	3.1	1.4	1.8
21	5.7	4.1	3.7	2.7	1.7	1.8	2.2	1.7	373	2.7	1.3	1.8
22	5.5	4.1	3.8	2.4	1.8	1.8	2.2	2.3	158	2.2	1.5	1.8
23	14	4.1	3.7	2.2	1.8	1.7	2.2	2.0	66	2.1	1.5	1.8
24	6.7	4.1	3.8	2.2	1.7	1.7	2.2	1.9	233	2.3	1.5	1.8
25	4.6	4.7	3.8	2.2	1.6	1.8	2.2	1.8	153	2.5	1.7	1.9
26	4.4	4.7	3.7	2.2	1.7	1.8	2.2	1.8	141	2.6	1.8	2.0
27	4.4	18	3.8	2.2	1.7	1.9	2.3	1.8	231	2.4	1.8	2.0
28	4.5	192	4.4	2.1	1.7	1.8	2.3	1.7	140	2.0	1.7	2.0
29	4.4	22	14	2.0	---	1.9	2.3	1.8	255	2.0	1.7	1.9
30	4.5	16	16	2.0	---	2.1	2.3	1.7	152	2.1	1.8	1.9
31	4.5	---	42	2.0	---	2.0	---	1.7	---	1.9	1.8	---
TOTAL	916.1	567.7	233.0	283.7	52.0	56.7	118.1	91.5	2089.3	458.5	52.3	57.2
MEAN	29.6	18.9	7.52	9.15	1.86	1.83	3.94	2.95	69.6	14.8	1.69	1.91
MAX	340	192	42	166	2.0	2.3	32	12	373	131	2.2	2.3
MIN	4.4	4.1	3.7	2.0	1.6	1.6	1.8	1.7	1.7	1.9	1.3	1.7
AC-FT	1820	1130	462	563	103	112	234	181	4140	909	104	113

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1998, BY WATER YEAR (WY)

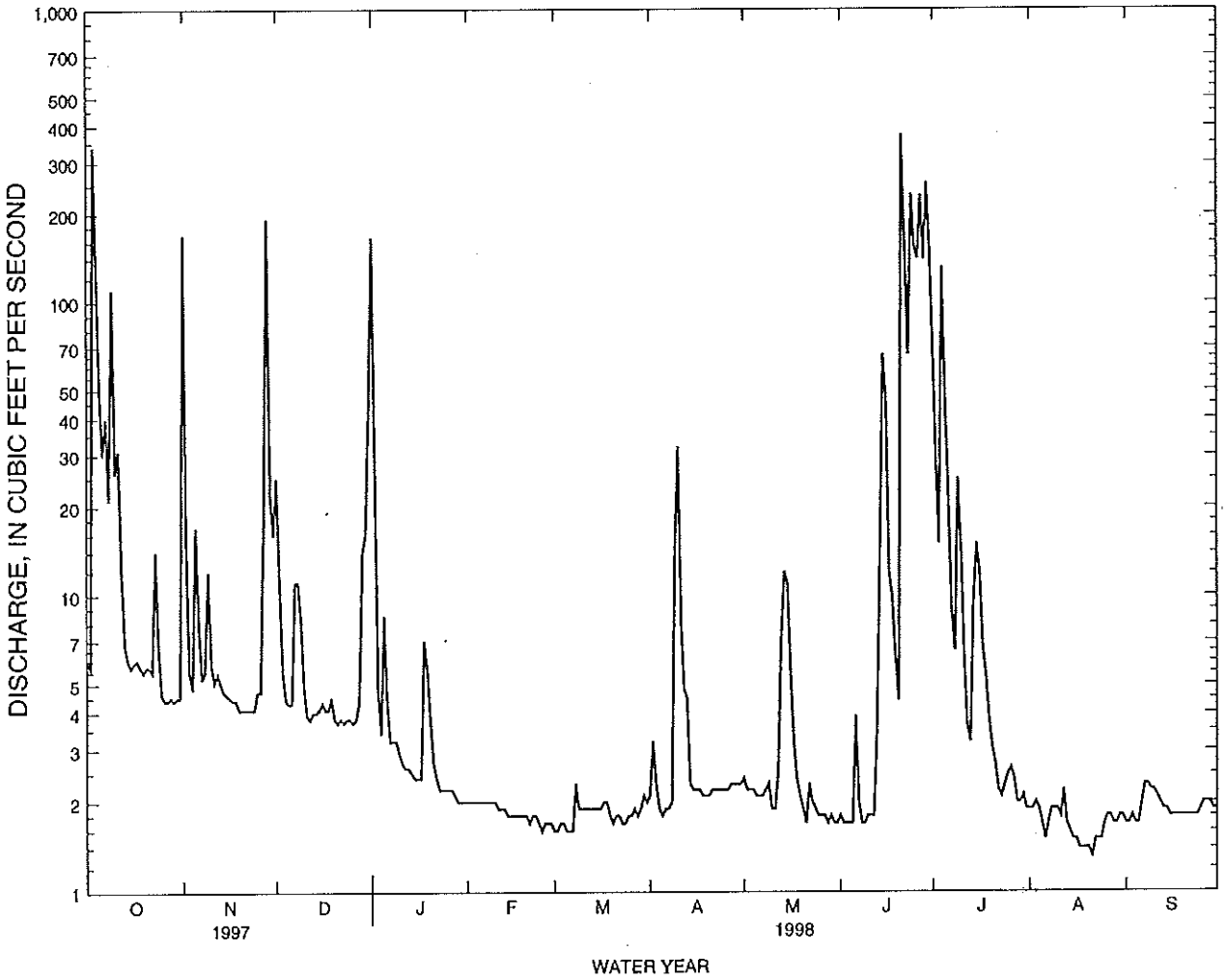
MEAN	29.3	54.9	44.0	45.0	38.0	53.3	41.0	23.6	15.7	27.0	21.3	14.6
MAX	131	295	351	199	208	336	241	131	72.9	149	128	104
(WY)	1967	1997	1988	1969	1955	1980	1974	1965	1987	1970	1982	1992
MIN	1.55	2.54	1.92	1.65	1.66	1.56	1.75	1.55	1.43	1.40	1.28	1.28
(WY)	1985	1990	1984	1986	1986	1993	1992	1996	1984	1984	1984	1984

e Estimated

HAWAII, ISLAND OF OAHU

16216000 WAIAWA STREAM NEAR PEARL CITY

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1952 - 1998	
ANNUAL TOTAL	10086.0		4976.1			
ANNUAL MEAN	27.6		13.6		34.0	
HIGHEST ANNUAL MEAN					80.8	1982
LOWEST ANNUAL MEAN					7.56	1984
HIGHEST DAILY MEAN	1520	Jan 3	373	Jun 21	5150	Mar 24 1994
LOWEST DAILY MEAN	2.0	Jun 3	1.3	Aug 21	1.1	May 18 1993
ANNUAL SEVEN-DAY MINIMUM	2.1	May 29	1.4	Aug 15	1.1	May 25 1993
ANNUAL RUNOFF (AC-FT)	20010		9870		24640	
10 PERCENT EXCEEDS	46		17		47	
50 PERCENT EXCEEDS	6.1		2.3		6.5	
90 PERCENT EXCEEDS	2.6		1.7		2.2	



HAWAII, ISLAND OF OAHU

16225800 NORTH HALAWA STREAM NEAR KANEOHE

LOCATION.--Lat 21°24′33″, long 157°52′06″, Hydrologic Unit 2006000 (Kaneohe quadrangle, 1968, 1:24,000), on right bank, 4.1 mi west of Kaneohe Post Office, and 4.4 mi east of Aiea High School.

DRAINAGE AREA.--1.64 mi^2.

PERIOD OF RECORD.--April 1991 to current year.

REVISED RECORDS.--WDR HI-95-1: 1992-94 (M).

GAGE.--Water-stage recorder. Gage datum is 646.52 ft above mean sea level (by stadia survey).

REMARKS.--Records computed by A.H.M. Okihara. Records good. Suspended sediment data are collected at this site.

AVERAGE DISCHARGE.--7 years (water years 1992-98), 2.59 ft^3/s (1,880 acre ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 470 ft^3/s, October 16, 1991, gage height, 6.94 ft, no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 9	1445	271	5.26	Nov. 1	1015	296	5.44

Minimum discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	36	6.5	33	.07	.01	.00	.01	.00	1.9	.00	.00
2	2.6	1.8	1.4	5.4	.06	.02	.00	.00	.00	.92	.00	.78
3	32	.68	.67	2.1	.06	.00	.00	.00	.03	1.3	.00	.55
4	16	.58	.32	1.5	.05	.00	.00	.00	.42	5.6	.00	.03
5	4.5	16	.21	4.9	.05	.00	.00	.00	1.5	3.0	.00	.00
6	2.3	1.1	.19	1.4	.04	.00	.00	.01	.12	1.2	.00	.00
7	7.0	.57	2.8	.81	.03	.00	.00	.00	.01	.68	.00	.00
8	3.3	6.5	1.2	.56	.03	.00	.01	.00	.19	1.4	.00	.00
9	26	9.0	1.5	.43	.03	.00	.01	.00	.11	1.9	.06	.00
10	4.2	.96	.63	.33	.02	.00	.01	.00	.02	.85	2.0	.00
11	12	1.5	.31	.26	.01	.00	.00	.00	.00	.50	.09	.00
12	2.2	2.0	.18	.23	.00	.00	.00	.00	.69	.25	.01	.00
13	1.2	2.6	.11	.20	.00	.00	.00	.00	.37	.35	.00	.00
14	.83	.72	.09	.17	.00	.00	.00	.00	.77	1.3	.00	.00
15	.68	.43	.07	.15	.00	.00	.00	.00	2.0	1.9	.00	.00
16	1.1	.31	.57	.14	.00	.00	.00	.00	.87	.92	.00	.00
17	.54	.23	.51	8.7	.00	.00	.00	.00	.78	.38	.00	.00
18	3.1	.26	14	4.1	.00	.00	.00	.00	.46	.18	.00	.00
19	.72	.21	6.1	1.3	.00	.00	.00	.00	.10	.12	.00	.00
20	.40	.15	1.2	.67	.00	.00	.00	.00	4.9	.08	.00	.00
21	.39	.11	.62	.42	.00	.00	.00	.00	12	.06	.00	4.0
22	.79	.09	.38	.29	.01	.00	.00	.00	4.6	.04	.11	.23
23	1.3	.10	6.3	.22	.00	.00	.02	.00	1.8	.02	.09	.01
24	.67	.13	1.8	.17	.00	.00	.01	.00	11	.00	.00	.00
25	.35	.42	1.5	.14	.00	.00	.00	.00	2.8	.00	.00	.00
26	.71	.10	.78	.12	.08	.00	.00	.00	8.0	.01	.00	.00
27	.47	9.3	.76	.11	.37	.00	.00	.00	4.3	.00	.00	.00
28	.23	4.0	6.3	.11	.03	.00	.00	.00	3.2	.01	.00	.00
29	.16	1.4	2.4	.09	---	.00	.00	.00	5.4	.00	.00	.00
30	.11	2.4	30	.08	---	.00	.00	.00	4.7	.00	.00	.00
31	.15	---	18	.07	---	.00	---	.00	---	.00	.00	---
TOTAL	126.19	99.65	107.40	68.17	0.94	0.03	0.06	0.02	71.14	24.87	2.36	5.60
MEAN	4.07	3.32	3.46	2.20	.034	.001	.002	.001	2.37	.80	.076	.19
MAX	32	36	30	33	.37	.02	.02	.01	12	5.6	2.0	4.0
MIN	.11	.09	.07	.07	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	250	198	213	135	1.9	.06	.1	.04	141	49	4.7	11

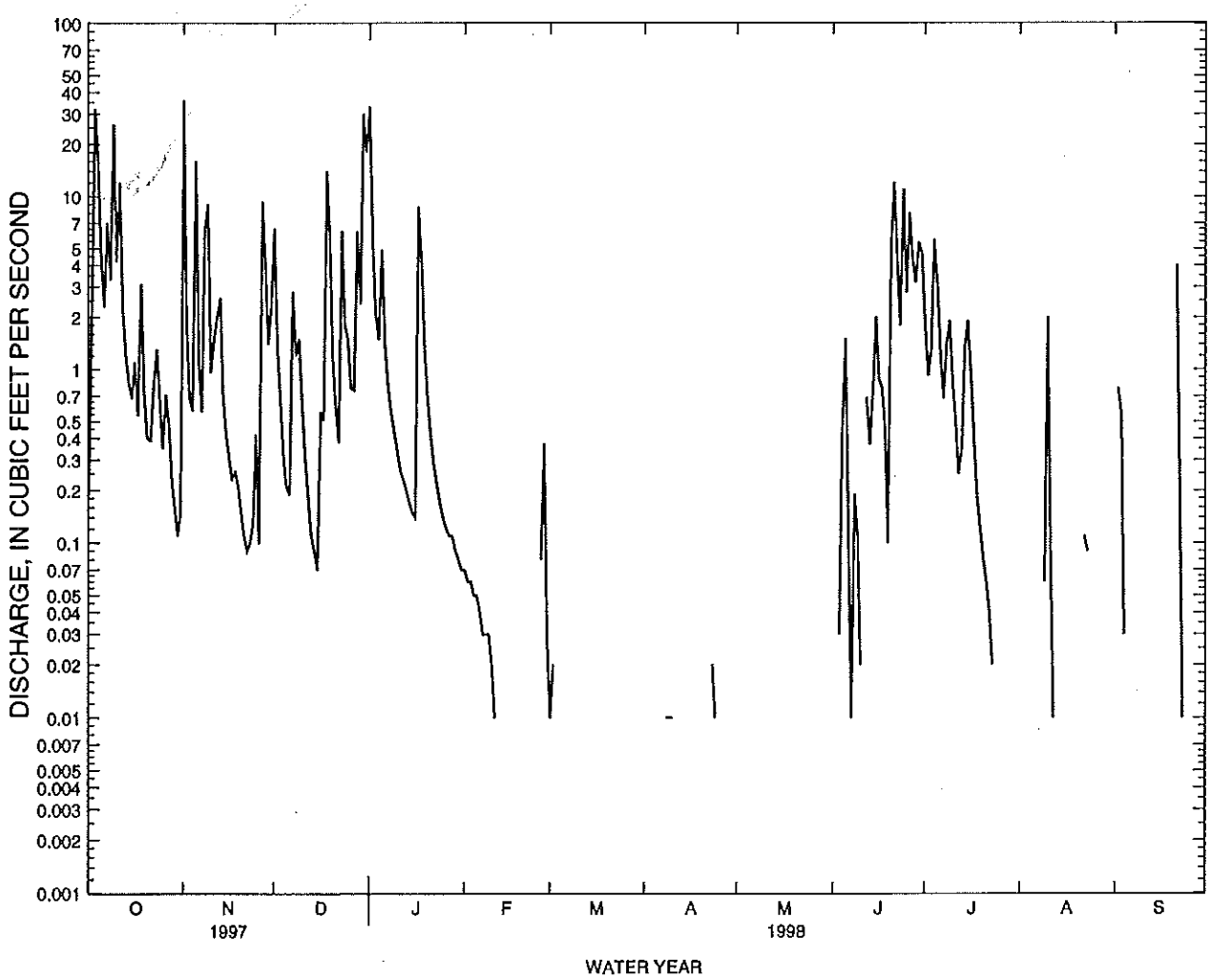
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1998, BY WATER YEAR (WY)

MEAN	2.89	4.46	2.71	3.12	1.69	3.18	2.54	1.02	1.58	2.97	2.10	3.01
MAX	4.48	9.63	6.89	8.09	7.87	12.0	5.82	4.53	2.85	7.07	5.97	12.3
(WY)	1992	1997	1993	1994	1994	1994	1997	1997	1994	1993	1991	1992
MIN	.097	.56	1.28	.81	.034	.001	.002	.001	.11	.80	.076	.19
(WY)	1997	1992	1994	1992	1998	1998	1998	1998	1992	1998	1998	1998

HAWAII, ISLAND OF OAHU

16225800 NORTH HALAWA STREAM NEAR KANEOHE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1991 - 1998	
ANNUAL TOTAL	1197.93		506.43			
ANNUAL MEAN	3.28		1.39		2.59	
HIGHEST ANNUAL MEAN					4.28	1994
LOWEST ANNUAL MEAN					1.39	1998
HIGHEST DAILY MEAN	46	Jan 3	36	Nov 1	213	Mar 24 1994
LOWEST DAILY MEAN	.03	Feb 21	.00	Feb 12	.00	Nov 28 1991
ANNUAL SEVEN-DAY MINIMUM	.07	Feb 15	.00	Feb 12	.00	Jan 24 1992
ANNUAL RUNOFF (AC-FT)	2380		1000		1870	
10 PERCENT EXCEEDS	9.1		3.2		6.1	
50 PERCENT EXCEEDS	.96		.05		.43	
90 PERCENT EXCEEDS	.17		.00		.00	



PERIOD OF RECORD.--April 1991 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: April 1991 to current year.

INSTRUMENTATION.--Automatic pumping sediment sampler since September 1991.

REMARKS.--Samples for water years 1995-97 with concentrations of about 1,000 mg/L and higher were analyzed using method 2540D (Standard Methods, 19th edition, 1995) for total suspended solids.

Water year 1997: Sediment records computed by A.H.M. Okihara. Records fair.

Water year 1998: Sediment records computed by A.H.M. Okihara. Records fair.

EXTREMES FOR PERIOD OF RECORD.--
Water year 1997:
Sediment Concentrations: Maximum daily mean 5,620 mg/L (estimated), September 3, 1992; no flow on many days in 1992-97.
Sediment Discharge: Maximum daily, 979 tons (estimated), September 3, 1992; no flow on many days in 1992-97.
Water year 1998:
Sediment Concentrations: Maximum daily mean 5,620 mg/L (estimated), September 3, 1992; no flow on many days in 1992-98.
Sediment Discharge: Maximum daily, 979 tons (estimated), September 3, 1992; no flow on many days in 1992-98.

EXTREMES FOR CURRENT YEAR.--
Water year 1997:
Sediment Concentrations: Maximum daily mean, 183 mg/L, June 26; minimum daily mean, 0 mg/L on many days.
Sediment Discharge: Maximum daily, 46 tons (estimated), January 3; minimum daily, 0.0 tons on many days.
Water year 1998:
Sediment Concentrations: Maximum daily mean, 287 mg/L (estimated), October 3; minimum daily mean, 0 mg/L on many days.
Sediment Discharge: Maximum daily, 94 tons, November 1; minimum daily, 0.0 tons on many days.

HAWAII, ISLAND OF OAHU

16225800 NORTH HALAWA STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	.00	0	.00	.00	0	.00	.34	e4	.00
2	.00	0	.00	15	e42	8.2	.29	e4	.00
3	.00	0	.00	3.3	e18	.22	.26	e3	.00
4	.00	0	.00	.19	e4	.00	.27	e3	.00
5	.00	0	.00	19	e47	5.6	.50	e6	.01
6	.00	0	.00	4.5	e32	.45	.30	e4	.00
7	.00	0	.00	1.1	e12	.05	3.0	e20	.30
8	.00	0	.00	27	e92	7.6	.55	e7	.01
9	.00	0	.00	6.0	e65	1.2	.29	e4	.00
10	.00	0	.00	1.4	e23	.10	.29	e3	.00
11	.00	0	.00	.65	e8	.02	9.7	e50	2.0
12	.00	0	.00	32	e81	17	6.6	e42	.87
13	.00	0	.00	30	e137	19	1.7	e15	.07
14	.01	e1	.00	43	e151	31	1.3	e11	.04
15	.00	0	.00	20	e77	4.3	.70	e9	.02
16	.00	0	.00	32	e143	21	.40	e6	.01
17	.02	e1	.00	23	e99	7.6	.27	e4	.00
18	.00	0	.00	6.2	e40	.69	.23	e3	.00
19	1.8	e11	.28	2.9	e29	.23	.22	e3	.00
20	1.1	e10	.04	1.8	e21	.11	.19	e3	.00
21	.05	e2	.00	1.3	e15	.05	.37	e5	.01
22	.01	e1	.00	1.0	e11	.03	.23	e4	.00
23	.00	0	.00	.85	e8	.02	.30	e6	.01
24	.00	0	.00	11	e74	3.4	.48	e9	.01
25	.00	0	.00	1.9	e15	.08	.29	e5	.00
26	.00	0	.00	1.2	e12	.04	2.8	e19	.58
27	.00	0	.00	.95	e9	.02	9.2	e47	1.5
28	.00	0	.00	.79	e7	.02	1.6	e15	.07
29	.00	0	.00	.53	e6	.01	.68	e9	.02
30	.00	0	.00	.42	e5	.01	.41	e5	.01
31	.01	e1	.00	---	---	---	1.1	e10	.06
TOTAL	3.00	---	0.32	288.98	---	128.05	44.86	---	5.60
		JANUARY			FEBRUARY			MARCH	
1	.74	e10	.02	.61	e6	.01	.09	e2	.00
2	.28	e4	.00	.30	e4	.00	.19	e3	.00
3	46	e153	46	.18	e3	.00	.27	e3	.00
4	12	e63	2.4	.14	<1	.00	8.6	e38	1.8
5	3.5	e25	.24	.14	e1	.00	20	e76	5.2
6	1.6	e18	.08	.17	e4	.00	3.5	e23	.23
7	1.0	e14	.04	2.1	e24	.16	1.7	e15	.07
8	.68	e10	.02	.43	e10	.01	.81	e10	.02
9	.49	e7	.01	.20	e3	.00	.49	e6	.01
10	.37	e5	.01	.14	e2	.00	.33	e4	.00
11	.29	e4	.00	.35	e4	.01	7.7	e41	1.6
12	.39	e7	.01	.27	e5	.00	1.5	e12	.05
13	1.2	e13	.06	.15	e8	.00	3.4	38	.64
14	.31	e4	.00	.14	12	.00	.82	e22	.06
15	.22	e3	.00	.13	e7	.00	5.3	30	1.4
16	.52	e5	.01	.10	e4	.00	1.9	28	.21
17	.47	e5	.01	.09	e2	.00	29	92	18
18	.18	e3	.00	.08	1	.00	2.7	e22	.17
19	11	e36	8.6	.05	e1	.00	1.1	e14	.04
20	6.4	e32	1.0	.04	e1	.00	.92	e9	.02
21	9.0	e47	4.3	.03	e1	.00	.53	e6	.01
22	2.6	e21	.17	7.4	e31	1.9	.33	e4	.00
23	.96	e9	.02	1.2	e14	.06	27	112	16
24	.51	e8	.01	.20	e4	.00	16	34	1.2
25	.29	e8	.01	.17	e3	.00	21	e85	5.8
26	.22	e7	.00	.18	e3	.00	6.3	e16	.30
27	.17	e7	.00	.42	e5	.01	3.3	e12	.10
28	.16	e7	.00	.14	e3	.00	5.4	e39	.77
29	1.4	e16	.12	---	---	---	2.8	e18	.14
30	2.6	e20	.28	---	---	---	1.5	e13	.05
31	2.7	e21	.21	---	---	---	1.1	e9	.03
TOTAL	108.25	---	63.63	15.55	---	2.16	175.58	---	53.92

e Estimated
< Actual value is known to be less than the value shown

HAWAII, ISLAND OF OAHU

16225800 NORTH HALAWA STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	2.7	e18	.31	.93	e9	.02	.62	e6	.01
2	29	180	28	.79	e8	.02	.68	e7	.01
3	30	30	5.0	.83	e7	.02	.67	3	.01
4	4.5	e18	.23	.67	e7	.01	.58	e3	.01
5	3.0	16	.13	13	56	7.6	.49	e5	.01
6	6.2	56	1.2	9.6	e50	1.8	.85	e7	.02
7	1.7	e12	.06	3.4	e23	.23	.68	e7	.01
8	3.2	29	.68	12	e64	4.3	5.9	e34	.77
9	1.6	e25	.14	2.3	e18	.12	2.7	e18	.19
10	6.6	18	2.1	1.2	e11	.04	2.8	e23	.19
11	11	40	2.2	2.6	e19	.25	1.1	e11	.04
12	1.6	e13	.06	5.6	e32	.56	2.6	e19	.14
13	6.6	60	2.6	1.7	e20	.10	1.2	e14	.05
14	1.4	e11	.04	27	e120	13	.87	e9	.02
15	1.0	e9	.03	28	e107	11	1.4	e12	.09
16	.80	e8	.02	13	e58	2.2	1.5	e19	.09
17	.68	e8	.01	3.8	e25	.26	2.1	e18	.15
18	.59	e7	.01	2.1	e18	.10	1.9	e13	.07
19	.52	e6	.01	1.4	e13	.05	1.4	e11	.04
20	.50	e6	.01	1.1	e9	.03	.93	e8	.02
21	.45	e5	.01	.99	e8	.02	2.1	e15	.09
22	.42	e5	.01	1.1	e9	.04	1.4	e11	.04
23	.38	e4	.01	2.3	e17	.12	2.2	e19	.14
24	5.6	110	5.7	.94	e9	.02	2.6	e18	.14
25	5.5	e41	.77	.78	e8	.02	2.2	e20	.13
26	20	33	2.0	.68	e7	.01	9.6	183	6.7
27	22	e25	2.1	.61	e7	.01	3.7	e22	.23
28	4.0	e12	.13	.55	e6	.01	2.5	e17	.11
29	1.9	e11	.06	.52	e6	.01	5.2	e30	.45
30	1.2	e10	.03	.50	e5	.01	2.2	e17	.11
31	---	---	---	.56	e5	.01	---	---	---
TOTAL	174.64	---	53.66	140.55	---	41.99	64.67	---	10.08
		JULY			AUGUST			SEPTEMBER	
1	1.2	e10	.03	.57	e2	.00	.45	e6	.01
2	1.7	e13	.07	.50	e2	.00	1.4	e12	.06
3	.92	e8	.02	.43	e1	.00	.72	e9	.02
4	1.8	e14	.09	.42	e1	.00	.27	e4	.00
5	.80	e7	.02	.39	e1	.00	.18	e4	.00
6	1.4	e12	.05	.35	1	.00	.15	e3	.00
7	.79	e8	.02	.33	e1	.00	.13	e3	.00
8	.66	e6	.01	.33	e1	.00	.14	e3	.00
9	16	76	6.8	.29	e1	.00	.12	e2	.00
10	9.3	e45	1.2	.26	e1	.00	.11	e2	.00
11	3.6	e22	.21	.27	e1	.00	.15	e2	.00
12	1.8	e13	.07	.25	e1	.00	.77	e8	.02
13	1.4	e12	.05	.27	e2	.00	2.2	e27	.24
14	.98	e10	.03	.22	e3	.00	6.9	e40	2.4
15	.96	e9	.02	.76	e7	.03	1.6	e13	.07
16	1.1	e9	.03	3.3	e24	.36	.84	e8	.02
17	.84	e9	.02	14	47	7.7	1.0	e10	.03
18	.66	e7	.01	3.3	e25	.28	.66	e6	.01
19	13	39	2.2	.91	e7	.02	1.3	e10	.04
20	1.4	e12	.05	.56	e4	.01	1.5	e13	.07
21	.94	e9	.02	1.9	e13	.17	4.0	e19	.44
22	28	88	9.7	.80	e9	.02	1.3	e11	.05
23	6.1	11	.26	.46	e7	.01	.53	e6	.01
24	1.8	e9	.04	.30	e5	.00	.25	7	.01
25	10	59	2.6	.23	e4	.00	.16	4	.00
26	2.9	e19	.16	.82	e6	.02	1.0	e10	.03
27	1.4	e11	.04	.39	e5	.01	.41	e6	.01
28	1.1	e9	.03	.30	e3	.00	5.5	e31	1.6
29	.85	e8	.02	.36	e4	.01	1.1	e10	.03
30	1.1	e9	.03	.59	e6	.01	.39	e5	.01
31	.76	e4	.01	1.1	e10	.03	---	---	---
TOTAL	115.26	---	23.91	34.96	---	8.68	35.23	---	5.18
YEAR	1201.53		397.18						

e Estimated

16225800 NORTH HALAWA STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	.19	e11	.01	36	215	94	6.5	44	1.0
2	2.6	e78	1.2	1.8	e45	.25	1.4	e10	.04
3	32	e287	35	.68	e22	.04	.67	1	.00
4	16	e172	9.3	.58	e21	.04	.32	e1	.00
5	4.5	e89	1.3	16	e165	11	.21	e1	.00
6	2.3	e50	.31	1.1	e33	.10	.19	e2	.00
7	7.0	e105	3.9	.57	e22	.03	2.8	e28	.28
8	3.3	e54	1.3	6.5	62	6.0	1.2	e12	.04
9	26	e205	39	9.0	35	1.5	1.5	e15	.06
10	4.2	e50	.58	.96	e16	.04	.63	e7	.01
11	12	e134	7.1	1.5	e32	.27	.31	e4	.00
12	2.2	e49	.31	2.0	e51	.32	.18	e2	.00
13	1.2	e34	.11	2.6	e26	.39	.11	e1	.00
14	.83	e26	.06	.72	e5	.01	.09	e1	.00
15	.68	e22	.04	.43	e5	.01	.07	e1	.00
16	1.1	47	.18	.31	e5	.00	.57	e6	.02
17	.54	e24	.04	.23	e4	.00	.51	e6	.01
18	3.1	e61	.96	.26	e11	.01	14	e82	14
19	.72	e23	.05	.21	e11	.01	6.1	e22	.42
20	.40	e15	.02	.15	e9	.00	1.2	e10	.03
21	.39	46	.06	.11	e7	.00	.62	e5	.01
22	.79	e27	.07	.09	e7	.00	.38	e3	.00
23	1.3	e38	.16	.10	e6	.00	6.3	67	4.4
24	.67	e28	.06	.13	e8	.00	1.8	e16	.09
25	.35	e14	.01	.42	e20	.03	1.5	e14	.06
26	.71	e27	.06	.10	e7	.00	.78	e9	.02
27	.47	e21	.03	9.3	75	13	.76	e9	.02
28	.23	e12	.01	4.0	e24	.41	6.3	e39	1.3
29	.16	e9	.00	1.4	e13	.05	2.4	e15	.14
30	.11	e7	.00	2.4	e18	.33	30	e54	6.8
31	.15	e8	.00	---	---	---	18	e37	2.2
TOTAL	126.19	---	101.23	99.65	---	127.84	107.40	---	30.95
		JANUARY			FEBRUARY			MARCH	
1	33	e141	19	.07	e1	.00	.01	e1	.00
2	5.4	e32	.51	.06	e1	.00	.02	e1	.00
3	2.1	e18	.10	.06	e1	.00	.00	0	.00
4	1.5	e14	.06	.05	e1	.00	.00	0	.00
5	4.9	e37	1.0	.05	1	.00	.00	0	.00
6	1.4	e13	.05	.04	e1	.00	.00	0	.00
7	.81	e8	.02	.03	e1	.00	.00	0	.00
8	.56	e5	.01	.03	e1	.00	.00	0	.00
9	.43	e4	.00	.03	e1	.00	.00	0	.00
10	.33	e3	.00	.02	e1	.00	.00	0	.00
11	.26	e2	.00	.01	e1	.00	.00	0	.00
12	.23	e2	.00	.00	0	.00	.00	0	.00
13	.20	e2	.00	.00	0	.00	.00	0	.00
14	.17	e2	.00	.00	0	.00	.00	0	.00
15	.15	e1	.00	.00	0	.00	.00	0	.00
16	.14	e1	.00	.00	0	.00	.00	0	.00
17	8.7	e35	2.1	.00	0	.00	.00	0	.00
18	4.1	e29	.41	.00	0	.00	.00	0	.00
19	1.3	e13	.04	.00	0	.00	.00	0	.00
20	.67	e8	.02	.00	0	.00	.00	0	.00
21	.42	e6	.01	.00	0	.00	.00	0	.00
22	.29	e4	.00	.01	e1	.00	.00	0	.00
23	.22	e3	.00	.00	0	.00	.00	0	.00
24	.17	e2	.00	.00	0	.00	.00	0	.00
25	.14	e1	.00	.00	0	.00	.00	0	.00
26	.12	e1	.00	.08	e1	.00	.00	e1	.00
27	.11	e1	.00	.37	e3	.00	.00	0	.00
28	.11	e1	.00	.03	e2	.00	.00	0	.00
29	.09	e1	.00	---	---	---	.00	0	.00
30	.08	e1	.00	---	---	---	.00	0	.00
31	.07	e1	.00	---	---	---	.00	0	.00
TOTAL	68.17	---	23.33	0.94	---	0.00	0.03	---	0.00

e Estimated

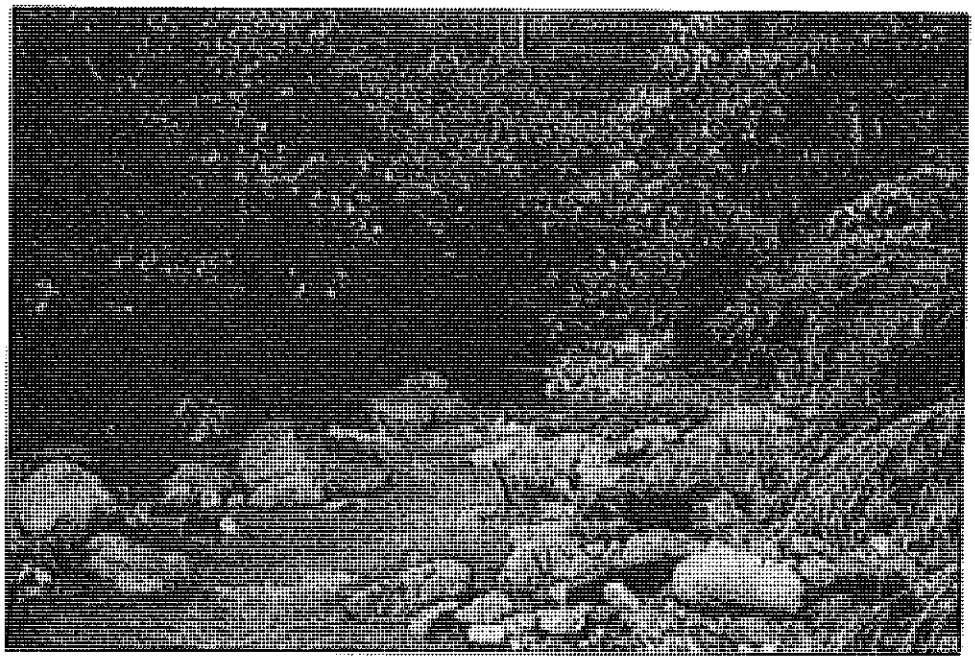
HAWAII, ISLAND OF OAHU

16225800 NORTH HALAWA STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	.00	0	.00	.01	e1	.00	.00	0	.00
2	.00	0	.00	.00	0	.00	.00	0	.00
3	.00	0	.00	.00	0	.00	.03	e1	.00
4	.00	0	.00	.00	0	.00	.42	e2	.01
5	.00	e1	.00	.00	0	.00	1.5	e4	.02
6	.00	0	.00	.01	e1	.00	.12	e2	.00
7	.00	0	.00	.00	0	.00	.01	e1	.00
8	.01	e1	.00	.00	0	.00	.19	e2	.00
9	.01	e1	.00	.00	0	.00	.11	e2	.00
10	.01	e1	.00	.00	0	.00	.02	e1	.00
11	.00	0	.00	.00	0	.00	.00	0	.00
12	.00	0	.00	.00	0	.00	.69	e2	.01
13	.00	0	.00	.00	0	.00	.37	e3	.00
14	.00	0	.00	.00	0	.00	.77	e3	.01
15	.00	0	.00	.00	0	.00	2.0	e4	.02
16	.00	0	.00	.00	0	.00	.87	e3	.01
17	.00	0	.00	.00	0	.00	.78	e3	.01
18	.00	0	.00	.00	0	.00	.46	e3	.00
19	.00	0	.00	.00	0	.00	.10	e3	.00
20	.00	0	.00	.00	0	.00	4.9	e6	.21
21	.00	0	.00	.00	0	.00	12	e17	.54
22	.00	0	.00	.00	0	.00	4.6	e12	.16
23	.02	e1	.00	.00	0	.00	1.8	e6	.03
24	.01	e1	.00	.00	0	.00	11	e10	.55
25	.00	0	.00	.00	0	.00	2.8	6	.05
26	.00	0	.00	.00	0	.00	8.0	e11	.35
27	.00	0	.00	.00	0	.00	4.3	e8	.11
28	.00	0	.00	.00	0	.00	3.2	e5	.05
29	.00	0	.00	.00	0	.00	5.4	e7	.11
30	.00	0	.00	.00	0	.00	4.7	e6	.09
31	---	---	---	.00	0	.00	---	---	---
TOTAL	0.06	---	0.00	0.02	---	0.00	71.14	---	2.34
	JULY			AUGUST			SEPTEMBER		
1	1.9	e5	.02	.00	0	.00	.00	0	.00
2	.92	3	.01	.00	0	.00	.78	e3	.01
3	1.3	e4	.02	.00	0	.00	.55	e3	.01
4	5.6	e7	.12	.00	0	.00	.03	e1	.00
5	3.0	e5	.05	.00	0	.00	.00	0	.00
6	1.2	e4	.01	.00	0	.00	.00	0	.00
7	.68	e3	.01	.00	0	.00	.00	0	.00
8	1.4	4	.02	.00	0	.00	.00	0	.00
9	1.9	e5	.02	.06	e1	.00	.00	0	.00
10	.85	e4	.01	2.0	e4	.02	.00	0	.00
11	.50	e3	.00	.09	1	.00	.00	0	.00
12	.25	e2	.00	.01	1	.00	.00	0	.00
13	.35	5	.01	.00	0	.00	.00	0	.00
14	1.3	e4	.01	.00	0	.00	.00	0	.00
15	1.9	e2	.01	.00	0	.00	.00	0	.00
16	.92	e1	.00	.00	0	.00	.00	0	.00
17	.38	e1	.00	.00	0	.00	.00	0	.00
18	.18	e1	.00	.00	0	.00	.00	0	.00
19	.12	e1	.00	.00	0	.00	.00	0	.00
20	.08	e1	.00	.00	0	.00	.00	0	.00
21	.06	e1	.00	.00	0	.00	4.0	e9	.27
22	.04	e1	.00	.11	e1	.00	.23	e2	.00
23	.02	1	.00	.09	e1	.00	.01	e1	.00
24	.00	e1	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.01	e1	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	.01	e1	.00	.00	0	.00	.00	0	.00
29	.00	0	.00	.00	0	.00	.00	0	.00
30	.00	0	.00	.00	0	.00	.00	0	.00
31	.00	0	.00	.00	0	.00	---	---	---
TOTAL	24.87	---	0.32	2.36	---	0.02	5.60	---	0.29
YEAR	506.43		286.32						

e Estimated



Moanalua Stream, Oahu

HAWAII, ISLAND OF OAHU

16226000 NORTH HALAWA STREAM NEAR AIEA

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

DRAINAGE AREA.--3.45 mi^2.

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. Elevation of gage is 320 ft above mean sea level (from topographic map).

REMARKS.--Records computed by C.W. Yeung. Records fair. Recording rain gage located at station.

AVERAGE DISCHARGE.--48 years (water years 1930-32, 1954-98), 5.34 ft^3/s (3,870 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,650 ft^3/s, February 28, 1932, gage height, 13.36 ft, from rating curve extended above 420 ft^3/s; maximum gage height, 13.46 ft, May 14, 1963; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 570 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1245	*413	*8.20				

Minimum discharge, no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	48	9.0	28	.00	.00	.01	.52	.00	4.0	.00	.33
2	1.6	3.9	3.2	6.8	.00	.39	.25	.00	.15	1.5	.00	.37
3	31	1.0	1.2	2.9	.00	.00	.14	.16	.22	1.1	.00	.04
4	19	.58	.44	1.8	.00	.00	.00	.01	.10	5.9	.00	.00
5	5.0	16	.21	5.7	.00	.00	.25	.00	.29	3.4	.00	.00
6	2.1	1.1	.38	2.4	.00	.01	.02	.54	.00	1.2	.26	.04
7	5.3	.36	3.7	.71	.00	.00	.24	.01	.00	.74	.14	.00
8	2.2	4.1	2.0	.26	.00	.00	.25	.03	.32	1.8	.12	.00
9	24	13	2.8	.10	.00	.00	.53	.03	.03	3.1	.22	.01
10	7.0	1.0	.95	.04	.00	.00	.24	.02	.01	1.2	.13	.00
11	22	1.2	.36	.01	.00	.00	.02	.24	.06	.64	.00	.00
12	5.8	2.4	.11	.00	.00	.00	.02	.17	.27	.25	.00	.29
13	2.7	2.8	.05	.00	.00	.00	.07	.06	.01	.35	.00	.04
14	1.2	.57	.03	.00	.00	.00	.00	.07	.34	.69	.00	.08
15	.87	.19	.00	.00	.00	.00	.00	.00	.71	3.0	.00	.09
16	1.0	.07	.49	.00	.00	.00	.00	.00	.51	1.3	.05	.17
17	.47	.04	.35	6.6	.00	.00	.01	.01	.46	.45	.00	.03
18	4.4	.23	15	5.1	.00	.00	.18	.02	.27	.19	.00	.00
19	.98	.03	8.0	1.2	.00	.00	.04	.43	.13	.11	.00	.00
20	.39	.00	1.1	.34	.00	.00	.29	.12	6.1	.12	.00	.12
21	.41	.00	.41	.10	.00	.00	.08	.04	19	.05	.05	1.1
22	1.9	.00	.23	.03	.19	.00	.24	.14	9.2	.01	.75	.01
23	2.0	.05	4.8	.00	.00	.16	.10	.01	3.9	.01	.04	.00
24	.91	.35	1.7	.00	.00	.00	.02	.00	15	.00	.00	.00
25	.34	.80	1.5	.00	.00	.11	.07	.00	5.8	.12	.26	.22
26	.57	.07	.61	.00	.36	.30	.00	.01	10	.13	.04	.07
27	.55	14	.42	.02	.01	.05	.03	.00	8.6	.00	.00	.01
28	.11	16	3.8	.00	.00	.01	.09	.01	5.6	.12	.13	.04
29	.17	5.5	2.6	.00	---	.16	.00	.00	10	.17	.00	.22
30	.10	3.9	29	.00	---	.24	.00	.01	9.1	.16	.00	.00
31	.07	---	19	.00	---	.16	---	.07	---	.00	.00	---
TOTAL	144.34	137.24	113.44	62.11	0.56	1.59	3.19	2.73	106.18	31.81	2.19	3.28
MEAN	4.66	4.57	3.66	2.00	.020	.051	.11	.088	3.54	1.03	.071	.11
MAX	31	48	29	28	.36	.39	.53	.54	19	5.9	.75	1.1
MIN	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	286	272	225	123	1.1	3.2	6.3	5.4	211	63	4.3	6.5

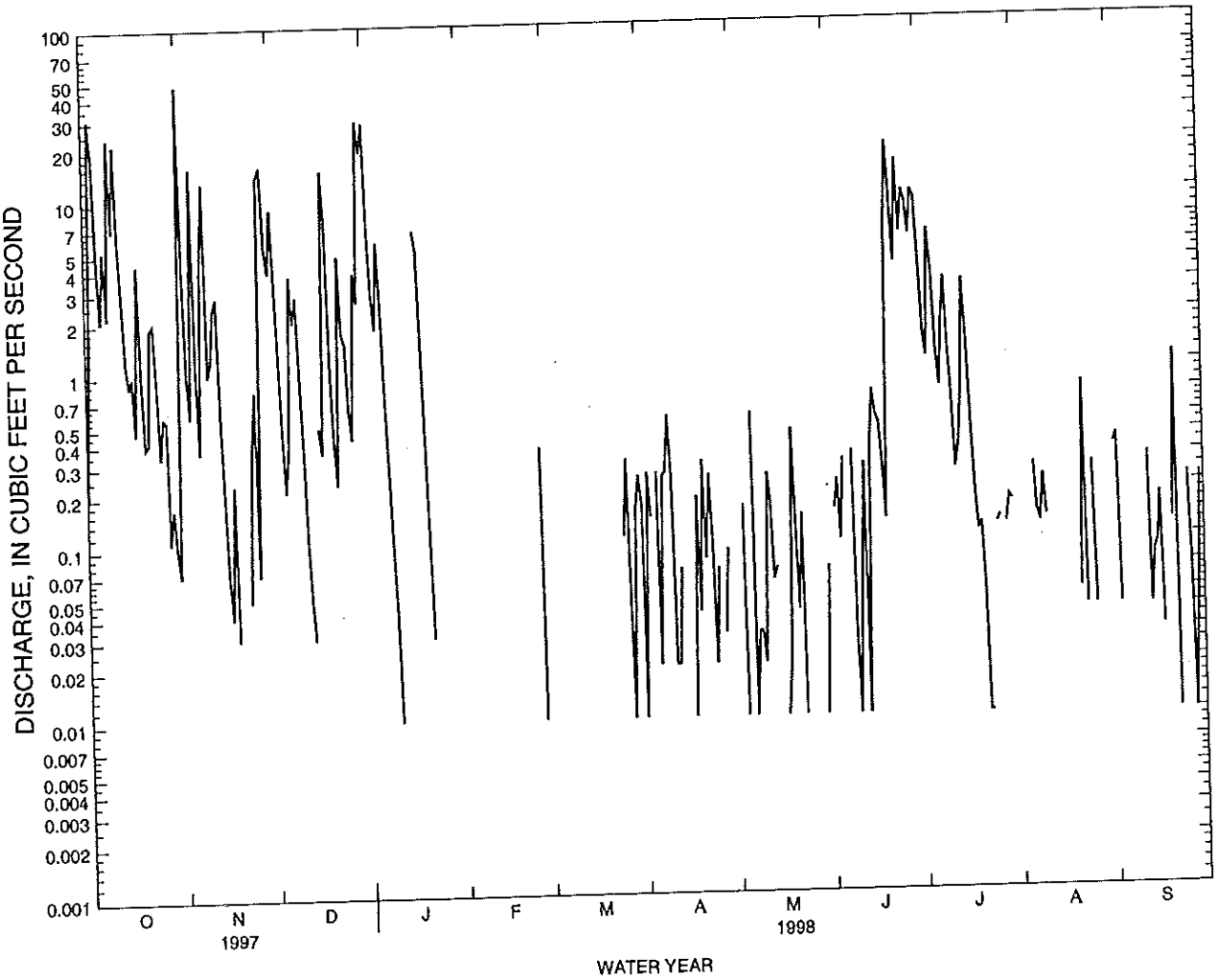
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1998, BY WATER YEAR (WY)

MEAN	3.51	7.98	7.61	6.47	7.79	8.12	7.02	4.74	1.88	3.69	3.63	2.17
MAX	16.3	50.6	35.0	26.0	76.3	37.8	33.3	30.1	7.86	23.0	21.6	17.1
(WY)	1959	1966	1930	1988	1932	1968	1932	1965	1932	1954	1982	1931
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1933	1954	1990	1977	1931	1931	1931	1931	1931	1953	1962	1953

HAWAII, ISLAND OF OAHU

16226000 NORTH HALAWA STREAM NEAR AIEA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1929 - 1998	
ANNUAL TOTAL	1707.60		608.66		5.34	
ANNUAL MEAN	4.68		1.67		15.7	1932
HIGHEST ANNUAL MEAN					1.41	1984
LOWEST ANNUAL MEAN					956	Nov 18 1930
HIGHEST DAILY MEAN	70	Jan 3	48	Nov 1	.00	Sep 14 1929
LOWEST DAILY MEAN	.00	Nov 20	.00	Nov 20	.00	Sep 14 1929
ANNUAL SEVEN-DAY MINIMUM	.05	Feb 15	.00	Jan 28		
ANNUAL RUNOFF (AC-FT)	3390		1210		3870	
10 PERCENT EXCEEDS	13		4.6		11	
50 PERCENT EXCEEDS	1.1		.10		.39	
90 PERCENT EXCEEDS	.11		.00		.00	



HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU

LOCATION.--Lat 21°23′04″, long 157°54′22″, Hydrologic Unit 20060000, on right bank, 0.5 mi north of Halawa quarry, 1.7 mi east of Aiea High School, and 1.9 mi east of Aiea.

DRAINAGE AREA.--4.01 mi^2.

PERIOD OF RECORD.--February 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above mean sea level (from topographic map).

REMARKS.--Records computed by A.H.M. Okihara. Records fair from October 7 to March 19. From March 20 to September 30, records good.

AVERAGE DISCHARGE.--15 years (water years 1984-98), 5.25 ft^3/s (3,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,780 ft^3/s, December 18, 1990, gage height, 12.02 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1300	*423	*9.49				

Minimum discharge, no flow on several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	55	10	39	.01	.00	.08	.54	.01	6.3	.03	.01
2	2.1	4.7	4.1	9.1	.01	.16	.43	.03	.01	2.9	.02	.07
3	51	1.3	1.9	4.4	.01	.01	.31	.07	.12	2.3	.02	.05
4	32	.70	.79	3.1	.01	.00	.03	.03	.01	7.7	.02	.01
5	8.6	16	.29	8.2	.01	.00	.40	.01	.37	4.6	.01	.01
6	4.3	1.7	.30	3.9	.01	.06	.04	.44	.02	2.3	.03	.02
7	9.4	.57	3.2	2.0	.01	.01	.35	.08	.02	1.3	.02	.01
8	4.7	2.2	2.2	1.1	.01	.00	.44	.07	.21	2.4	.01	.01
9	36	15	2.9	.52	.01	.00	.87	.04	.09	4.0	.01	.01
10	7.3	1.5	1.4	.24	.01	.00	1.3	.02	.08	2.1	.01	.00
11	31	1.0	.51	.12	.01	.00	.11	.12	.08	1.1	.01	.00
12	6.7	2.7	.17	.08	.00	.00	.11	.40	.34	.37	.01	.00
13	3.1	3.3	.10	.06	.00	.00	.10	.22	.14	.35	.01	.01
14	1.6	.84	.08	.03	.00	.00	.05	.14	.64	1.1	.01	.00
15	1.1	.29	.05	.02	.00	.00	.03	.05	.80	3.9	.01	.00
16	1.1	.12	.44	.02	.00	.00	.02	.02	1.0	2.4	.01	.00
17	.62	.06	.18	8.5	.00	.00	.04	.02	.85	.87	.00	.00
18	4.5	.27	14	7.3	.00	.00	.03	.02	.57	.32	.00	.00
19	1.4	.10	13	2.6	.00	.00	.03	.39	.24	.14	.00	.00
20	.49	.04	2.4	1.1	.00	.00	.14	.14	7.4	.09	.00	.04
21	.65	.02	1.2	.49	.00	.00	.04	.03	28	.08	.00	.99
22	2.0	.02	.62	.19	.01	.00	.17	.19	13	.03	.27	.06
23	2.2	.02	6.5	.08	.00	.00	.13	.09	5.3	.03	.04	.02
24	1.3	.16	3.3	.04	.00	.00	.03	.04	19	.02	.01	.01
25	.51	1.3	2.9	.02	.00	.00	.02	.03	7.5	.02	.27	.02
26	.65	.07	1.8	.02	.03	.00	.02	.02	14	.02	.03	.01
27	.73	14	1.1	.02	.05	.00	.05	.02	13	.02	.01	.01
28	.15	e22	4.9	.02	.00	.00	.02	.02	7.6	.02	.01	.04
29	.32	e7.8	4.6	.01	---	.01	.01	.01	15	.23	.01	.17
30	.09	4.3	37	.01	---	.17	.01	.01	13	.12	.01	.02
31	.06	---	29	.01	---	.10	---	.01	---	.05	.00	---
TOTAL	215.76	157.08	150.93	92.30	0.20	0.52	5.41	3.32	148.40	47.18	0.90	1.60
MEAN	6.96	5.24	4.87	2.98	.007	.017	.18	.11	4.95	1.52	.029	.053
MAX	51	55	37	39	.05	.17	1.3	.54	28	7.7	.27	.99
MIN	.06	.02	.05	.01	.00	.00	.01	.01	.01	.02	.00	.00
AC-FT	428	312	299	183	.4	1.0	11	6.6	294	94	1.8	3.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1998, BY WATER YEAR (WY)

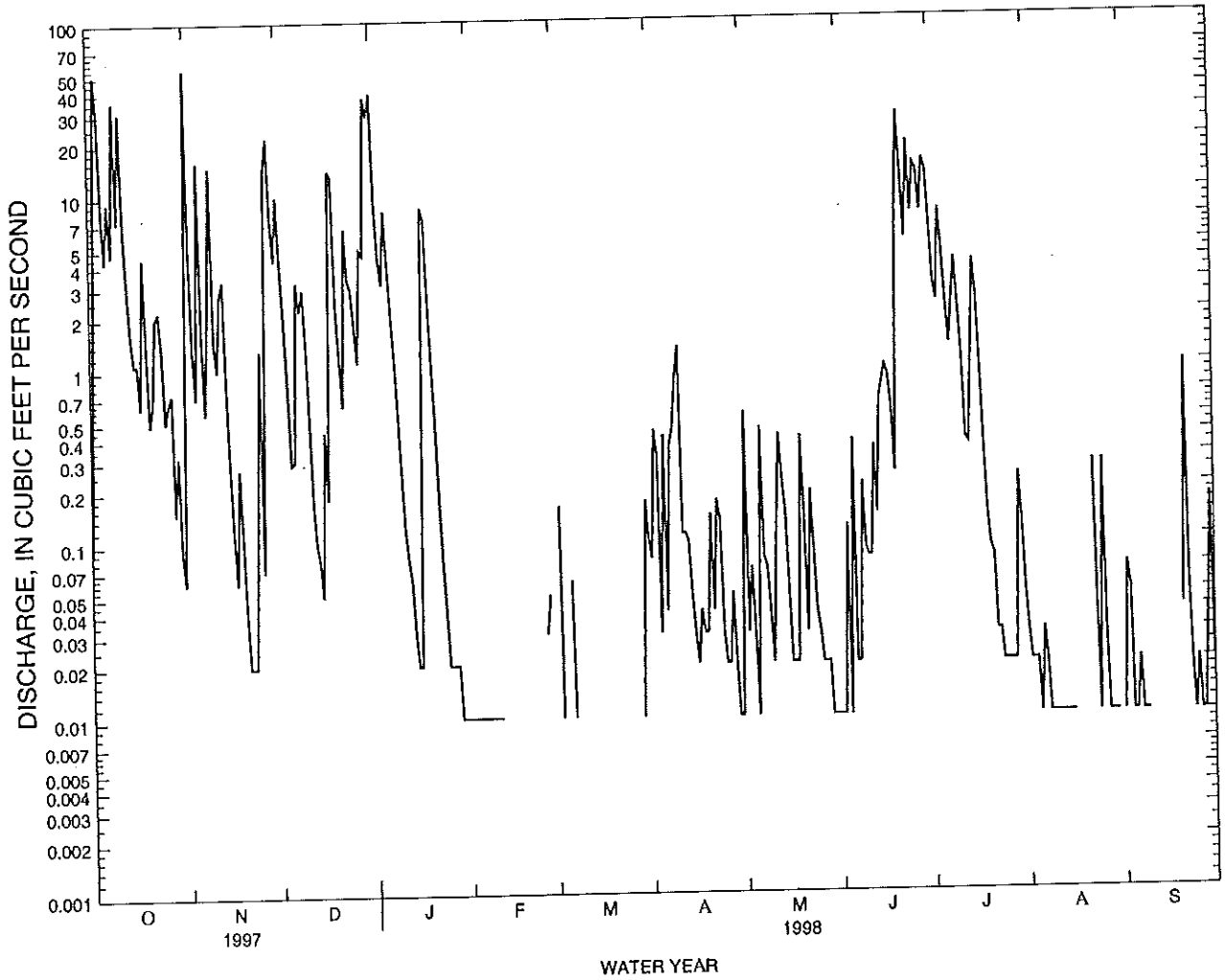
MEAN	3.94	8.28	8.05	6.61	4.17	8.35	6.28	2.87	2.15	4.44	2.84	3.08
MAX	9.71	29.1	40.6	29.6	17.4	31.0	35.3	15.5	7.84	15.0	10.0	12.6
(WY)	1992	1997	1988	1988	1989	1991	1989	1988	1987	1989	1991	1992
MIN	.000	.059	.008	.001	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1985	1990	1990	1986	1983	1983	1983	1992	1984	1984	1984	1984

e Estimated

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1983 - 1998	
ANNUAL TOTAL	2278.32		823.60		5.25	
ANNUAL MEAN	6.24		2.26		10.1	1988
HIGHEST ANNUAL MEAN					1.43	1984
LOWEST ANNUAL MEAN					476	Mar 24 1994
HIGHEST DAILY MEAN	99	Jan 3	55	Nov 1	.00	Feb 1 1983
LOWEST DAILY MEAN	.01	Aug 9	.00	Feb 12	.00	Feb 1 1983
ANNUAL SEVEN-DAY MINIMUM	.02	Aug 6	.00	Feb 12	3800	
ANNUAL RUNOFF (AC-FT)	4520		1630		11	
10 PERCENT EXCEEDS	15		6.4		.53	
50 PERCENT EXCEEDS	1.6		.08		.00	
90 PERCENT EXCEEDS	.08		.00			



HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

PERIOD OF RECORD.--February 1983 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: February 1983 to current year.

INSTRUMENTATION.--Automatic pumping sediment sampler since February 1983.

REMARKS.--Samples for water years 1995-97 with concentrations of about 1,000 mg/L and higher were analyzed using method 2540D (Standard Methods, 19th edition, 1995) for total suspended solids.

Water year 1997: Water-quality samples were collected at this site. Sediment records computed by A.H.M. Okihara. Records fair.

Water year 1998: Water-quality samples were collected at this site. Sediment records computed by M.F. Wong. Records fair.

EXTREMES FOR PERIOD OF RECORD.--

Water year 1997:

Sediment Concentrations: Maximum daily mean 5,360 mg/L (estimated), November 14, 1996; 0 mg/L on many days in 1983-86, 1988, 1990, 1992-95, 1997.

Sediment Discharge: Maximum daily, 5,310 tons, March 24, 1994; 0.0 tons on many days in 1983-88, 1990, 1992-97.

Water year 1998:

Sediment Concentrations: Maximum daily mean 5,360 mg/L (estimated), November 14, 1996; 0 mg/L on many days in 1983-86, 1988, 1990, 1992-95, 1997-98.

Sediment Discharge: Maximum daily, 5,310 tons, March 24, 1994; 0.0 tons on many days in 1983-88, 1990, 1992-98.

EXTREMES FOR CURRENT YEAR.--

Water year 1997:

Sediment Concentrations: Maximum daily mean, 5,360 mg/L (estimated), November 14; 0 mg/L on October 23-29.

Sediment Discharge: Maximum daily, 3,690 tons (estimated), November 14; 0.0 tons on many days.

Water year 1998:

Sediment Concentrations: Maximum daily mean, 2,110 mg/L, October 3; 0 mg/L on many days.

Sediment Discharge: Maximum daily, 711 tons, October 3; 0.0 tons on many days.

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TUR-BID-ITY (NTU) (00076)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)
NOV 1997												
13...	1035	22.0	24.5	760	2.92	6.35	7.6	160	8.3	8.0	--	--
DEC												
17...	1030	21.0	21.0	760	.16	6.01	.8	310	7.6	7.7	--	6
FEB 1998												
03...	1120	18.0	22.0	760	.010	5.83	14	386	7.8	7.6	8.0	1
APR												
21...	0905	22.0	23.5	760	.030	5.97	.3	346	7.4	7.3	--	--
MAY												
27...	0920	23.0	21.0	765	.020	5.93	.3	351	6.6	7.7	--	--
JUL												
23...	1110	23.5	26.5	760	.020	5.97	.2	326	7.8	7.6	--	--

DATE	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L) (00556)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	<.1	<.05	<.01	--	--	--	--	--	--	--	--
FEB 1998												
03...	<1	.1	.05	<.01	1.7	27	16	27	1.5	33	12	<.1
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
27...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
23...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
03...	21	<1	4	<100	<10	<1	<1.0	<12	<1	<1	90	31
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
27...	--	--	--	--	--	--	--	--	--	--	--	--
JUL												
23...	--	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
17...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<1	30	27	<60	<1.0	<1	<1	<1	<1	160	<10
APR											
21...	--	--	--	--	--	--	--	--	--	--	--
MAY											
27...	--	--	--	--	--	--	--	--	--	--	--
JUL											
23...	--	--	--	--	--	--	--	--	--	--	--

DATE	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI) (01132)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CHLOR-PYRIFOS TOTAL RECOVER (UG/L) (38932)	DISUL-FOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
17...	--	--	--	--	--	--	--	1600	--	--	--
FEB 1998											
03...	<10	20	<10.0	<4	<10	<1	<1	K130	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--
MAY											
27...	--	--	--	--	--	--	--	--	--	--	--
JUL											
23...	--	--	--	--	--	--	--	--	--	--	--

DATE	PER-THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLOR-DANE, TECH-NICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDO-SULFAN I TOTAL (UG/L) (39388)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
17...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--
MAY											
27...	--	--	--	--	--	--	--	--	--	--	--
JUL											
23...	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA-THION, TOTAL (UG/L) (39600)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
17...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--
MAY											
27...	--	--	--	--	--	--	--	--	--	--	--
JUL											
23...	--	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRI-THION (UG/L) (39786)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
17...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.01	<.01	<.01	<.01	<.01	229	<.1	<.01	<.01	395	137
APR											
21...	--	--	--	--	--	--	--	--	--	--	--
MAY											
27...	--	--	--	--	--	--	--	--	--	--	--
JUL											
23...	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	.01	e1	.00	.09	e3	.00	.57	e10	.02
2	.02	e1	.00	18	e579	128	.41	e8	.01
3	.01	e1	.00	6.9	e824	32	.45	e10	.01
4	.01	e1	.00	.29	e16	.02	.48	e9	.02
5	.01	e1	.00	49	e921	278	1.8	e20	.10
6	.01	e1	.00	18	e182	13	.79	e12	.03
7	.01	e1	.00	4.9	e30	.48	7.3	e108	3.3
8	.01	e1	.00	63	e1150	222	2.0	e19	.11
9	.01	e1	.00	16	e129	7.6	1.0	e13	.04
10	.01	e1	.00	4.7	e30	.38	.85	e14	.03
11	.01	e1	.00	2.4	e21	.14	9.4	e153	8.7
12	.01	e1	.00	101	2530	1600	11	e183	6.2
13	.01	e1	.00	122	e3460	1770	4.0	e38	.43
14	.07	e2	.00	147	e5360	3690	2.9	e24	.19
15	.01	e1	.00	67	e1190	215	1.5	e18	.07
16	.01	e1	.00	126	e3660	1900	.87	14	.03
17	.20	e4	.01	63	e1720	340	.50	11	.02
18	.01	e2	.00	18	e280	15	.27	8	.01
19	.23	e5	.01	8.5	e110	2.5	.20	6	.00
20	.22	e4	.01	5.3	e69	1.0	.19	6	.00
21	.01	e1	.00	3.4	e44	.41	.95	e18	.14
22	.01	3	.00	2.4	e28	.18	.35	4	.00
23	.00	0	.00	1.8	e24	.12	.96	21	.06
24	.00	0	.00	13	e303	21	1.1	e21	.07
25	.00	0	.00	3.8	e27	.27	.32	17	.02
26	.00	0	.00	2.2	e21	.12	1.1	53	.65
27	.00	0	.00	1.7	e18	.08	14	163	7.0
28	.00	0	.00	1.7	e17	.09	4.8	19	.27
29	.00	0	.00	.88	e12	.03	2.1	12	.07
30	.03	e1	.00	.79	e13	.03	1.2	16	.05
31	.14	e4	.00	---	---	---	1.3	e18	.08
TOTAL	1.08	---	0.03	872.75	---	10237.45	74.66	---	27.73
		JANUARY			FEBRUARY			MARCH	
1	3.0	23	.18	.96	e15	.04	.17	e5	.00
2	2.8	15	.11	.34	e13	.01	.34	e9	.01
3	99	1980	2260	.19	e11	.01	1.2	e17	.06
4	17	145	7.3	.13	9	.00	15	e244	22
5	4.4	18	.20	.11	10	.00	54	e1140	212
6	2.0	16	.09	.19	10	.01	11	e118	4.4
7	1.7	e9	.04	2.9	e25	.30	5.6	e36	.56
8	1.6	5	.02	.79	7	.01	2.7	e25	.18
9	1.1	e5	.02	.29	7	.01	1.4	e17	.06
10	.63	e6	.01	.16	5	.00	.82	e12	.03
11	.35	e6	.01	.41	e12	.02	15	e306	20
12	.73	e9	.02	.20	6	.00	5.0	46	.78
13	.83	e7	.02	.08	e4	.00	5.9	125	2.9
14	.36	6	.01	.10	e4	.00	2.9	e87	.75
15	.17	9	.00	.15	e5	.00	4.5	e104	4.8
16	.50	22	.03	.08	e4	.00	5.0	e132	2.6
17	.12	4	.00	.07	e3	.00	86	e3000	1530
18	.07	e3	.00	.03	e3	.00	15	e325	14
19	18	38	17	.02	e3	.00	5.6	e154	2.4
20	30	436	74	.02	e2	.00	3.2	e73	.65
21	20	362	56	.02	e2	.00	1.9	e34	.19
22	11	117	3.8	6.9	e132	9.0	1.1	e16	.05
23	4.1	e67	.76	2.5	e144	1.7	73	e1340	532
24	2.0	e42	.24	.28	e12	.01	45	e1050	166
25	1.3	e26	.09	.74	e13	.04	66	e1510	314
26	.71	e16	.03	.89	e14	.03	21	e281	17
27	.44	e10	.01	1.3	e17	.07	13	e163	6.2
28	.45	e11	.01	.52	e10	.02	15	e195	9.8
29	1.6	e26	.23	---	---	---	10	e153	4.4
30	2.2	e21	.14	---	---	---	5.2	e70	1.0
31	3.0	e23	.20	---	---	---	3.1	e32	.27
TOTAL	231.16	---	2420.57	20.37	---	11.28	494.63	---	2869.09

e Estimated

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	4.8	e85	1.8	1.9	13	.07	.54	e10	.02
2	33	e500	151	1.2	12	.04	.13	4	.00
3	84	e2710	1070	1.6	38	.15	.09	3	.00
4	14	e163	6.8	.86	34	.09	.16	5	.00
5	8.0	e70	1.8	13	234	59	.08	7	.00
6	14	e231	12	23	752	61	.80	e12	.03
7	4.9	e63	.87	7.9	134	3.2	.43	e12	.02
8	3.9	e44	.75	14	183	8.4	6.0	e64	1.8
9	3.8	e83	1.1	4.1	84	1.0	2.8	e17	.14
10	4.6	e121	6.8	1.9	e35	.19	4.0	20	.24
11	71	e1960	1040	2.7	e22	.21	1.6	e13	.07
12	9.1	e45	1.2	6.0	e88	1.6	3.7	e30	.32
13	13	e287	22	2.2	e33	.21	1.9	e23	.12
14	4.4	e25	.31	38	e1060	247	1.1	e15	.05
15	2.5	27	.17	50	e1530	308	1.2	e14	.06
16	1.6	131	.58	18	e312	17	2.5	e22	.16
17	1.1	25	.08	7.0	e99	2.0	2.7	57	.48
18	.76	19	.04	3.9	e50	.54	3.1	37	.32
19	.49	9	.01	2.3	e26	.17	3.2	31	.28
20	.29	9	.01	1.6	e16	.07	1.4	15	.06
21	.22	15	.01	1.2	e14	.04	2.8	e19	.16
22	.15	10	.00	1.5	e23	.24	2.1	8	.05
23	.19	72	.04	3.0	e26	.23	3.1	e20	.19
24	5.1	170	2.6	1.1	e15	.05	6.2	e57	1.4
25	12	325	13	.57	e11	.02	6.0	25	.43
26	39	143	16	.32	e10	.01	18	359	28
27	59	686	146	.16	e9	.00	9.0	53	1.3
28	12	27	.84	.04	e8	.00	5.9	39	.64
29	5.2	25	.37	.05	7	.00	8.4	19	.42
30	3.0	11	.09	.05	9	.00	4.6	10	.12
31	---	---	---	.05	8	.00	---	---	---
TOTAL	415.10	---	2496.27	209.20	---	710.53	103.53	---	36.88
		JULY			AUGUST			SEPTEMBER	
1	2.2	8	.05	.21	5	.00	.69	3	.01
2	3.5	33	.39	.08	5	.00	.64	e8	.02
3	1.5	12	.04	.07	6	.00	1.0	3	.01
4	2.0	63	.42	.04	4	.00	.23	2	.00
5	.74	18	.04	.04	7	.00	.15	e5	.00
6	1.5	e17	.08	.02	5	.00	.12	1	.00
7	.73	e9	.02	.02	8	.00	.05	1	.00
8	.33	5	.01	.02	e6	.00	.12	e1	.00
9	22	e408	90	.01	e4	.00	.05	e2	.00
10	17	e263	14	.02	e2	.00	.04	2	.00
11	6.7	e56	1.1	.03	e3	.00	.16	e4	.00
12	3.2	e23	.20	.02	3	.00	.45	e8	.01
13	1.8	e18	.09	.02	e2	.00	1.1	e9	.04
14	1.2	8	.03	.02	e1	.00	10	139	7.3
15	.87	e9	.02	3.1	52	2.1	4.8	110	2.2
16	.89	e9	.03	3.8	96	1.3	2.2	23	.15
17	.89	e8	.03	22	323	91	2.8	26	.22
18	.54	e9	.02	7.9	462	9.6	1.8	24	.13
19	16	78	7.2	1.8	174	.98	1.5	9	.04
20	2.1	10	.06	.67	69	.14	1.7	e8	.04
21	1.2	e14	.05	1.7	e17	.10	3.2	e51	1.1
22	50	1720	537	1.5	6	.03	2.8	e27	.26
23	17	384	41	.63	4	.01	1.0	e6	.02
24	4.3	25	.30	.24	5	.00	.14	6	.00
25	15	172	8.1	.15	5	.00	.06	e5	.00
26	6.5	40	.80	1.6	16	.08	.77	e8	.02
27	2.7	21	.15	.52	3	.01	.35	e8	.01
28	1.8	16	.08	.42	2	.00	4.5	161	5.9
29	.95	e4	.01	.23	1	.00	1.7	47	.36
30	1.2	e11	.04	.26	2	.00	.33	7	.01
31	.63	3	.01	2.0	e13	.10	---	---	---
TOTAL	186.97	---	701.37	49.14	---	105.45	44.45	---	17.85
YEAR	2703.04		19634.50						

e Estimated

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	.09	6	.00	55	1120	599	10	e71	2.3
2	2.1	e13	.13	4.7	188	2.5	4.1	e32	.38
3	51	2110	711	1.3	39	.19	1.9	e7	.04
4	32	e292	31	.70	3	.01	.79	e1	.00
5	8.6	e59	1.4	16	50	3.9	.29	e1	.00
6	4.3	e29	.35	1.7	19	.09	.30	e1	.00
7	9.4	e59	2.4	.57	7	.01	3.2	e24	.25
8	4.7	e31	1.1	2.2	5	.06	2.2	e18	.12
9	36	e1390	634	15	43	4.8	2.9	e24	.19
10	7.3	56	1.1	1.5	8	.04	1.4	e5	.02
11	31	544	128	1.0	7	.03	.51	e1	.00
12	6.7	42	.78	2.7	20	.15	.17	e1	.00
13	3.1	47	.43	3.3	17	.22	.10	e1	.00
14	1.6	16	.08	.84	4	.01	.08	e1	.00
15	1.1	18	.06	.29	4	.00	.05	e1	.00
16	1.1	e7	.03	.12	3	.00	.44	e1	.00
17	.62	5	.01	.06	2	.00	.18	e1	.00
18	4.5	e13	.22	.27	3	.00	14	e706	307
19	1.4	3	.01	.10	3	.00	13	e137	12
20	.49	2	.00	.04	2	.00	2.4	e17	.12
21	.65	8	.02	.02	2	.00	1.2	e5	.02
22	2.0	e15	.13	.02	3	.00	.62	e3	.01
23	2.2	e12	.08	.02	3	.00	6.5	e39	1.9
24	1.3	3	.01	.16	2	.00	3.3	e24	.25
25	.51	4	.01	1.3	e8	.06	2.9	e25	.20
26	.65	e4	.01	.07	e3	.00	1.8	e9	.05
27	.73	e4	.01	14	e220	67	1.1	e3	.01
28	.15	2	.00	e22	e168	20	4.9	e28	.68
29	.32	4	.00	e7.8	e52	1.1	4.6	e36	.60
30	.09	3	.00	4.3	e31	.38	37	e301	73
31	.06	5	.00	---	---	---	29	e198	37
TOTAL	215.76	---	1512.37	157.08	---	699.55	150.93	---	436.14
		JANUARY			FEBRUARY			MARCH	
1	39	e601	121	.01	e2	.00	.00	0	.00
2	9.1	e56	1.5	.01	e2	.00	.16	e4	.01
3	4.4	e33	.41	.01	e2	.00	.01	e2	.00
4	3.1	e23	.20	.01	e2	.00	.00	0	.00
5	8.2	e44	1.7	.01	2	.00	.00	0	.00
6	3.9	11	.13	.01	1	.00	.06	0	.00
7	2.0	2	.01	.01	1	.00	.01	0	.00
8	1.1	2	.01	.01	1	.00	.00	0	.00
9	.52	3	.00	.01	2	.00	.00	0	.00
10	.24	5	.00	.01	e2	.00	.00	0	.00
11	.12	2	.00	.01	e2	.00	.00	0	.00
12	.08	2	.00	.00	0	.00	.00	0	.00
13	.06	3	.00	.00	0	.00	.00	0	.00
14	.03	2	.00	.00	0	.00	.00	0	.00
15	.02	3	.00	.00	0	.00	.00	0	.00
16	.02	3	.00	.00	0	.00	.00	0	.00
17	8.5	e17	1.2	.00	0	.00	.00	0	.00
18	7.3	6	.13	.00	0	.00	.00	0	.00
19	2.6	3	.02	.00	0	.00	.00	0	.00
20	1.1	3	.01	.00	0	.00	.00	0	.00
21	.49	3	.00	.00	0	.00	.00	0	.00
22	.19	2	.00	.01	e2	.00	.00	0	.00
23	.08	2	.00	.00	0	.00	.00	0	.00
24	.04	2	.00	.00	0	.00	.00	0	.00
25	.02	2	.00	.00	0	.00	.00	0	.00
26	.02	2	.00	.03	e4	.00	.00	0	.00
27	.02	1	.00	.05	4	.00	.00	0	.00
28	.02	4	.00	.00	0	.00	.00	0	.00
29	.01	11	.00	---	---	---	.01	e2	.00
30	.01	6	.00	---	---	---	.17	3	.00
31	.01	2	.00	---	---	---	.10	2	.00
TOTAL	92.30	---	126.32	0.20	---	0.00	0.52	---	0.01

e Estimated

HAWAII, ISLAND OF OAHU

16226200 NORTH HALAWA STREAM NEAR HONOLULU--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	.08	1	.00	.54	e4	.02	.01	10	.00
2	.43	2	.00	.03	2	.00	.01	4	.00
3	.31	8	.01	.07	2	.00	.12	5	.00
4	.03	3	.00	.03	2	.00	.01	2	.00
5	.40	e4	.01	.01	2	.00	.37	4	.00
6	.04	1	.00	.44	e4	.01	.02	2	.00
7	.35	2	.00	.08	2	.00	.02	3	.00
8	.44	2	.00	.07	2	.00	.21	2	.00
9	.87	5	.05	.04	1	.00	.09	2	.00
10	1.3	e13	.10	.02	2	.00	.08	2	.00
11	.11	2	.00	.12	1	.00	.08	2	.00
12	.11	e2	.00	.40	2	.00	.34	1	.00
13	.10	2	.00	.22	2	.00	.14	2	.00
14	.05	1	.00	.14	1	.00	.64	3	.01
15	.03	2	.00	.05	2	.00	.80	e4	.01
16	.02	2	.00	.02	1	.00	1.0	1	.01
17	.04	3	.00	.02	1	.00	.85	2	.00
18	.03	2	.00	.02	1	.00	.57	3	.00
19	.03	2	.00	.39	e3	.01	.24	6	.00
20	.14	1	.00	.14	2	.00	7.4	7	.36
21	.04	2	.00	.03	1	.00	28	18	1.5
22	.17	2	.00	.19	1	.00	13	5	.19
23	.13	2	.00	.09	1	.00	5.3	4	.06
24	.03	3	.00	.04	1	.00	19	21	2.0
25	.02	2	.00	.03	3	.00	7.5	3	.08
26	.02	2	.00	.02	3	.00	14	8	.46
27	.05	5	.00	.02	6	.00	13	3	.13
28	.02	2	.00	.02	10	.00	7.6	e5	.13
29	.01	2	.00	.01	18	.00	15	e18	.79
30	.01	2	.00	.01	4	.00	13	e17	.65
31	---	---	---	.01	11	.00	---	---	---
TOTAL	5.41	---	0.17	3.32	---	0.04	148.40	---	6.38
		JULY			AUGUST			SEPTEMBER	
1	6.3	e5	.10	.03	e1	.00	.01	e4	.00
2	2.9	1	.01	.02	e1	.00	.07	7	.00
3	2.3	e2	.01	.02	e1	.00	.05	6	.00
4	7.7	e14	.33	.02	e2	.00	.01	5	.00
5	4.6	e6	.08	.01	e2	.00	.01	6	.00
6	2.3	e3	.02	.03	e2	.00	.02	10	.00
7	1.3	e2	.01	.02	e2	.00	.01	12	.00
8	2.4	e4	.04	.01	e2	.00	.01	11	.00
9	4.0	e8	.09	.01	e2	.00	.01	11	.00
10	2.1	e4	.02	.01	e2	.00	.00	0	.00
11	1.1	e3	.01	.01	e2	.00	.00	0	.00
12	.37	e2	.00	.01	2	.00	.00	0	.00
13	.35	2	.00	.01	e2	.00	.01	e3	.00
14	1.1	e2	.01	.01	e2	.00	.00	0	.00
15	3.9	e7	.08	.01	e2	.00	.00	0	.00
16	2.4	e3	.02	.01	e2	.00	.00	0	.00
17	.87	e2	.00	.00	0	.00	.00	0	.00
18	.32	e2	.00	.00	0	.00	.00	0	.00
19	.14	e2	.00	.00	0	.00	.00	0	.00
20	.09	e1	.00	.00	0	.00	.04	e2	.00
21	.08	e1	.00	.00	0	.00	.99	e4	.02
22	.03	e1	.00	.27	2	.00	.06	e3	.00
23	.03	1	.00	.04	5	.00	.02	e3	.00
24	.02	e1	.00	.01	4	.00	.01	e3	.00
25	.02	e1	.00	.27	6	.01	.02	e3	.00
26	.02	e1	.00	.03	7	.00	.01	e3	.00
27	.02	e1	.00	.01	8	.00	.01	e3	.00
28	.02	e1	.00	.01	5	.00	.04	e3	.00
29	.23	e1	.00	.01	4	.00	.17	3	.00
30	.12	e1	.00	.01	3	.00	.02	e2	.00
31	.05	e1	.00	.00	0	.00	---	---	---
TOTAL	47.18	---	0.83	0.90	---	0.01	1.60	---	0.02
YEAR	823.60		2781.84						

e Estimated

HAWAII, ISLAND OF OAHU

16229000 KALIHI STREAM NEAR HONOLULU

LOCATION.--Lat 21°22′00″, long 157°50′49″, Hydrologic Unit 20060000, on right bank 1.9 mi upstream from Kamanaiki Stream, and 4.1 mi north of Honolulu Post Office.

DRAINAGE AREA.--2.61 mi^2.

PERIOD OF RECORD.--September 1913 to April 1914, July 1914 to current year. Monthly discharge only for some periods, published in WSP 1319.
CHEMICAL ANALYSES: Water years 1972, 1974-93, 1996, quarterly (discontinued).

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 above mean sea level (by stadia survey). Prior to October 12, 1923, at datum 2.00 ft lower.

REMARKS.--Records computed by C.W. Yeung. Records fair except for estimated period which is poor. Miscellaneous chemical analyses published for the 1969 and 1973 water years.

AVERAGE DISCHARGE.--84 years (water years 1915-98), 6.47 ft^3/s (4,690 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 12,400 ft^3/s, November 18, 1930, gage height, 13.81 ft, from rating curve extended above 280 ft^3/s on basis of indirect measurements at gage heights 8.9 ft, 10.96 ft, and 11.27 ft; minimum, 0.09 ft^3/s, October 22, 1933, July 29, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 4	0730	*210	*5.17				

Minimum discharge, 0.46 ft^3/s, September 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	e20	e13	33	1.9	1.2	.82	1.2	.82	5.2	1.6	1.4
2	1.6	e3.0	4.5	10	1.8	1.6	.86	.79	1.1	4.0	1.3	2.3
3	25	e2.5	3.2	6.3	1.8	1.5	1.0	.79	1.5	3.4	1.4	2.1
4	25	e2.2	3.0	4.2	1.8	1.2	.78	.88	1.1	5.8	1.3	1.2
5	7.8	e10	2.8	7.6	1.8	1.1	1.1	.81	1.6	5.6	1.6	.98
6	4.5	e3.0	2.8	4.2	1.8	1.1	.85	2.1	1.0	3.7	1.5	1.6
7	4.9	e2.5	6.1	3.5	1.8	1.1	1.2	1.8	.84	3.1	1.5	1.2
8	6.1	e2.3	3.7	3.3	1.8	1.1	1.3	1.2	1.3	4.7	1.5	1.1
9	3.8	e6.5	3.5	3.0	1.8	1.0	1.7	1.1	1.0	4.7	1.8	1.2
10	4.8	e2.5	2.8	2.8	1.8	.91	1.5	1.0	1.0	3.2	2.4	1.3
11	11	e3.0	2.5	2.7	1.8	.84	1.0	.98	1.0	2.7	1.7	1.1
12	4.6	e4.0	2.3	2.4	1.9	.84	.89	1.4	3.0	2.4	1.5	1.4
13	3.5	e7.0	2.2	2.3	2.3	.84	.93	1.3	1.7	2.4	1.3	1.4
14	3.0	e3.0	2.1	2.3	2.2	.84	.93	1.1	4.1	2.5	1.1	1.1
15	2.8	e2.5	2.0	2.3	1.9	.86	.89	1.1	5.6	11	1.3	1.1
16	2.5	e2.3	3.1	2.3	1.7	.84	.77	1.0	4.0	3.9	1.2	1.2
17	2.3	e2.2	2.6	8.9	1.4	.84	.67	.93	2.9	2.9	1.2	1.2
18	2.6	e2.4	17	8.8	1.2	.84	.61	.92	2.4	2.5	1.1	1.1
19	2.6	e2.3	8.6	5.2	1.2	.84	.66	1.1	2.0	2.4	.98	.92
20	e2.7	e2.2	3.3	3.4	1.2	.84	1.4	.94	3.1	2.6	.96	.76
21	e4.0	e2.0	2.6	3.1	1.2	.81	1.3	.76	9.4	2.5	1.0	2.3
22	e3.9	e1.9	2.2	2.9	2.2	.78	1.7	.88	6.2	2.1	2.4	1.2
23	e7.0	e2.0	3.0	2.6	2.5	.75	1.6	.91	5.4	1.9	1.6	.95
24	e2.6	e3.0	2.6	2.5	2.5	.58	1.2	.79	13	1.8	.89	.85
25	e2.6	e9.0	2.3	2.4	2.5	.58	1.0	.92	5.8	1.8	.84	1.2
26	e2.4	e2.5	2.0	2.3	2.9	.92	.87	.85	8.8	1.8	.76	.93
27	e2.2	e10	2.1	2.3	1.9	1.0	.75	1.0	7.1	1.7	.75	.84
28	e2.6	e30	5.0	2.4	1.4	.89	.93	.80	5.6	1.7	.87	.84
29	e3.0	e10	3.7	2.1	---	1.2	.84	.84	10	1.6	.88	1.0
30	e2.6	e5.0	14	1.9	---	.93	.84	.78	8.2	1.5	.78	.90
31	e2.3	---	15	1.9	---	.91	---	.81	---	1.6	.76	---
TOTAL	157.7	160.8	145.6	144.9	52.0	29.58	30.89	31.78	120.56	98.7	39.77	36.67
MEAN	5.09	5.36	4.70	4.67	1.86	.95	1.03	1.03	4.02	3.18	1.28	1.22
MAX	25	30	17	33	2.9	1.6	1.7	2.1	13	11	2.4	2.3
MIN	1.4	1.9	2.0	1.9	1.2	.58	.61	.76	.82	1.5	.75	.76
AC-FT	313	319	289	287	103	59	61	63	239	196	79	73

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1998, BY WATER YEAR (WY)

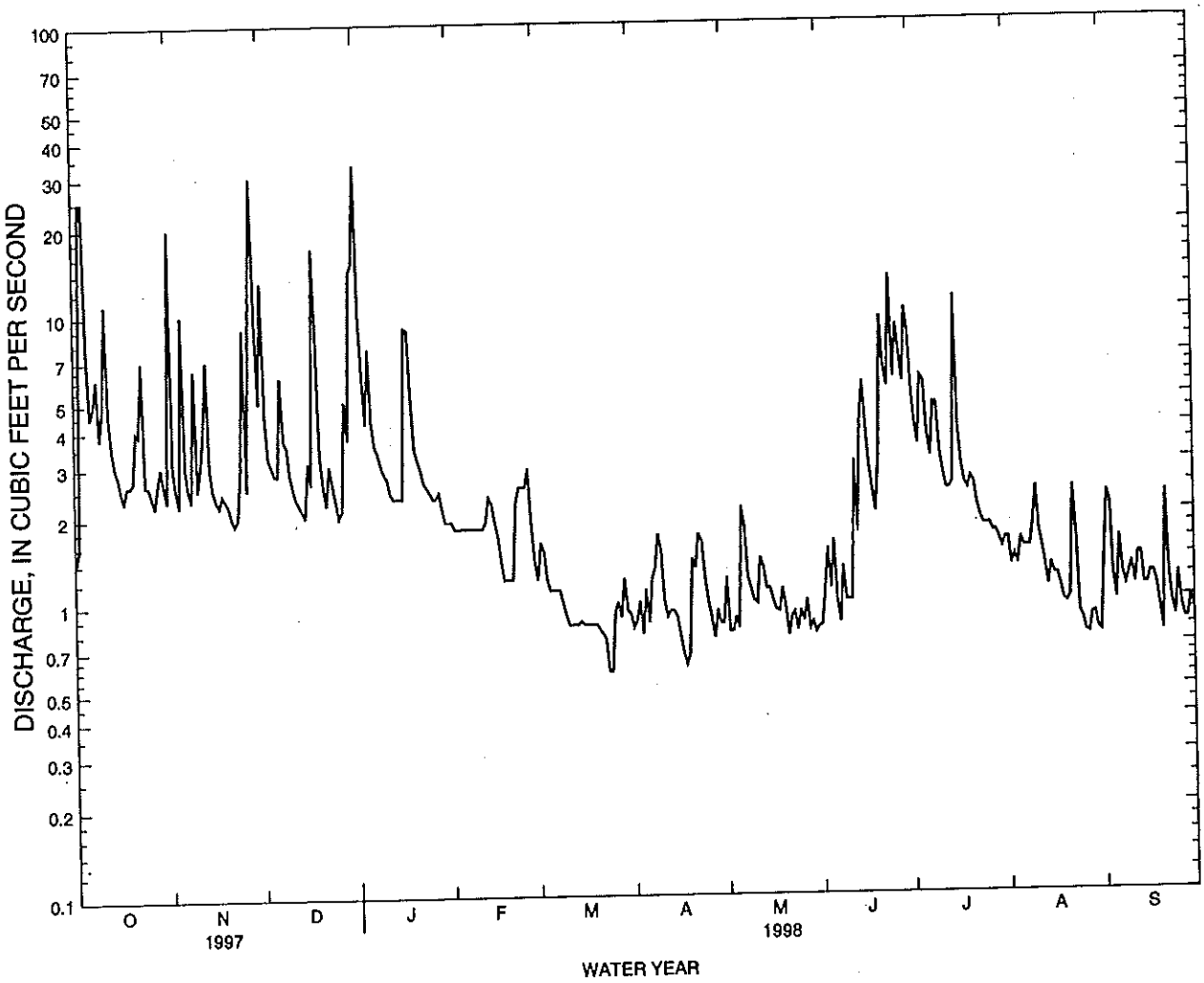
MEAN	4.63	7.36	8.40	9.00	7.17	8.57	8.38	6.48	3.73	4.56	5.07	4.54
MAX	18.9	35.0	35.0	65.7	48.6	40.6	36.0	37.5	12.9	16.6	26.7	31.3
(WY)	1937	1928	1930	1923	1932	1951	1989	1927	1934	1954	1958	1914
MIN	.29	.46	.74	.50	.34	.74	.63	.27	.32	.60	.43	.30
(WY)	1985	1954	1977	1977	1978	1926	1926	1926	1966	1984	1984	1984

e Estimated

HAWAII, ISLAND OF OAHU

16229000 KALIHI STREAM NEAR HONOLULU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1914 - 1998	
ANNUAL TOTAL	2241.3		1048.95			
ANNUAL MEAN	6.14		2.87		6.47	
HIGHEST ANNUAL MEAN					13.5	1923
LOWEST ANNUAL MEAN					2.04	1984
HIGHEST DAILY MEAN	69	Apr 11	33	Jan 1	951	Jan 19 1923
LOWEST DAILY MEAN	1.4	Sep 10	.58	Mar 24	.11	Jul 29 1966
ANNUAL SEVEN-DAY MINIMUM	1.6	Sep 5	.74	Mar 19	.15	May 15 1926
ANNUAL RUNOFF (AC-FT)	4450		2080		4690	
10 PERCENT EXCEEDS	13		5.7		12	
50 PERCENT EXCEEDS	3.6		1.8		2.9	
90 PERCENT EXCEEDS	2.0		.84		1.0	



HAWAII, ISLAND OF OAHU

16229300 KALIHI STREAM AT KALIHI

LOCATION.--Lat 21°20′29″, long 157°52′36″, Hydrologic Unit 20060000, on right bank at Kalihi, 0.4 mi northwest of Bishop Museum, and 2.4 mi northwest of Honolulu Post Office.

DRAINAGE AREA.--5.18 mi^2.

PERIOD OF RECORD.--Water year 1962 (annual maximum), July 1962 to current year.
CHEMICAL ANALYSES: Water years 1970-74, 1975-93, quarterly.
SUSPENDED-SEDIMENT DISCHARGE: Water years 1969-74, 1975-93, quarterly.

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. Elevation of gage is 70 ft above mean sea level (from topographic map). August 28, 1961, to June 30, 1962, crest-stage gage at site 600 ft downstream at different datum.

REMARKS.--Records computed by Ben Shimizu. Records fair.

AVERAGE DISCHARGE.--36 years (water years 1963-98), 10.2 ft^3/s (7,370 acre-ft/yr).

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

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 980 ft^3/s (revised) and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 28	0200	*302	*2.41				

Minimum discharge, 0.35 ft^3/s, March 30, April 1, August 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	38	20	34	1.8	1.8	1.2	5.2	.93	9.7	1.6	2.2
2	3.0	5.2	8.7	13	1.6	2.2	5.9	2.4	.89	6.7	1.5	3.9
3	39	3.3	6.0	11	1.9	2.5	2.1	2.8	1.6	6.5	1.3	4.6
4	46	3.4	4.3	6.6	1.9	1.4	.91	1.9	1.0	9.4	1.7	2.4
5	14	15	3.8	14	1.9	1.3	2.2	1.5	3.0	9.3	2.4	1.9
6	9.0	4.1	3.8	6.8	2.4	6.5	.93	6.8	1.8	6.1	1.8	3.0
7	7.8	3.2	9.7	5.3	2.6	1.2	1.8	4.3	1.3	5.9	2.4	2.0
8	8.9	3.3	7.5	4.7	2.6	.93	2.7	3.2	2.1	9.8	2.3	1.2
9	9.3	8.4	6.6	4.3	2.8	.98	5.3	2.8	1.1	12	2.6	1.3
10	11	2.9	4.3	4.0	2.6	1.1	6.5	2.3	1.9	6.3	3.7	1.6
11	25	3.5	3.6	3.9	2.6	.95	1.4	3.5	1.7	5.3	2.2	1.1
12	8.1	5.8	3.1	3.6	2.7	1.0	1.8	5.2	3.7	4.3	1.5	2.1
13	5.8	8.4	2.4	3.4	2.4	1.3	1.7	5.6	2.0	4.7	1.6	1.8
14	4.8	3.4	2.6	3.2	2.6	1.4	1.2	3.9	5.6	4.6	1.9	1.2
15	4.6	2.8	2.7	3.1	2.5	2.2	.76	2.4	5.7	18	1.6	1.4
16	4.1	2.7	5.0	3.1	2.5	1.1	.76	2.0	4.2	6.5	1.7	1.7
17	3.7	2.6	3.9	11	2.1	1.1	1.1	2.0	3.6	4.6	1.7	1.9
18	4.6	3.8	18	13	2.0	1.5	1.6	2.4	3.5	3.6	1.6	1.5
19	4.2	2.8	15	8.1	2.1	1.5	2.1	3.3	3.5	3.2	1.3	1.5
20	3.3	2.5	5.0	4.7	2.5	1.2	2.4	2.0	8.1	2.6	1.3	1.5
21	6.7	2.3	3.8	4.0	2.6	1.3	2.4	1.3	19	2.7	1.3	3.2
22	7.0	2.3	3.5	3.8	3.9	1.2	3.2	2.8	14	2.2	3.5	2.0
23	10	2.5	5.5	3.8	4.4	1.2	2.2	1.5	11	1.9	3.3	1.4
24	4.0	4.8	3.7	3.2	5.1	1.1	1.1	1.1	19	2.0	1.1	.90
25	3.9	14	4.1	2.9	4.9	1.6	.99	.73	9.9	1.8	1.2	1.8
26	3.9	3.1	3.2	2.5	4.8	2.6	.68	.99	16	1.6	1.3	1.1
27	3.9	25	3.1	2.2	3.5	2.7	1.4	.99	14	1.5	.97	1.3
28	2.9	46	4.9	2.5	2.1	2.0	2.0	.88	12	1.6	1.0	1.2
29	4.2	28	6.2	2.1	---	2.6	1.6	1.0	21	1.8	.89	1.7
30	2.6	14	14	1.9	---	1.5	1.7	.50	18	1.8	1.0	1.2
31	2.5	---	20	1.8	---	1.5	---	.71	---	1.2	.89	---
TOTAL	270.1	267.1	208.0	191.5	77.4	52.46	61.63	78.00	211.12	159.2	54.15	55.60
MEAN	8.71	8.90	6.71	6.18	2.76	1.69	2.05	2.52	7.04	5.14	1.75	1.85
MAX	46	46	20	34	5.1	6.5	6.5	6.8	21	18	3.7	4.6
MIN	2.3	2.3	2.4	1.8	1.6	.93	.68	.50	.89	1.2	.89	.90
AC-FT	536	530	413	380	154	104	122	155	419	316	107	110

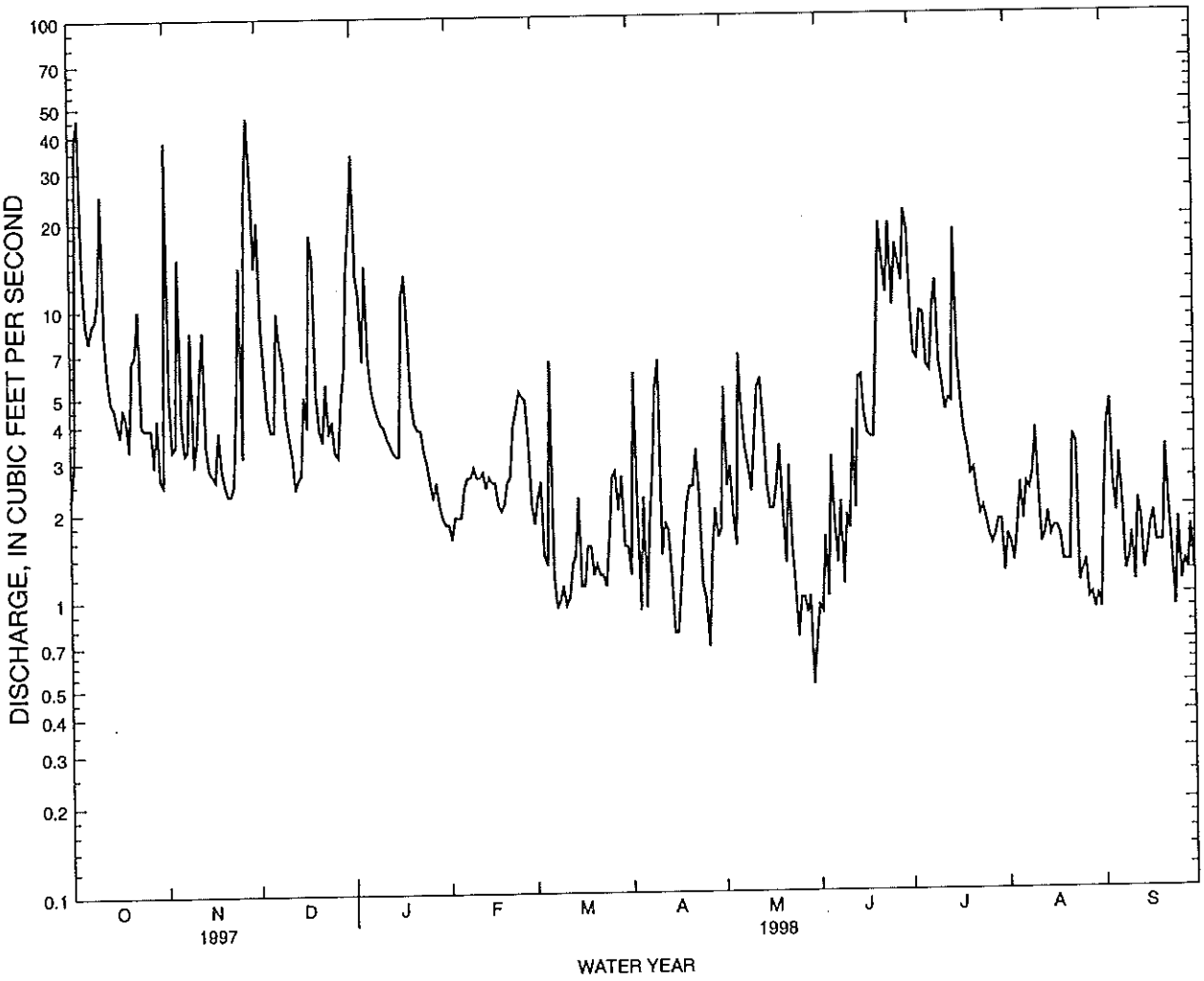
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

MEAN	6.89	14.0	14.6	13.2	10.9	15.7	13.4	9.48	5.43	7.87	6.03	4.74
MAX	22.2	49.2	56.6	45.8	60.3	73.2	57.6	40.9	19.5	29.3	35.7	20.4
(WY)	1964	1966	1988	1982	1969	1968	1989	1965	1980	1970	1982	1992
MIN	.95	2.15	1.15	.82	.78	1.15	1.65	1.49	.87	1.17	.83	.64
(WY)	1985	1981	1977	1977	1978	1983	1992	1966	1966	1984	1984	1984

HAWAII, ISLAND OF OAHU

16229300 KALIHI STREAM AT KALIHI--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1962 - 1998	
ANNUAL TOTAL	3437.5		1686.26			
ANNUAL MEAN	9.42		4.62		10.2	
HIGHEST ANNUAL MEAN					21.3	1982
LOWEST ANNUAL MEAN					3.13	1984
HIGHEST DAILY MEAN	159	Jan 3	46	Oct 4	781	Feb 1 1969
LOWEST DAILY MEAN	1.4	Feb 21	.50	May 30	.23	Jun 28 1966
ANNUAL SEVEN-DAY MINIMUM	1.9	Feb 15	.83	May 25	.36	Oct 14 1984
ANNUAL RUNOFF (AC-FT)	6820		3340		7370	
10 PERCENT EXCEEDS	20		9.8		18	
50 PERCENT EXCEEDS	4.9		2.6		3.8	
90 PERCENT EXCEEDS	2.4		1.1		1.3	



HAWAII, ISLAND OF OAHU

16240500 WAIAKEAKUA STREAM AT HONOLULU

LOCATION.--Lat 21°19′53″, long 157°48′08″, Hydrologic Unit 20060000, on right bank 5 ft downstream from bridge on Waaloa Way, 500 ft upstream from confluence with Waihi Stream, and 4.2 mi northeast of Honolulu Post Office.

DRAINAGE AREA.--1.06 mi^2.

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 above mean sea level (Honolulu Board of Water Supply benchmark). Prior to May 20, 1914, nonrecording gage at site 200 ft upstream at different datum. May 20, 1914 to January 16, 1921, water-stage recorder at site 30 ft upstream at different datum. August 18, 1925 to March 15, 1928, water-stage recorder at present site at datum 2.99 ft lower. March 16, 1928 to October 18, 1933, water-stage recorder at present site at datum 0.41 ft higher.

REMARKS.--Records computed by P. Ongayo. Records good except for estimated periods which are fair. Honolulu Board of Water Supply at times diverts a small amount of ground water from tunnel upstream of station. Occasional small diversions for irrigation upstream of station.

AVERAGE DISCHARGE.--80 years (water years 1914-20, 1926-98), 4.90 ft^3/s (3,550 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,090 ft^3/s, January 16, 1921, gage height, 10.4 ft, from floodmarks, site and datum then in use, from rating curve extended above 58 ft^3/s. Current peak discharges are derived from rating curve extended above 1,760 ft^3/s on the basis of slope-area measurement at gage height 5.28 ft; minimum, 0.6 ft^3/s, June 7, 8, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 310 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 9	1400	*258	*2.96				

Minimum discharge, 1.9 ft^3/s, several days in March and April.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	14	9.8	e23	2.6	2.4	2.7	2.8	2.2	5.6	3.4	5.7
2	4.2	3.3	4.6	e12	2.6	2.5	5.2	2.1	2.4	4.4	3.2	5.5
3	25	2.8	3.7	e8.0	2.6	2.3	4.2	4.0	3.2	5.7	3.2	3.8
4	14	2.7	3.2	e5.5	2.6	2.1	2.7	3.2	2.8	9.4	3.1	2.9
5	5.2	8.9	3.1	e9.5	2.6	2.1	3.8	2.4	4.9	8.0	3.1	2.6
6	4.7	3.1	4.1	e5.7	2.5	2.2	2.7	7.2	2.7	4.8	3.0	3.9
7	4.0	2.8	5.4	e4.2	2.5	2.2	3.6	4.3	2.3	5.5	3.5	2.7
8	4.1	3.6	4.4	e3.5	2.5	2.1	3.3	2.9	3.8	7.2	3.0	2.5
9	13	4.0	4.2	3.3	2.5	2.1	4.0	2.6	2.6	5.7	4.0	2.5
10	4.2	2.7	3.3	3.2	2.5	2.1	3.4	2.5	2.4	4.4	4.7	2.7
11	7.6	3.3	3.0	3.1	2.5	2.2	2.5	2.4	2.8	4.0	3.2	2.6
12	5.1	6.8	2.9	3.0	2.5	2.1	2.4	3.8	4.4	3.6	2.9	2.6
13	3.8	5.4	2.9	3.0	2.5	2.0	2.3	4.0	3.0	4.4	2.9	2.7
14	3.4	3.2	2.9	2.9	2.5	2.1	2.2	3.1	4.3	4.5	3.0	2.4
15	3.8	2.8	2.9	2.9	2.5	2.1	2.2	2.6	5.7	13	2.9	2.5
16	3.7	2.7	3.9	2.8	2.5	2.0	2.1	2.4	3.8	5.7	2.9	2.5
17	3.1	2.6	4.0	10	2.5	2.0	2.0	2.4	5.0	4.7	3.0	2.4
18	3.3	2.8	12	10	2.4	2.0	2.2	2.3	3.7	4.3	2.7	2.4
19	3.0	2.7	5.2	5.6	2.4	2.0	2.0	2.4	4.6	4.0	2.6	2.4
20	2.9	2.6	4.0	3.9	2.5	1.9	3.1	2.3	9.5	3.9	2.8	2.2
21	3.0	2.4	3.3	3.5	2.4	1.9	2.3	2.1	17	4.0	2.7	5.7
22	3.0	2.4	3.6	3.3	2.6	2.0	2.4	2.7	9.0	3.6	3.0	2.7
23	4.2	2.4	e5.5	3.2	2.5	2.0	2.4	2.4	7.9	3.6	2.8	2.4
24	3.0	3.4	e3.7	3.0	2.4	2.0	2.4	2.2	9.5	3.8	2.6	2.3
25	2.9	4.3	e3.9	3.0	2.5	2.1	2.2	2.1	5.3	3.6	2.8	4.0
26	2.9	2.6	e3.5	2.9	2.4	2.8	2.1	2.1	15	3.4	2.8	2.7
27	2.9	13	e3.2	2.8	2.5	2.2	2.0	2.1	9.1	3.3	2.7	2.6
28	2.7	8.7	e3.6	2.8	2.2	2.1	2.1	2.1	8.2	3.4	2.6	2.7
29	2.9	8.5	e4.8	2.8	---	4.4	2.0	2.2	9.6	5.2	2.8	2.8
30	2.6	6.5	e8.2	2.7	---	2.8	2.0	2.0	8.4	4.6	2.8	2.6
31	4.2	---	e15	2.7	---	2.5	---	2.5	---	3.5	2.6	---
TOTAL	155.2	137.0	147.8	157.8	69.8	69.3	80.5	86.2	175.1	154.8	93.3	90.0
MEAN	5.01	4.57	4.77	5.09	2.49	2.24	2.68	2.78	5.84	4.99	3.01	3.00
MAX	25	14	15	23	2.6	4.4	5.2	7.2	17	13	4.7	5.7
MIN	2.6	2.4	2.9	2.7	2.2	1.9	2.0	2.0	2.2	3.3	2.6	2.2
AC-FT	308	272	293	313	138	137	160	171	347	307	185	179

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1998, BY WATER YEAR (WY)

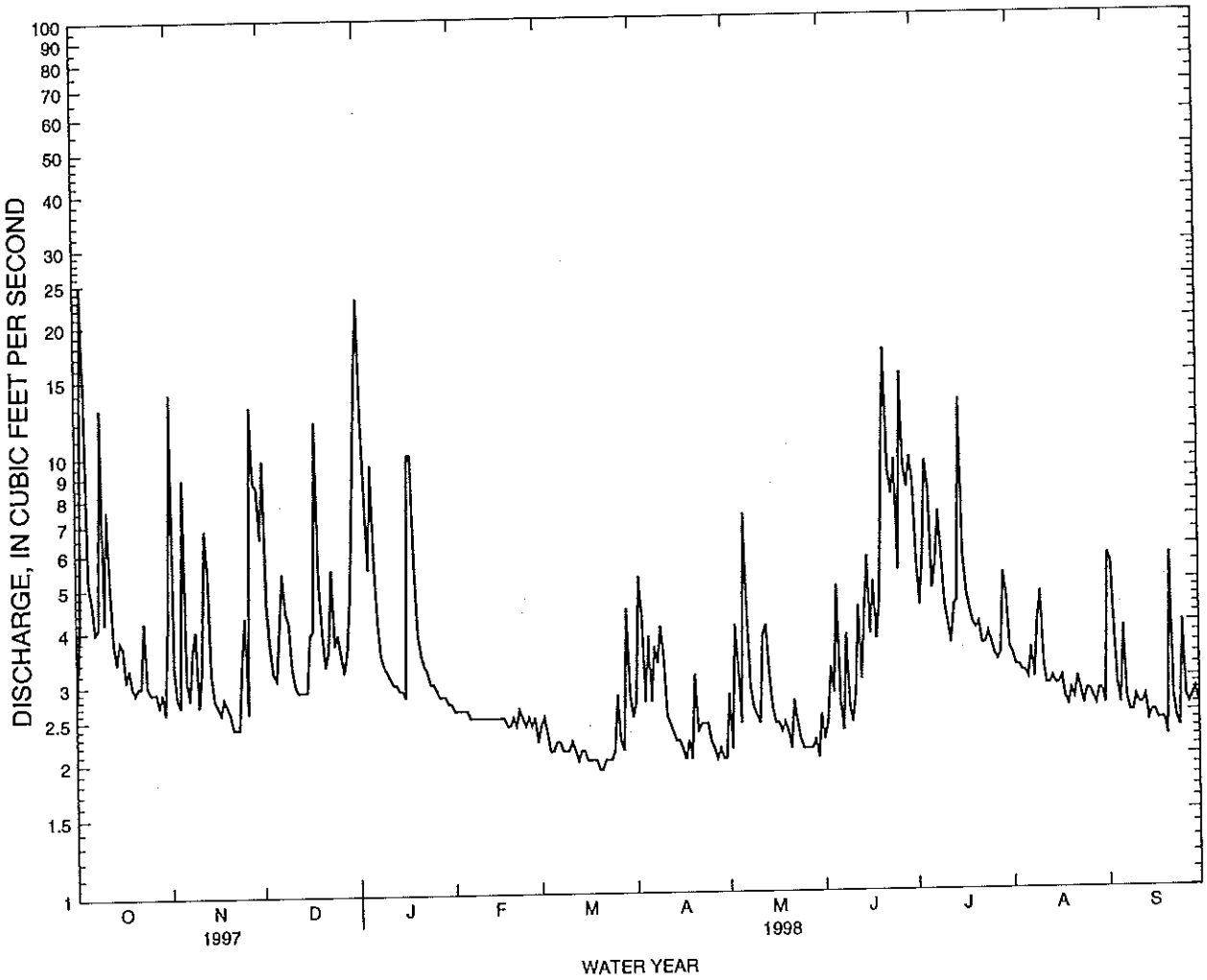
MEAN	4.20	5.26	5.34	4.89	4.48	5.43	5.68	5.18	4.20	4.96	4.85	4.19
MAX	10.7	18.1	15.5	14.8	15.6	19.5	17.5	13.3	10.3	12.3	13.6	13.3
(WY)	1915	1928	1988	1988	1955	1942	1989	1988	1938	1958	1958	1914
MIN	1.18	1.17	1.42	1.28	1.03	1.14	1.16	.87	1.27	.87	1.31	1.27
(WY)	1946	1934	1920	1977	1920	1926	1926	1926	1920	1926	1984	1984

e Estimated

HAWAII, ISLAND OF OAHU

16240500 WAIAKEAKUA STREAM AT HONOLULU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1913 - 1998	
ANNUAL TOTAL	1751.9		1416.8			
ANNUAL MEAN	4.80		3.88		4.90	
HIGHEST ANNUAL MEAN					8.23	1988
LOWEST ANNUAL MEAN					1.94	1920
HIGHEST DAILY MEAN	32	Apr 3	25	Oct 3	183	Mar 24 1994
LOWEST DAILY MEAN	2.0	Feb 21	1.9	Mar 20	.62	Feb 26 1920
ANNUAL SEVEN-DAY MINIMUM	2.1	Feb 15	2.0	Mar 16	.75	May 23 1926
ANNUAL RUNOFF (AC-FT)	3470		2810		3550	
10 PERCENT EXCEEDS	8.4		6.0		8.0	
50 PERCENT EXCEEDS	3.8		2.9		3.5	
90 PERCENT EXCEEDS	2.5		2.2		1.7	



HAWAII, ISLAND OF OAHU

16249500 MAUNAWILI DITCH AT AINONI SPRING

LOCATION.--Lat 21°21'08", long 157°46'03", on left bank about 1,000 ft below Siphon 8, 3.2 mi east of Waimanalo Elementary School, and 3.8 mi northeast of Manoa Elementary School.

PERIOD OF RECORD.--June 1991 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 440 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records fair October 1 to May 21 and good for the remainder of the water year. At times flow is diverted above gage by Waimanalo Irrigation System, State Department of Agriculture.

AVERAGE DISCHARGE.--7 years (water years 1992-98) 1.18 ft^3/s (858 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2.9 ft^3/s, May 20, 1997; minimum daily, no flow on January 1, 2, 1993, January 25-30, and February 3-7, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 1.9 ft^3/s, December 31; minimum daily, 0.18 ft^3/s, January 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.85	1.5	1.6	1.0	1.0	.54	1.0	1.1	1.2	1.5	.90	1.2
2	.80	1.0	1.0	.46	1.1	1.2	.91	1.0	1.3	1.4	.78	1.1
3	.70	1.2	.92	.43	.93	1.4	1.4	.81	1.4	1.5	.85	1.0
4	.83	1.5	.86	.33	.57	1.2	1.3	1.0	1.3	1.2	.90	1.0
5	.81	1.8	.87	.34	.44	1.3	.89	1.4	1.3	.90	.97	1.0
6	1.1	.98	.95	.19	.88	1.5	1.3	1.4	1.3	1.2	1.0	.95
7	1.1	.81	1.0	.18	1.3	1.6	1.2	1.4	1.1	1.4	1.1	.94
8	1.1	.75	1.2	.18	.95	1.3	1.1	1.4	1.1	1.5	1.1	.99
9	.95	.74	1.2	.22	.65	1.1	1.2	1.2	1.2	1.5	1.0	1.0
10	1.1	.72	1.0	.26	.56	.98	.71	.83	1.2	1.4	.98	1.0
11	.88	.67	.89	.42	.94	.93	.59	1.0	1.3	1.3	1.1	1.0
12	.72	.67	.80	.42	1.2	1.2	.51	1.2	1.3	1.2	1.0	.97
13	1.0	.69	.76	.96	.99	1.5	.71	1.3	1.2	1.3	1.1	.81
14	1.4	.65	.73	.89	.78	1.4	.85	1.3	1.2	1.3	1.1	.93
15	1.3	.69	.99	.70	.72	1.2	.74	1.2	1.2	1.6	1.0	1.0
16	1.0	.72	1.1	.56	.59	1.4	.64	1.1	1.2	1.5	.94	1.0
17	1.2	1.2	.78	.61	.81	1.5	.80	.93	1.1	1.5	1.0	1.0
18	1.3	1.5	.96	.55	1.1	1.6	.90	.94	1.2	1.6	1.1	1.0
19	1.2	1.1	.93	.45	1.1	1.8	.60	.97	1.2	1.2	1.0	1.0
20	.97	.94	.75	1.0	.97	1.7	.94	.94	1.0	1.3	1.1	.95
21	.85	.81	.68	1.2	.92	1.6	1.2	1.1	1.2	1.4	.92	1.0
22	.79	.76	.66	.95	.77	1.1	1.2	1.4	1.2	1.4	.93	1.0
23	.70	.69	.65	.78	.83	1.2	1.2	1.3	1.2	1.2	.82	.94
24	.63	1.0	.59	.71	.99	1.4	1.2	.91	1.5	1.2	.92	.98
25	.62	1.1	.58	.68	.76	1.1	1.3	1.1	1.4	1.4	.89	1.0
26	.58	.98	.62	1.1	.67	.96	.89	1.3	1.5	1.0	.76	.95
27	1.0	.98	.67	1.2	.60	1.5	1.0	1.3	1.5	1.1	.95	.85
28	1.1	.81	.69	.84	.54	1.3	1.2	1.1	1.5	1.4	.84	.88
29	.77	.69	.74	.66	---	.99	1.1	1.0	1.5	1.4	.94	1.0
30	1.1	.80	1.6	.97	---	1.3	.98	1.3	1.7	1.3	.78	.95
31	1.4	---	1.9	1.2	---	1.3	---	1.0	---	1.1	.90	---
TOTAL	29.85	28.45	28.67	20.44	23.66	40.10	29.56	35.23	38.5	41.20	29.67	29.39
MEAN	.96	.95	.92	.66	.84	1.29	.99	1.14	1.28	1.33	.96	.98
MAX	1.4	1.8	1.9	1.2	1.3	1.8	1.4	1.4	1.7	1.6	1.1	1.2
MIN	.58	.65	.58	.18	.44	.54	.51	.81	1.0	.90	.76	.81
AC-FT	59	56	57	41	47	80	59	70	76	82	59	58

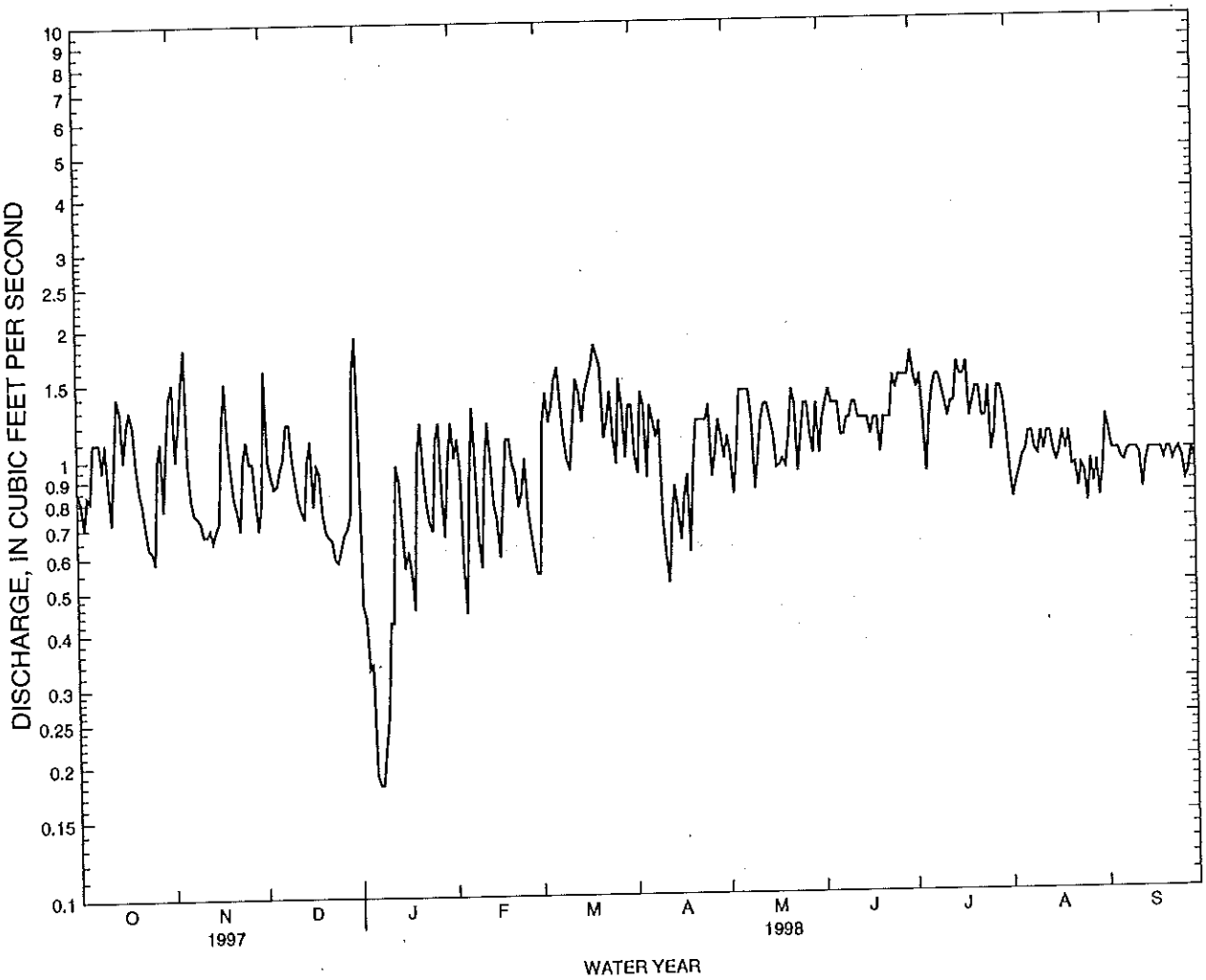
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1998, BY WATER YEAR (WY)

MEAN	1.26	1.26	1.01	.89	.96	1.15	1.13	1.42	1.33	1.30	1.37	1.32
MAX	2.01	1.84	1.86	1.89	1.60	1.76	1.63	1.64	1.80	1.76	1.76	1.90
(WY)	1992	1992	1992	1992	1995	1992	1992	1994	1994	1991	1991	1992
MIN	.81	.70	.44	.32	.41	.34	.63	1.02	.87	.83	.96	.78
(WY)	1997	1997	1997	1996	1996	1996	1996	1996	1997	1997	1998	1997

HAWAII, ISLAND OF OAHU

16249500 MAUNAWILI DITCH AT AINONI SPRING

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1991 - 1998	
ANNUAL TOTAL	325.64		374.72			
ANNUAL MEAN	.89		1.03		1.18	
HIGHEST ANNUAL MEAN					1.75	1992
LOWEST ANNUAL MEAN					.81	1996
HIGHEST DAILY MEAN	2.9	May 20	1.9	Dec 31	2.9	May 20 1997
LOWEST DAILY MEAN	.07	Jan 5	.18	Jan 7	.00	Jan 1 1993
ANNUAL SEVEN-DAY MINIMUM	.29	Jan 29	.24	Jan 4	.03	Feb 2 1996
ANNUAL RUNOFF (AC-FT)	646		743		858	
10 PERCENT EXCEEDS	1.4		1.4		1.9	
50 PERCENT EXCEEDS	.82		1.0		1.2	
90 PERCENT EXCEEDS	.42		.66		.52	



HAWAII, ISLAND OF OAHU

16249900 MAUNAWILI DITCH ABOVE ANIANINUI TUNNEL NR KAILUA

LOCATION.--Lat 21°20′50″, long 157°46′26″, on left bank about 1,000 ft above Aniani Nui Tunnel, 2.5 mi east of Waimanalo Elementary School, and 3.6 mi north of Wailupe Valley Elementary School.

PERIOD OF RECORD.--December 3, 1990 to current year.

GAGE.--Water-stage recorder and 3 ft semi-circular corrugated metal pipe control with concrete on upstream end. Elevation of gage is 400 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records fair.

AVERAGE DISCHARGE.--8 years (water years 1991-98), 1.65 ft^3/s (1,190 acre-ft/yr)

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 5.5 ft^3/s, March 24, 1994; no flow on March 22, 24, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 3.7 ft^3/s, December 9; minimum daily, 0.32 ft^3/s, December 5, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.98	1.5	.54	1.2	1.3	.79	e1.1	1.3	1.3	2.1	1.8	1.8
2	e1.1	1.2	.41	.50	1.4	.76	e1.0	1.1	1.3	2.0	1.8	1.7
3	e1.3	1.4	.37	.60	1.5	.63	e1.2	1.0	1.5	2.1	1.7	1.7
4	e1.2	1.7	.36	.51	1.2	1.0	e1.1	1.2	1.7	1.8	1.5	1.6
5	e1.1	1.8	.32	.93	1.0	1.1	e.80	1.4	1.9	1.5	1.6	1.6
6	e1.2	1.4	.36	.57	1.2	1.0	e1.1	1.5	1.8	1.8	1.6	1.6
7	e1.3	1.1	.32	.62	1.5	.93	e1.2	1.6	1.6	2.0	1.7	1.5
8	e1.1	.89	2.2	.60	1.3	.83	e1.0	1.6	1.7	2.0	1.6	1.6
9	e1.0	.78	3.7	.60	1.2	.77	e1.1	1.6	1.7	2.1	1.5	1.6
10	e.95	1.1	3.5	.60	1.1	.80	1.1	1.2	1.8	2.0	1.6	1.6
11	e1.3	1.3	3.5	.67	1.1	.80	.95	1.2	1.8	1.8	1.7	1.6
12	e.85	1.3	1.6	.74	1.2	.81	.87	1.4	1.9	1.8	1.6	1.6
13	e1.2	1.2	.67	.84	1.2	1.0	.93	1.5	1.7	2.0	1.6	1.4
14	e1.5	1.1	.82	1.1	1.3	1.2	1.0	1.6	1.7	2.0	1.7	1.5
15	e1.3	.91	.80	.93	1.2	1.1	.97	1.6	1.8	2.4	1.6	1.6
16	e1.2	.80	.79	.92	.98	1.0	.88	1.5	1.8	2.3	1.5	1.6
17	e1.4	1.1	.70	1.1	.90	1.1	.87	1.4	1.7	2.2	1.6	1.6
18	e1.7	1.2	.71	.93	.88	1.2	.88	1.2	1.7	2.2	1.6	1.6
19	e1.5	1.1	.66	.78	1.1	e1.6	.81	1.1	1.8	1.9	1.6	1.5
20	e1.2	.95	.60	.99	1.3	e1.5	.88	1.3	1.6	1.9	1.6	1.4
21	e1.2	.94	.56	.80	1.2	e1.5	.87	1.4	1.8	2.0	1.5	1.6
22	e1.1	.91	.61	.99	1.1	e1.1	e1.2	1.4	1.8	2.0	1.5	1.6
23	e1.1	.81	1.1	.98	.95	e1.1	e1.3	1.3	1.8	1.8	1.3	1.6
24	1.2	1.0	1.0	.97	.99	e1.2	e1.3	1.5	2.0	1.8	1.5	1.6
25	1.0	1.0	.92	.95	.88	e1.1	e1.4	1.6	2.1	1.9	1.5	1.6
26	.93	.65	.94	.99	.86	e1.0	e1.1	1.7	2.1	1.6	1.4	1.5
27	1.5	.75	.93	.57	.80	e1.4	e1.2	1.6	2.0	1.6	1.6	1.4
28	1.6	.63	.91	1.3	.76	e1.3	e1.4	1.3	1.9	1.9	1.5	1.4
29	1.0	.68	.94	1.2	---	e1.0	e1.3	1.3	2.1	1.9	1.5	1.5
30	1.2	.60	1.5	1.3	---	e1.3	1.2	1.3	2.3	1.9	1.3	1.5
31	1.2	---	.79	1.3	---	e1.3	---	1.3	---	1.8	1.4	---
TOTAL	37.41	31.80	33.13	27.08	31.40	33.22	32.01	43.0	53.7	60.1	48.5	47.0
MEAN	1.21	1.06	1.07	.87	1.12	1.07	1.07	1.39	1.79	1.94	1.56	1.57
MAX	1.7	1.8	3.7	1.3	1.5	1.6	1.4	1.7	2.3	2.4	1.8	1.8
MIN	.85	.60	.32	.50	.76	.63	.80	1.0	1.3	1.5	1.3	1.4
AC-FT	74	63	66	54	62	66	63	85	107	119	96	93

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1998, BY WATER YEAR (WY)

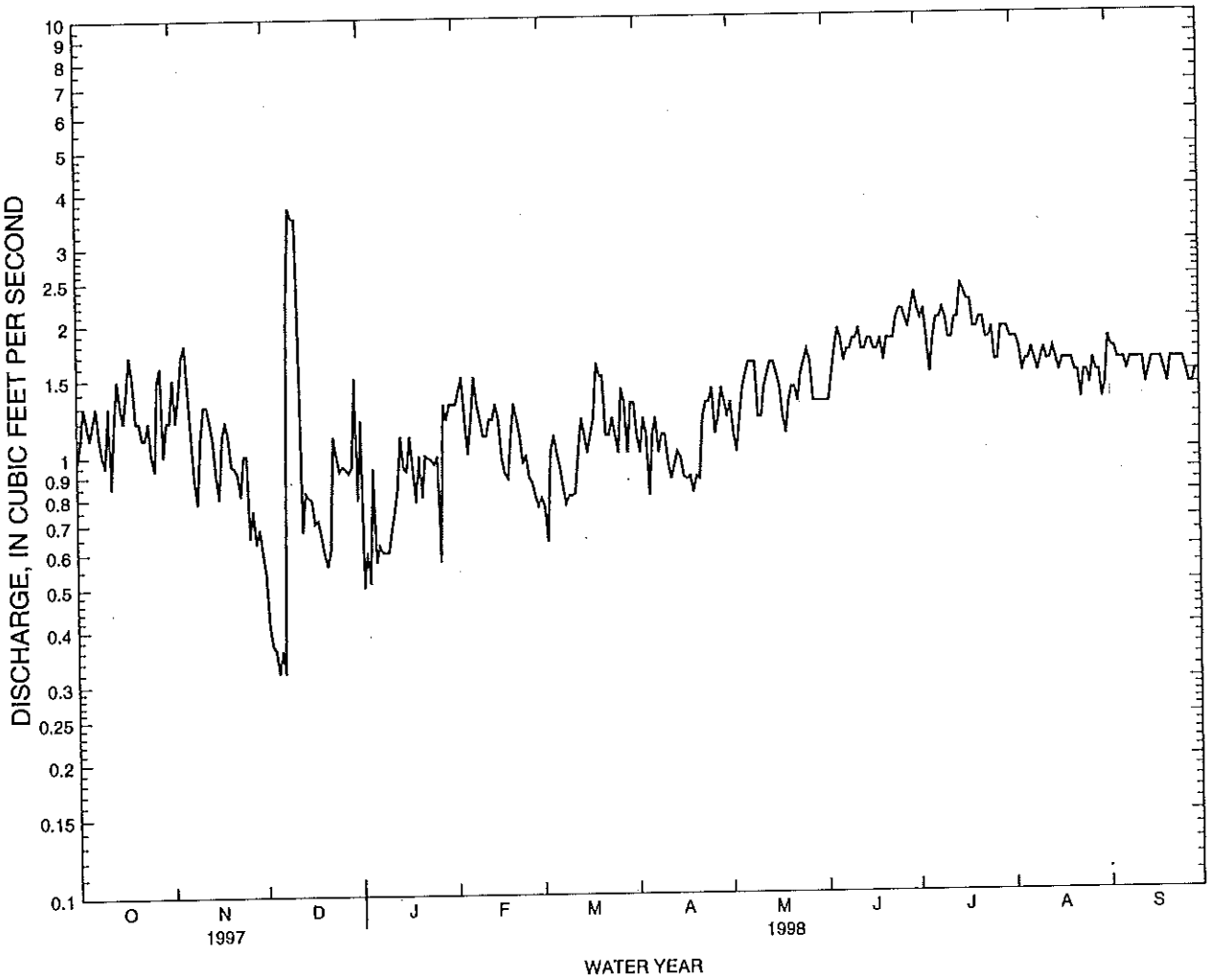
MEAN	1.80	1.80	1.40	1.32	1.53	1.56	1.64	1.89	1.89	1.80	1.85	1.91
MAX	2.69	2.99	2.57	2.22	2.46	2.23	2.26	2.38	2.39	2.80	2.75	3.22
(WY)	1992	1992	1992	1992	1991	1992	1991	1994	1991	1992	1992	1992
MIN	1.00	1.06	.72	.58	.66	.63	1.07	1.39	1.36	1.03	1.09	.91
(WY)	1997	1998	1997	1996	1996	1996	1998	1998	1997	1997	1997	1996

e Estimated

HAWAII, ISLAND OF OAHU

16249900 MAUNAWILI DITCH ABOVE ANIANINUI TUNNEL NR KAILUA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1991 - 1998	
ANNUAL TOTAL	404.38		478.35			
ANNUAL MEAN	1.11		1.31		1.65	
HIGHEST ANNUAL MEAN					2.48	1992
LOWEST ANNUAL MEAN					1.07	1997
HIGHEST DAILY MEAN	3.7	Dec 9	3.7	Dec 9	5.5	Mar 24 1994
LOWEST DAILY MEAN	.32	Dec 5	.32	Dec 5	.00	Mar 22 1991
ANNUAL SEVEN-DAY MINIMUM	.38	Dec 1	.38	Dec 1	.13	Jan 26 1996
ANNUAL RUNOFF (AC-FT)	802		949		1190	
10 PERCENT EXCEEDS	1.6		1.8		2.7	
50 PERCENT EXCEEDS	1.1		1.3		1.7	
90 PERCENT EXCEEDS	.64		.79		.81	



HAWAII, ISLAND OF OAHU

16250000 MAUNAWILI DITCH NEAR WAIMANALO

LOCATION.--Lat 21°20′45″, long 157°45′10″, Hydrologic Unit 20060000, on left bank 80 ft downstream from Aniani Nui Ridge tunnel, and 3.5 mi west of Waimanalo Post Office.

PERIOD OF RECORD.--March 1954 to September 1968, October 1993 to current year.

GAGE.--Water-stage recorder with concrete Columbus type control. Altitude of gage is 390 ft above mean sea level (from topographic map). Prior to July 12, 1993, water stage recorder at same site with different datum.

REMARKS.--Records computed by Ben Shimizu. Records good. Ditch diverts from headwaters of Maunawili and Makawao streams for irrigation in vicinity of Waimanalo. Station was reestablished on October 1, 1993.

AVERAGE DISCHARGE.-- 19 years (water years 1955-68, 1994-98), 2.23 ft^3/s (1,620 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 11 ft^3/s, March 5, 1958; minimum, no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2.9 ft^3/s, May 25; minimum daily 0.22 ft^3/s, December 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.94	.95	.57	1.2	1.2	.64	1.2	1.5	1.6	2.1	1.7	1.9
2	.99	.70	.44	.53	1.4	.97	1.1	1.4	1.8	2.0	1.5	1.9
3	1.2	.97	.47	.60	1.4	1.1	.93	1.2	1.9	2.2	1.6	1.8
4	1.1	1.3	.45	.47	1.1	.94	.83	1.4	1.8	2.0	1.6	1.8
5	.99	1.3	.28	1.2	.96	.84	.78	1.6	2.0	1.6	1.6	1.7
6	1.1	1.0	.22	.54	1.1	.79	.95	1.6	1.9	1.9	1.7	1.7
7	1.2	.84	.23	.51	1.5	.75	1.2	1.7	1.7	2.1	1.7	1.6
8	.97	.74	.62	.53	1.3	.68	1.0	1.7	1.7	2.1	1.7	1.7
9	.96	.65	.92	.54	1.1	.67	1.1	1.6	1.7	2.2	1.5	1.8
10	.87	.84	.85	.59	1.0	.65	1.0	1.3	1.8	2.1	1.5	1.8
11	1.1	1.0	.85	.59	1.0	.65	.91	1.3	1.9	1.9	1.7	1.7
12	.74	.98	.94	.59	1.1	.65	.82	1.5	1.9	1.8	1.8	1.8
13	1.1	.96	.92	.98	1.1	.87	.84	1.6	1.8	2.1	1.8	1.6
14	1.4	.86	.96	1.1	1.1	1.0	.92	1.6	1.8	2.1	1.8	1.7
15	1.2	.76	.96	1.0	1.0	.92	.92	1.7	1.8	2.4	1.6	1.8
16	.98	.71	.94	.92	.84	.91	.85	1.5	1.8	2.3	1.5	1.8
17	1.3	.85	.85	1.0	.80	.85	.81	1.4	1.7	2.2	1.5	1.8
18	1.5	.96	.90	.76	.75	1.1	.84	1.3	1.7	2.2	1.6	1.7
19	1.3	.83	.75	.67	.94	1.4	.76	1.3	1.8	1.9	1.6	1.7
20	1.0	.78	.67	.96	1.2	1.3	.79	1.4	1.7	2.0	1.6	1.6
21	.92	.78	.61	1.0	1.1	1.4	.84	1.7	1.8	2.2	1.5	1.8
22	.86	.78	.80	.84	.94	1.2	1.2	1.9	1.9	2.2	1.5	1.8
23	.84	.76	.95	.72	.80	1.1	1.5	2.3	1.8	1.9	1.4	1.7
24	.78	.91	.85	.71	.82	1.1	1.5	2.5	2.1	1.9	1.4	1.7
25	.72	1.0	.80	.71	.71	1.0	1.6	2.9	2.1	2.1	1.5	1.7
26	.65	.90	.77	.90	.68	1.0	1.4	2.6	2.1	1.7	1.3	1.7
27	.87	.72	.78	1.4	.65	1.3	1.4	1.8	2.0	1.7	1.7	1.6
28	1.0	.53	.78	1.3	.63	1.3	1.6	1.7	2.0	2.0	1.5	1.5
29	.81	.57	.87	1.1	---	1.0	1.5	1.6	2.1	2.1	1.7	1.8
30	.77	.53	1.1	1.2	---	1.3	1.4	1.8	2.4	2.0	1.5	1.7
31	.78	---	.79	1.3	---	1.4	---	1.5	---	1.8	1.5	---
TOTAL	30.94	25.46	22.89	26.46	28.22	30.78	32.49	51.9	56.1	62.8	49.1	51.9
MEAN	1.00	.85	.74	.85	1.01	.99	1.08	1.67	1.87	2.03	1.58	1.73
MAX	1.5	1.3	1.1	1.4	1.5	1.4	1.6	2.9	2.4	2.4	1.8	1.9
MIN	.65	.53	.22	.47	.63	.64	.76	1.2	1.6	1.6	1.3	1.5
AC-FT	61	50	45	52	56	61	64	103	111	125	97	103

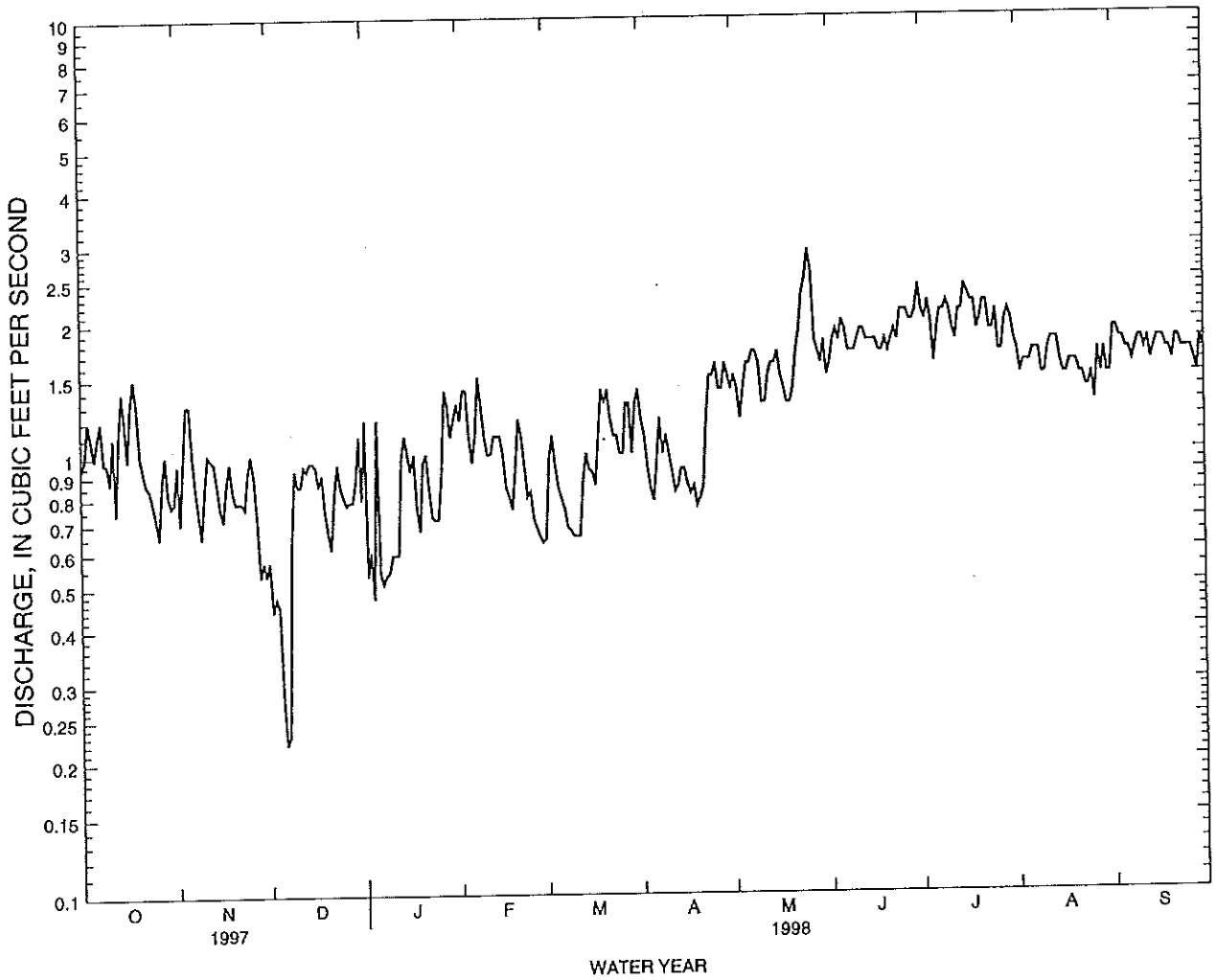
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1998, BY WATER YEAR (WY)

MEAN	2.63	2.28	1.53	1.53	1.40	1.69	2.32	2.87	2.92	2.73	2.69	2.65
MAX	4.36	3.87	3.24	3.22	2.67	3.89	4.07	4.90	4.52	4.02	4.74	4.61
(WY)	1955	1955	1961	1955	1957	1956	1966	1955	1955	1955	1954	1954
MIN	1.00	.85	.026	.000	.000	.097	.39	1.19	1.14	.92	1.22	.61
(WY)	1998	1998	1968	1968	1968	1968	1963	1965	1997	1997	1997	1968

HAWAII, ISLAND OF OAHU

16250000 MAUNAWILI DITCH NEAR WAIMANALO--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1954 - 1998	
ANNUAL TOTAL	377.37		469.04			
ANNUAL MEAN	1.03		1.29		2.23	
HIGHEST ANNUAL MEAN					3.43	1955
LOWEST ANNUAL MEAN					1.06	1997
HIGHEST DAILY MEAN	3.2	May 8	2.9	May 25	11	Mar 5 1958
LOWEST DAILY MEAN	.22	Dec 6	.22	Dec 6	.00	Dec 27 1955
ANNUAL SEVEN-DAY MINIMUM	.36	Jan 29	.38	Dec 1	.00	Dec 27 1955
ANNUAL RUNOFF (AC-FT)	749		930		1620	
10 PERCENT EXCEEDS	1.5		1.9		3.9	
50 PERCENT EXCEEDS	.96		1.2		2.4	
90 PERCENT EXCEEDS	.53		.71		.58	



HAWAII, ISLAND OF OAHU

16254000 MAKAWAO STREAM NEAR KAILUA

LOCATION.--Lat 21°21′49″, long 157°46′02″, Hydrologic Unit 20060000, on left bank 650 ft upstream from mouth, 2.7 mi southwest of Kailua, and 4.3 mi southeast of Kaneohe Courthouse.

DRAINAGE AREA.--2.04 mi^2.

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. Elevation of gage is 80 ft above mean sea level (from topographic map). Prior to January 1, 1958, nonrecording gage at sites about 200 ft upstream at different datums.

REMARKS.--Records computed by George Dayag. Records good. Maunawili ditch diverts 1.5 mi upstream of station for irrigation in vicinity of Waimanalo. Records do not include flow of Maunawili ditch (stations 16249500, 16249900, and 16250000).

AVERAGE DISCHARGE.--42 years (water years 1914-15, 1959-98), 5.11 ft^3/s (3,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,000 ft^3/s, February 4, 1965, gage height, 12.41 ft, from rating curve extended above 470 ft^3/s on basis of slope-area measurement of peak flow; minimum, 0.43 ft^3/s, September 8-12, 14, 16-20, 22, 23, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 390 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 5	1330	*162	*3.76				

Minimum discharge, 0.71 ft^3/s, May 8, minimum daily discharge, 0.99 ft^3/s, September 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	6.5	11	37	3.6	3.8	2.9	2.1	1.7	2.1	1.4	1.7
2	3.6	3.8	5.3	9.9	3.3	3.8	3.3	2.5	1.4	1.9	1.5	1.7
3	8.8	3.3	4.6	8.2	3.2	3.1	3.5	3.3	1.5	1.8	1.5	1.4
4	5.9	2.8	4.2	6.2	3.5	3.0	3.2	2.8	1.6	2.7	1.4	1.3
5	4.8	11	4.1	24	3.6	3.3	3.5	2.3	1.5	2.6	1.4	1.3
6	4.0	4.8	4.4	7.9	3.3	3.3	3.1	2.9	1.3	2.1	1.4	1.6
7	3.5	4.2	4.7	6.0	3.0	3.2	2.9	2.4	1.4	1.7	1.4	1.5
8	3.4	4.1	3.8	5.4	3.1	3.2	2.9	2.1	1.6	1.9	1.3	1.4
9	8.2	4.2	3.4	5.1	3.3	3.3	2.8	2.1	1.4	1.8	1.7	1.4
10	5.2	3.7	3.3	5.0	3.3	3.2	2.9	2.4	1.3	1.7	2.2	1.3
11	6.1	3.5	3.2	5.3	3.2	3.1	2.9	2.4	1.3	1.7	1.4	1.2
12	6.7	3.6	3.1	5.5	3.1	2.9	2.8	2.3	1.6	1.8	1.3	1.3
13	5.2	3.5	3.0	5.0	3.1	2.7	2.6	2.0	1.4	1.8	1.3	1.4
14	4.0	3.5	3.0	4.8	3.1	2.5	2.4	2.0	1.5	1.8	1.3	1.3
15	4.2	3.4	2.9	4.7	3.0	2.6	2.4	1.8	1.5	2.9	1.3	1.1
16	4.0	3.6	3.2	4.7	3.2	2.6	2.4	1.9	1.4	1.7	1.4	1.2
17	3.4	3.4	3.2	7.9	3.2	2.7	2.4	2.0	1.7	1.6	1.5	1.2
18	3.1	3.6	7.6	5.8	3.2	2.7	3.0	2.2	1.5	1.5	1.3	1.1
19	3.3	3.4	5.6	5.3	3.0	2.4	3.0	2.3	1.5	1.6	1.2	1.1
20	3.6	3.3	4.2	4.7	2.9	2.4	3.2	2.1	1.6	1.7	1.3	1.2
21	3.6	3.2	3.8	4.4	2.8	2.4	2.9	1.7	2.4	1.5	1.2	1.7
22	3.5	3.1	3.8	4.4	2.9	2.8	2.7	1.9	2.2	1.4	1.3	1.3
23	3.6	3.1	3.7	4.7	3.0	2.6	2.3	1.6	2.7	1.5	1.4	1.2
24	3.5	3.0	3.4	4.6	3.0	2.5	2.4	1.8	1.9	1.8	1.6	1.1
25	3.5	3.2	3.3	4.5	3.0	2.9	2.3	1.9	1.7	1.4	1.4	1.1
26	3.4	3.0	3.2	4.1	3.1	3.2	2.7	1.6	2.1	1.7	1.2	1.1
27	3.1	4.4	3.2	3.8	3.1	2.8	2.6	1.4	1.8	1.7	1.2	1.0
28	2.9	4.3	3.9	3.7	3.0	2.7	2.1	1.5	2.1	1.6	1.1	1.2
29	3.1	4.0	4.1	3.7	---	3.6	2.0	1.7	2.2	1.6	1.2	1.0
30	3.1	4.7	6.8	3.5	---	3.0	2.0	1.4	2.0	1.6	1.4	.99
31	3.4	---	11	3.5	---	2.8	---	1.7	---	1.5	1.4	---
TOTAL	130.6	119.2	138.0	213.3	88.1	91.1	82.1	64.1	50.8	55.7	42.9	38.39
MEAN	4.21	3.97	4.45	6.88	3.15	2.94	2.74	2.07	1.69	1.80	1.38	1.28
MAX	8.8	11	11	37	3.6	3.8	3.5	3.3	2.7	2.9	2.2	1.7
MIN	2.9	2.8	2.9	3.5	2.8	2.4	2.0	1.4	1.3	1.4	1.1	.99
AC-FT	259	236	274	423	175	181	163	127	101	110	85	76

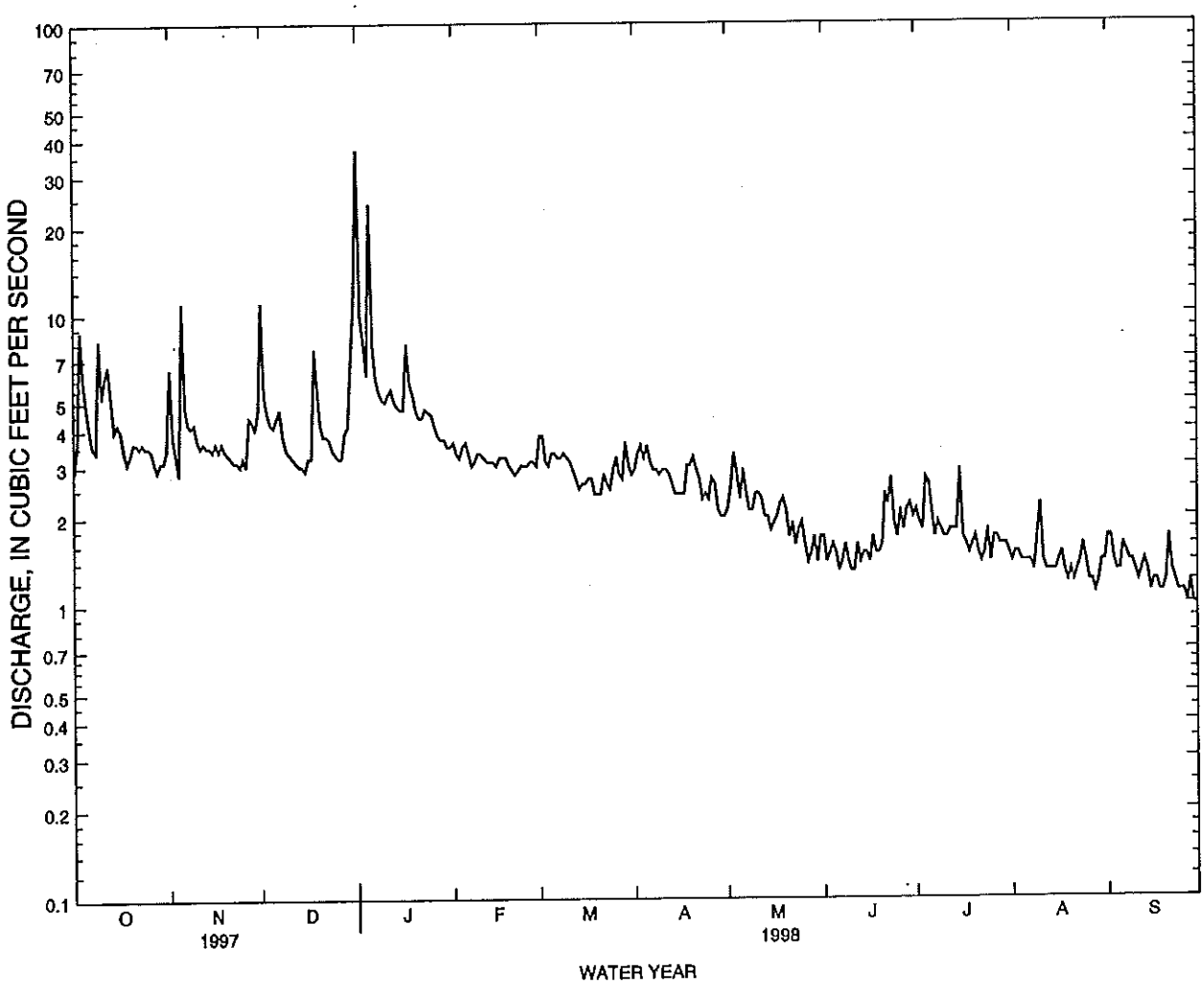
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1998, BY WATER YEAR (WY)

MEAN	3.03	5.70	6.99	8.43	7.05	7.66	6.65	5.38	3.35	2.73	2.58	2.50
MAX	8.43	38.2	34.8	39.2	27.2	24.3	31.4	17.2	11.3	6.66	8.52	15.1
(WY)	1966	1966	1988	1916	1979	1958	1963	1981	1982	1982	1982	1914
MIN	1.06	.99	1.22	1.24	1.11	1.25	1.55	1.40	1.15	1.25	1.18	1.00
(WY)	1976	1963	1978	1973	1978	1978	1973	1973	1973	1959	1984	1975

HAWAII, ISLAND OF OAHU

16254000 MAKAWAO STREAM NEAR KAILUA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1913 - 1998	
ANNUAL TOTAL	2290.0		1114.29			
ANNUAL MEAN	6.27		3.05		5.11	
HIGHEST ANNUAL MEAN					11.1	1982
LOWEST ANNUAL MEAN					1.31	1973
HIGHEST DAILY MEAN	41	Jan 3	37	Jan 1	518	Dec 31 1987
LOWEST DAILY MEAN	2.3	Sep 10	.99	Sep 30	.50	Sep 8 1964
ANNUAL SEVEN-DAY MINIMUM	2.7	Sep 5	1.1	Sep 24	.67	Sep 8 1964
ANNUAL RUNOFF (AC-FT)	4540		2210		3700	
10 PERCENT EXCEEDS	11		4.7		8.8	
50 PERCENT EXCEEDS	4.7		2.8		2.9	
90 PERCENT EXCEEDS	3.2		1.3		1.4	



HAWAII, ISLAND OF OAHU

16265600 RIGHT BRANCH KAMOOALII STREAM NEAR KANEOHE

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

PERIOD OF RECORD.--February 1983 to September 30, 1997.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: February 1983 to September 1995, October 1996 to September 1997 (discontinued).

INSTRUMENTATION.--Observer collected daily sediment samples since March 1990.

REMARKS.--Samples for water years 1995-97 with concentrations of about 1,000 mg/L and higher were analyzed using method 2540D (Standard Methods, 19th edition, 1995) for total suspended solids.

Water year 1997: Water-quality samples were collected at this site. Sediment records computed by C.W. Yeung. Records poor.

EXTREMES FOR PERIOD OF RECORD.--

Water year 1997:
Sediment Concentrations: Maximum daily mean 1,230 mg/L, April 19, 1984; minimum daily mean, less than 0.5 mg/L on many days.
Sediment Discharge: Maximum daily mean, 966 tons, December 31, 1987; minimum daily, 0.00 tons on many days.

EXTREMES FOR CURRENT YEAR.--

Water year 1997:
Sediment Concentrations: Maximum daily mean, 66 mg/L (estimated), March 17; minimum daily mean, less than 0.5 mg/L on October 29, December 9, and January 8.
Sediment Discharge: Maximum daily mean, 29 tons (estimated), March 17; minimum daily, 0.00 tons on many days.

HAWAII, ISLAND OF OAHU

16265600 RIGHT BRANCH KAMOOALII STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	.40	e1	.00	.27	e1	.00	1.0	e3	.01
2	.40	e1	.00	.82	e4	.03	.98	e3	.01
3	.40	e1	.00	.25	e1	.00	.96	e3	.01
4	.42	e1	.00	.24	e1	.00	.92	e3	.01
5	.33	e1	.00	7.7	e17	2.1	.95	e3	.01
6	.33	e1	.00	.29	e1	.00	.89	e3	.01
7	.34	e1	.00	.35	e1	.01	1.0	e3	.02
8	.40	e1	.00	5.9	e17	.60	.74	e1	.00
9	.37	e1	.00	.28	e1	.00	.72	<1	.00
10	.39	e1	.00	.27	e1	.00	.76	e1	.00
11	.35	e1	.00	.27	e1	.00	1.1	e4	.01
12	.34	e1	.00	21	e45	7.8	.78	e1	.00
13	.38	e1	.00	13	e44	8.9	.76	e2	.01
14	.37	e1	.00	26	e46	22	1.2	e5	.03
15	.35	e1	.00	7.2	e23	.81	.71	e2	.00
16	.26	1	.00	10	e27	2.3	.72	e2	.00
17	.28	e1	.00	2.2	e8	.06	.73	e2	.00
18	.29	e1	.00	1.1	e4	.01	.73	e2	.00
19	.91	e3	.07	.98	e3	.01	.75	e2	.00
20	.30	e1	.00	.97	e3	.01	.72	e2	.00
21	.26	e1	.00	.97	e3	.01	.76	e2	.00
22	.27	e1	.00	.98	e3	.01	.74	e2	.00
23	.25	e1	.00	1.0	e3	.01	.97	e4	.01
24	.26	e1	.00	1.7	e6	.06	.96	e3	.01
25	.28	e1	.00	.98	e3	.01	.79	e2	.01
26	.28	e1	.00	.99	e3	.01	1.9	e8	.14
27	.26	e1	.00	.98	e3	.01	6.3	e20	.77
28	.26	e1	.00	1.0	e3	.01	.92	e3	.01
29	.23	<1	.00	1.0	e3	.01	.87	e3	.01
30	.24	e1	.00	.98	e3	.01	1.2	e3	.01
31	.26	e1	.00	---	---	---	3.2	e11	.17
TOTAL	10.46	---	0.07	109.67	---	44.79	35.73	---	1.27
		JANUARY			FEBRUARY			MARCH	
1	1.2	e5	.02	1.3	e5	.02	1.3	e5	.02
2	1.3	e6	.02	1.2	e4	.01	1.1	e4	.01
3	32	50	17	1.2	e4	.01	.97	e3	.01
4	3.5	e12	.20	1.2	e4	.01	2.0	e9	.08
5	1.2	e3	.01	1.2	e3	.01	3.1	e15	.22
6	1.0	e2	.01	1.1	e3	.01	1.2	e4	.01
7	1.0	e1	.00	1.2	e4	.01	1.1	e4	.01
8	.98	<1	.00	1.1	e4	.01	1.0	e3	.01
9	.95	e1	.00	1.1	e4	.01	1.1	e3	.01
10	1.0	e2	.01	1.0	e4	.01	1.1	e4	.01
11	1.1	e4	.01	1.0	4	.01	7.5	e30	1.4
12	2.0	e8	.08	.99	e3	.01	1.1	5	.01
13	1.2	5	.02	1.0	3	.01	1.9	e8	.06
14	.93	e3	.01	.99	e3	.01	3.5	e9	.58
15	1.1	e4	.01	1.2	e5	.02	1.9	e8	.07
16	1.3	e6	.02	.98	e3	.01	1.7	e4	.11
17	.98	e3	.01	1.0	e3	.01	35	e66	29
18	1.0	e3	.01	1.0	e3	.01	1.4	e7	.03
19	21	e33	10	1.0	e4	.01	1.3	e6	.02
20	2.8	e10	.16	1.1	e4	.01	1.3	e5	.02
21	12	e32	4.2	1.1	e4	.01	1.3	e5	.02
22	1.2	e5	.02	1.5	e7	.04	1.2	e4	.01
23	1.0	e4	.01	1.0	e3	.01	19	e48	5.4
24	1.0	e4	.01	.95	e3	.01	2.2	e10	.06
25	1.0	e4	.01	1.0	e3	.01	1.9	7	.04
26	1.0	e4	.01	1.4	e5	.03	1.5	e6	.03
27	1.0	e4	.01	1.4	e5	.03	1.5	e5	.03
28	1.2	e4	.01	1.1	e4	.02	2.2	e7	.07
29	2.7	e11	.17	---	---	---	1.3	e3	.01
30	1.4	e5	.02	---	---	---	1.2	e3	.01
31	1.6	6	.03	---	---	---	1.2	e2	.01
TOTAL	102.64	---	32.10	31.31	---	0.38	105.07	---	37.38

e Estimated
< Actual value is known to be less than the value shown

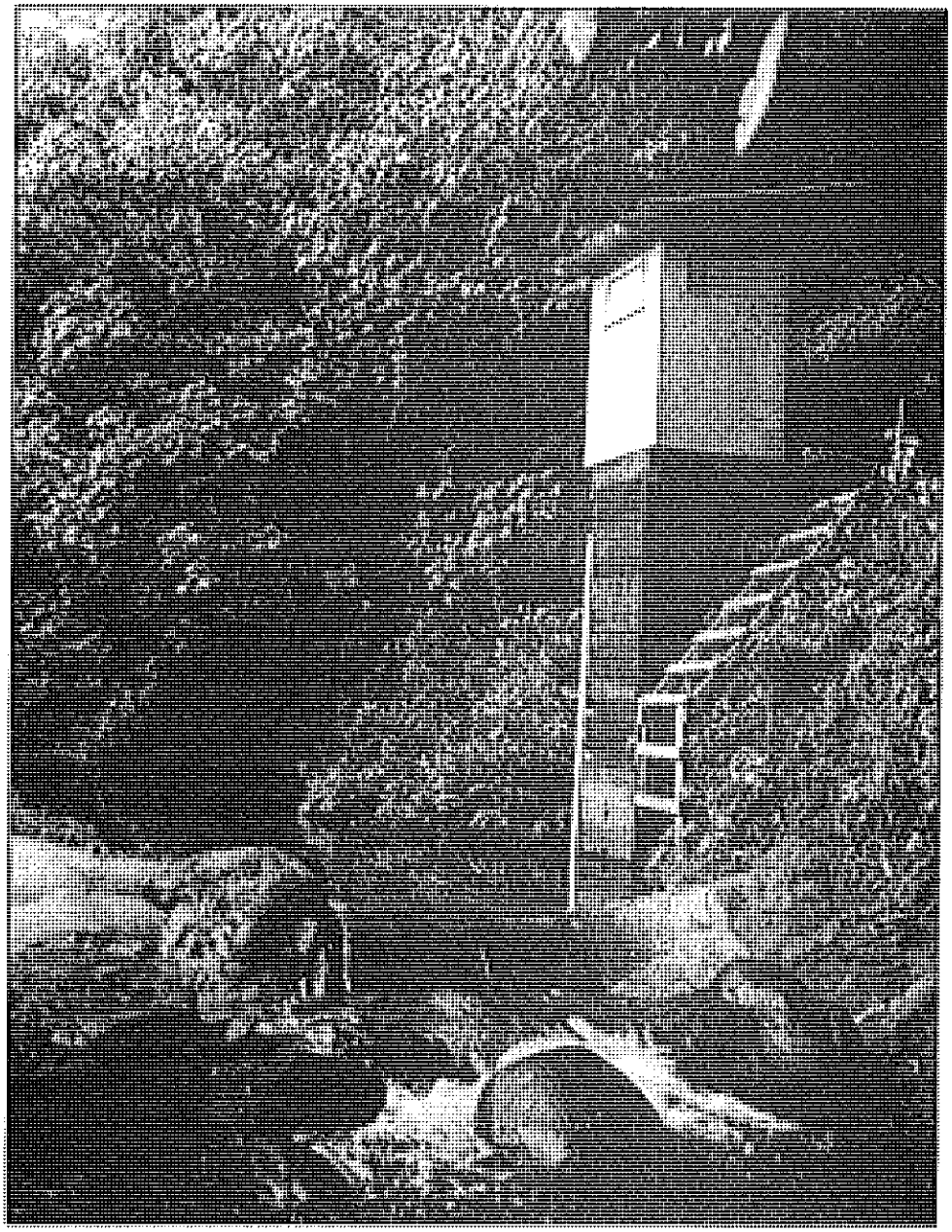
HAWAII, ISLAND OF OAHU

16265600 RIGHT BRANCH KAMOOALII STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	7.1	e18	1.6	1.4	e5	.02	1.4	e2	.01
2	25	e63	9.3	1.4	e5	.02	1.5	e3	.01
3	13	e38	3.6	1.4	e5	.02	1.4	e2	.01
4	1.7	e8	.04	1.4	e5	.02	1.5	e3	.01
5	1.8	e7	.04	1.9	e8	.05	1.4	e2	.01
6	1.8	e8	.04	4.8	e19	.48	1.4	e2	.01
7	1.5	e6	.03	13	e35	7.3	1.4	e2	.01
8	1.6	e7	.04	8.7	e28	1.0	1.4	e2	.01
9	1.5	e6	.02	1.8	e7	.03	1.4	e2	.01
10	2.1	e9	.08	1.6	e6	.03	1.4	2	.01
11	2.0	e9	.06	4.6	e14	.62	1.4	e2	.01
12	1.4	e5	.02	3.8	e16	.31	1.6	e4	.02
13	1.4	e5	.02	1.7	e6	.03	1.4	e2	.01
14	1.4	4	.02	10	e33	1.4	1.5	e2	.01
15	1.4	e4	.02	4.3	e16	.25	1.5	e2	.01
16	1.4	e4	.02	6.3	e22	.61	1.4	e2	.01
17	1.4	e4	.02	1.9	e8	.04	1.5	e3	.01
18	1.4	e4	.02	2.0	e9	.05	1.6	e6	.03
19	1.4	e4	.02	1.8	e8	.04	1.4	e2	.01
20	1.4	e5	.02	1.7	e8	.04	1.5	e3	.01
21	1.4	e5	.02	1.7	e8	.04	1.8	e5	.04
22	1.3	e5	.02	3.9	e15	.43	1.4	e3	.01
23	1.4	e5	.02	1.9	e5	.03	1.6	e5	.02
24	1.6	e7	.04	1.6	e2	.01	2.0	e7	.05
25	1.4	e6	.02	1.6	e2	.01	1.6	e5	.02
26	2.1	e11	.07	1.6	e2	.01	2.0	e5	.04
27	2.4	e12	.09	1.6	e2	.01	1.5	e4	.02
28	1.4	e6	.02	1.6	e2	.01	1.5	e3	.01
29	1.4	e6	.02	1.5	2	.01	1.5	e5	.02
30	1.4	e6	.02	1.4	e2	.01	e1.4	e2	.01
31	---	---	---	1.4	e2	.01	---	---	---
TOTAL	87.5	---	15.37	95.3	---	12.94	45.3	---	0.47
		JULY			AUGUST			SEPTEMBER	
1	e1.4	e2	.01	.93	e2	.01	.86	e1	.00
2	e1.4	e2	.01	.95	e2	.01	.86	e1	.00
3	e1.4	e3	.01	.94	e2	.00	.85	e1	.00
4	e1.5	e3	.01	.92	e1	.00	.88	e1	.00
5	e1.4	e3	.01	.94	e1	.00	.85	e2	.00
6	e1.7	e3	.01	.89	1	.00	.84	e2	.00
7	e1.4	e4	.01	.94	e1	.00	.85	e2	.00
8	e1.3	e4	.01	.90	e1	.00	.81	e2	.00
9	1.5	e8	.04	.92	e1	.00	.81	e2	.00
10	1.5	e7	.03	.94	e1	.00	.81	e2	.00
11	1.3	e4	.01	.93	e1	.00	.82	e2	.00
12	1.2	e4	.01	.90	2	.00	1.6	e4	.03
13	1.3	e3	.01	.85	e1	.00	.88	e2	.01
14	1.2	3	.01	.87	e1	.00	.84	e2	.01
15	1.3	e5	.02	.88	e1	.00	.74	e2	.00
16	1.2	e4	.01	1.2	e4	.03	.77	e2	.00
17	1.2	e4	.01	1.2	e4	.03	.79	e2	.00
18	1.2	e4	.01	.84	e1	.00	1.2	e5	.02
19	1.4	e6	.03	.86	e1	.00	.78	e2	.00
20	1.2	e4	.01	.84	e1	.00	.88	e2	.01
21	1.2	e6	.02	.83	e1	.00	3.2	e9	.29
22	2.9	e9	.10	.83	e1	.00	.79	e2	.01
23	1.1	e4	.01	.83	e1	.00	1.5	e5	.08
24	1.1	e3	.01	.86	e1	.00	2.1	e7	.11
25	1.1	e5	.02	.86	e1	.00	.77	e3	.01
26	1.0	e3	.01	.98	e2	.01	.80	e3	.01
27	.95	e3	.01	.82	e1	.00	.78	e2	.01
28	1.0	e3	.01	.85	e1	.00	.74	e2	.01
29	.97	e3	.01	.87	e1	.00	.73	e2	.00
30	.93	3	.01	.86	e1	.00	.71	2	.00
31	.93	e3	.01	.87	e1	.00	---	---	---
TOTAL	40.18	---	0.50	28.10	---	0.09	29.84	---	0.61
YEAR	721.10		145.97						

e Estimated



Makawao Stream, Oahu

HAWAII, ISLAND OF OAHU

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE

LOCATION.--Lat 21°23′42″, long 157°48′44″, Hydrologic Unit 20060000, on right bank 0.5 mi upstream from mouth, 1.4 mi southwest of Castle High School, and 1.9 mi south of Kaneohe Post Office.

DRAINAGE AREA.--0.44 mi^2.

PERIOD OF RECORD.--1960-63 (low-flow measurements), 1965-71, 1971-84 (annual maximum), April 1984 to June 1998 (discontinued).

GAGE.--Water-stage recorder and wooden control. Elevation of gage is 220 ft above mean sea level (from topographic map) (revised). Prior to April 1984, the station was located 400 ft upstream.

REMARKS.--Records computed by S.T.M. Young. Records fair. Honolulu Board of Water Supply diverts water from tunnel and well in drainage area. Station discontinued on June 30, 1998.

AVERAGE DISCHARGE.--18 years (water years 1968-71, 1985-98), 1.40 ft^3/s (1,020 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 957 ft^3/s, January 25, 1996 on the basis of slope-area measurement at gage height 4.10 ft; minimum, 0.03 ft^3/s on many days 1984-85.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 01	0745	*58	*1.68				

Minimum discharge, 0.09 ft^3/s on May 4, 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	6.0	2.2	12	.51	1.2	.95	.74	.80	---	---	---
2	1.5	1.3	1.6	2.2	.91	1.7	1.0	.65	.78	---	---	---
3	2.5	1.4	1.5	1.8	1.2	.85	1.0	.71	.78	---	---	---
4	2.5	1.3	1.5	1.5	1.1	1.0	1.0	.57	.74	---	---	---
5	1.6	3.3	1.3	2.1	1.2	1.1	1.1	.73	.83	---	---	---
6	1.4	1.6	1.5	1.6	1.1	.99	.95	.81	.77	---	---	---
7	1.4	1.5	1.5	1.6	1.1	1.1	.99	.72	.79	---	---	---
8	1.5	1.6	1.3	1.6	1.2	1.1	1.1	.75	.87	---	---	---
9	1.7	1.5	1.3	1.6	1.1	1.1	1.1	.73	.79	---	---	---
10	1.2	1.5	1.2	1.5	1.1	.98	1.1	.71	.76	---	---	---
11	2.6	1.7	1.2	1.4	1.1	1.0	1.1	.73	.85	---	---	---
12	1.3	1.9	1.3	1.6	1.0	1.2	1.1	.64	.99	---	---	---
13	1.3	1.5	1.3	1.5	1.1	1.1	1.0	.70	.91	---	---	---
14	1.3	1.5	1.4	1.5	1.1	1.0	1.1	.68	.75	---	---	---
15	1.2	1.6	1.4	1.5	1.0	1.1	1.1	.70	1.1	---	---	---
16	1.1	1.6	1.4	1.6	1.1	1.0	1.1	.72	.94	---	---	---
17	1.1	1.6	1.3	1.9	1.1	1.1	1.1	.71	.98	---	---	---
18	1.3	1.6	2.6	1.6	1.1	.98	1.3	.63	.83	---	---	---
19	1.1	1.5	1.4	1.4	1.0	1.1	1.2	.75	.95	---	---	---
20	1.3	1.6	1.4	1.4	1.1	1.1	1.1	.71	1.1	---	---	---
21	1.2	1.6	1.2	1.4	1.1	1.1	.90	.69	.91	---	---	---
22	1.1	1.6	1.2	1.3	1.2	1.1	.86	.75	.66	---	---	---
23	1.2	1.5	1.2	1.5	1.0	1.1	.74	.73	.93	---	---	---
24	1.2	1.4	1.2	1.5	1.1	.95	.85	.62	1.2	---	---	---
25	1.2	1.4	1.2	1.4	.98	1.1	.77	.70	.67	---	---	---
26	1.1	1.5	1.1	1.2	1.3	1.1	.81	.67	.78	---	---	---
27	1.2	1.7	1.2	1.2	1.0	.98	.77	.63	.69	---	---	---
28	1.3	1.6	3.7	1.2	1.1	1.1	.78	.67	.69	---	---	---
29	1.2	1.6	1.5	1.2	---	1.1	.77	.81	.98	---	---	---
30	1.1	2.0	2.2	1.1	---	.97	.70	.73	1.1	---	---	---
31	1.4	---	2.1	.76	---	.99	---	.80	---	---	---	---
TOTAL	43.3	53.0	47.4	56.66	30.00	33.39	29.44	21.89	25.92	---	---	---
MEAN	1.40	1.77	1.53	1.83	1.07	1.08	.98	.71	.86	---	---	---
MAX	2.6	6.0	3.7	12	1.3	1.7	1.3	.81	1.2	---	---	---
MIN	1.1	1.3	1.1	.76	.51	.85	.70	.57	.66	---	---	---
AC-FT	86	105	94	112	60	66	58	43	51	---	---	---

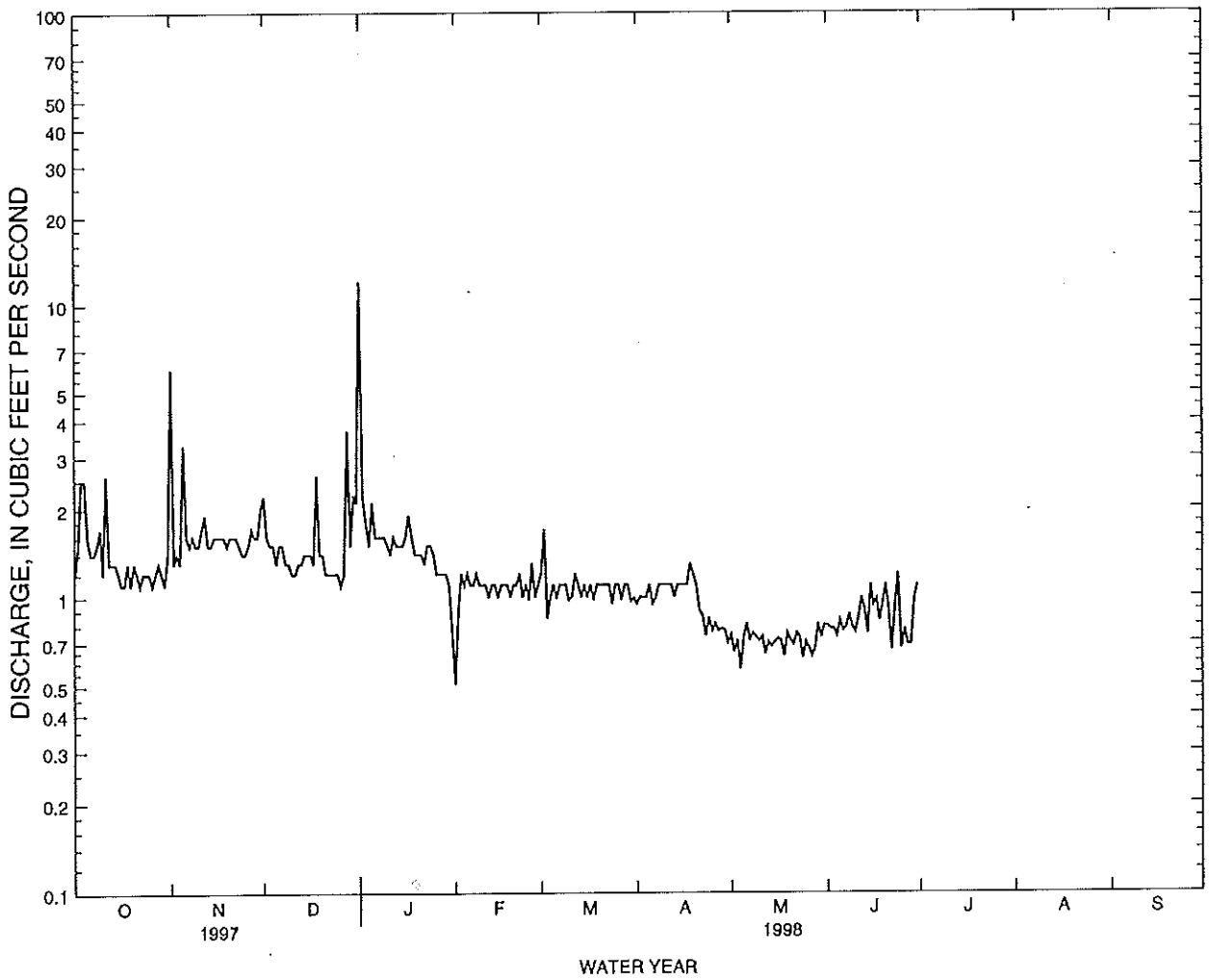
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1998, BY WATER YEAR (WY)

MEAN	1.08	1.64	1.74	1.66	1.57	1.68	1.51	1.20	1.05	1.15	1.09	1.09
MAX	2.30	3.57	4.10	3.02	4.92	3.78	3.67	2.07	1.89	2.12	2.39	2.21
(WY)	1992	1971	1988	1969	1969	1968	1989	1969	1971	1994	1991	1994
MIN	.089	.12	.26	.16	.17	.63	.39	.34	.23	.16	.14	.14
(WY)	1985	1985	1986	1986	1986	1985	1984	1984	1984	1984	1985	1984

HAWAII, ISLAND OF OAHU

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		WATER YEARS 1967 - 1998	
ANNUAL TOTAL	562.86			
ANNUAL MEAN	1.54		1.40	
HIGHEST ANNUAL MEAN			2.13	1969
LOWEST ANNUAL MEAN			.41	1986
HIGHEST DAILY MEAN	11	Jan 3	67	Feb 1 1969
LOWEST DAILY MEAN	.64	Aug 10	.03	Oct 14 1988
ANNUAL SEVEN-DAY MINIMUM	.90	Aug 5	.07	Nov 18 1984
ANNUAL RUNOFF (AC-FT)	1120		1020	
10 PERCENT EXCEEDS	2.0		2.1	
50 PERCENT EXCEEDS	1.3		1.1	
90 PERCENT EXCEEDS	1.1		.34	



PERIOD OF RECORD.--April 1984 to June 1998.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: April 1984 to June 1998.

INSTRUMENTATION.--Automatic pumping sediment sampler since April 1984.

REMARKS.--Samples for water years 1995-97 with concentrations of about 1,000 mg/L and higher were analyzed using method 2540D (Standard Methods, 19th edition, 1995) for total suspended solids.

Water year 1997: Water-quality samples were collected at this site. Sediment records computed by C.W. Yeung. Records good.

Water year 1998: Water-quality samples were collected at this site. Sediment records computed by A.H.M. Okihara. Records good.

EXTREMES FOR PERIOD OF RECORD.--

Water year 1997:

Sediment Concentrations: Maximum daily mean 679 mg/L, December 30, 1992; minimum daily mean, 1 mg/L, on many days in 1991, 1997.

Sediment Discharge: Maximum daily, 534 tons, January 25, 1996; minimum daily, 0.00 ton on many days.

Water year 1998:

Sediment Concentrations: Maximum daily mean 679 mg/L, December 30, 1992; minimum daily mean, <0.5 mg/L, on many days.

Sediment Discharge: Maximum daily, 534 tons, January 25, 1996; minimum daily, 0.00 ton on many days.

EXTREMES FOR CURRENT YEAR.--

Water year 1997:

Sediment Concentrations: Maximum daily mean 151 mg/L, January 3; minimum daily mean, 1 mg/L, on many days.

Sediment Discharge: Maximum daily, 34 tons, March 17; minimum daily, 0.00 ton on many days.

Water year 1998:

Sediment Concentrations: Maximum daily mean 89 mg/L, January 1; minimum daily mean, <0.5 mg/L, on many days.

Sediment Discharge: Maximum daily, 6.9 tons, January 1; minimum daily, 0.00 ton on many days.

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

HAWAII, ISLAND OF OAHU

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)
NOV 1997												
12...	1052	21.0	28.0	760	1.32	.870	.4	159	--	7.7	--	--
DEC												
22...	1230	20.0	25.5	760	1.3	.85	.5	157	8.8	7.4	--	3
JAN 1998												
26...	0925	19.0	20.0	760	1.3	.85	.3	156	8.8	7.7	7.8	<1
APR												
21...	1230	20.5	25.5	760	.900	.800	.5	150	8.8	7.9	--	--

DATE	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)
NOV 1997												
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
22...	--	<.1	.17	.01	--	--	--	--	--	--	--	--
JAN 1998												
26...	<1	<.1	.20	.01	.5	9.0	5.5	12	.9	16	6.8	<.1
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)
NOV 1997												
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
22...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1998												
26...	27	<1	1	<100	<10	<1	1.0	<12	<1	<1	100	<10
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
JAN 1998											
26...	<1	10	6	<60	<1.0	<1	<1	<1	<1	53	<10
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI) (01132)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CHLOR-PYRIFOS TOTAL RECOVER (UG/L) (38932)	DISUL-FOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	230	--	--	--
JAN 1998											
26...	<10	50	<10.0	<4	<10	<1	<1	K130	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	PER-THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLOR-DANE, TECH-NICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDO-SULFAN I TOTAL (UG/L) (39388)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
JAN 1998											
26...	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA-THION, TOTAL (UG/L) (39600)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
JAN 1998											
26...	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRI-THION (UG/L) (39786)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
JAN 1998											
26...	<.01	<.01	<.01	<.01	<.01	113	<.1	<.01	<.01	161	48
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	.85	e7	.02	.76	e3	.01	1.3	4	.01
2	.72	e6	.01	1.9	26	1.3	1.2	4	.01
3	.78	e5	.01	.96	e5	.01	1.4	6	.02
4	.80	e5	.01	.83	e5	.01	1.4	4	.02
5	.73	e4	.01	2.6	e25	.50	1.4	6	.02
6	.86	e4	.01	1.1	e8	.02	1.4	9	.03
7	.85	e4	.01	1.2	e7	.05	1.4	e7	.03
8	.83	e3	.01	3.7	46	.73	1.4	5	.02
9	.81	3	.01	1.4	8	.03	1.2	4	.01
10	.70	e3	.01	1.3	9	.03	1.3	3	.01
11	.56	e3	.00	1.2	14	.04	1.4	11	.04
12	.59	e3	.00	7.5	122	8.9	1.3	e6	.02
13	.60	e2	.00	6.9	80	5.4	1.1	e7	.02
14	.58	e2	.00	10	101	16	1.4	e9	.05
15	.61	e2	.00	3.4	32	.31	1.2	3	.01
16	.70	e3	.01	4.6	e64	1.8	1.1	2	.01
17	.87	e6	.03	3.5	e32	.32	1.1	3	.01
18	.74	e3	.01	2.6	10	.07	1.0	1	.00
19	1.0	e6	.11	1.9	12	.06	.96	2	.00
20	.76	e4	.01	1.8	8	.04	.97	1	.00
21	.74	e4	.01	1.6	5	.02	1.0	1	.00
22	.66	e4	.01	1.5	e6	.03	1.0	2	.01
23	.70	e4	.01	1.4	e7	.03	1.2	e6	.03
24	.69	e4	.01	2.4	e35	.47	1.2	e6	.02
25	.73	e4	.01	1.5	e16	.07	1.0	6	.02
26	.69	e3	.01	1.4	19	.07	1.2	e5	.04
27	.65	e3	.01	1.4	16	.06	2.0	44	.43
28	.60	e3	.01	1.4	12	.04	1.2	6	.02
29	.63	e3	.01	1.4	6	.02	1.1	2	.01
30	.74	e3	.01	1.3	8	.03	.98	3	.01
31	.76	e3	.01	---	---	---	1.5	e17	.11
TOTAL	22.53	---	0.39	74.45	---	36.47	38.31	---	1.04
		JANUARY			FEBRUARY			MARCH	
1	1.2	3	.01	1.5	5	.02	.89	e5	.01
2	1.2	5	.02	1.3	6	.02	.95	e5	.02
3	11	151	22	1.2	6	.02	.85	e4	.01
4	2.7	e24	.22	1.4	5	.02	1.6	e15	.15
5	1.6	4	.02	1.2	4	.02	2.6	e37	.44
6	1.4	7	.03	1.2	e6	.02	1.2	e4	.02
7	1.2	6	.02	1.3	e10	.04	1.1	e5	.01
8	1.2	5	.02	1.2	e7	.02	1.0	e6	.02
9	1.1	3	.01	1.2	e6	.02	.98	e5	.02
10	1.2	3	.01	1.2	e6	.02	.88	e4	.01
11	1.1	6	.02	1.2	e6	.02	2.0	e24	.90
12	1.3	e9	.04	1.0	e5	.01	.83	e4	.01
13	1.3	3	.01	1.1	5	.02	.97	e6	.02
14	1.3	2	.01	1.1	e5	.02	.70	e3	.01
15	1.2	2	.01	1.0	e5	.01	1.2	e11	.10
16	1.3	3	.01	1.0	e5	.01	.87	e5	.02
17	1.2	3	.01	1.1	e5	.02	8.2	148	34
18	1.2	2	.01	1.1	e5	.01	1.8	e7	.03
19	4.1	33	2.2	1.0	e5	.01	1.3	2	.01
20	1.7	8	.05	1.0	e5	.01	1.3	e2	.01
21	2.9	28	1.3	1.1	e5	.02	1.3	e3	.01
22	1.4	3	.01	2.4	e29	.52	1.6	e6	.03
23	1.3	3	.01	1.2	e7	.03	5.9	71	2.7
24	1.2	3	.01	1.1	e6	.02	2.2	e12	.07
25	1.4	2	.01	1.0	e5	.02	2.2	e11	.07
26	1.4	2	.01	1.3	e10	.08	2.2	e10	.06
27	1.4	3	.01	1.2	e9	.03	1.9	e9	.05
28	1.4	4	.02	.92	e6	.02	2.0	e19	.15
29	1.6	e13	.07	---	---	---	1.7	e12	.05
30	1.5	25	.10	---	---	---	1.5	e11	.05
31	1.7	3	.02	---	---	---	1.4	e11	.04
TOTAL	56.7	---	26.30	33.52	---	1.10	55.12	---	39.10

e Estimated

HAWAII, ISLAND OF OAHU

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	1.8	e16	.12	1.5	e13	.05	1.5	e6	.03
2	4.4	29	.59	1.5	e12	.05	1.5	e12	.06
3	2.9	16	.16	1.5	e12	.05	1.1	e6	.02
4	1.8	7	.03	1.5	e11	.05	1.2	e6	.02
5	2.1	e13	.08	2.5	e39	.75	1.0	e6	.02
6	1.9	e13	.07	1.8	e12	.06	1.1	e6	.02
7	1.8	e11	.05	1.9	e20	.13	1.2	e6	.02
8	1.7	e10	.05	4.1	e88	1.6	1.1	e7	.02
9	1.5	e9	.04	1.8	31	.15	1.0	e7	.02
10	1.8	e14	.13	1.9	45	.23	1.1	e7	.02
11	1.8	e12	.06	2.0	32	.19	1.2	e7	.02
12	1.6	e10	.04	2.0	22	.12	1.1	e7	.02
13	1.7	e12	.06	1.8	21	.10	1.2	e7	.02
14	1.5	e7	.03	3.6	e76	.98	1.1	e7	.02
15	1.4	e6	.02	3.0	e35	.32	1.1	e7	.02
16	1.3	5	.02	2.6	e36	.26	1.0	e7	.02
17	1.4	e5	.02	2.3	24	.14	1.1	e8	.02
18	1.6	e6	.03	2.0	29	.15	1.1	e8	.02
19	1.6	e6	.03	1.7	23	.10	1.2	e8	.03
20	1.5	e7	.03	1.5	e12	.05	1.2	e8	.03
21	1.5	e8	.03	1.5	e9	.04	1.4	e9	.04
22	1.5	e8	.03	1.7	13	.10	1.4	e5	.02
23	1.4	e9	.04	1.7	e12	.06	1.4	e8	.03
24	1.8	e17	.13	1.7	e12	.06	1.4	e9	.04
25	1.3	e8	.03	1.7	e11	.05	1.4	e8	.03
26	2.1	e14	.09	1.6	e10	.04	1.6	e13	.07
27	2.4	e19	.15	1.6	e9	.04	1.7	e15	.08
28	1.6	e14	.06	1.5	e9	.04	1.4	e8	.03
29	1.6	e13	.06	1.6	e8	.03	1.3	e8	.03
30	1.6	e13	.05	1.6	e7	.03	1.3	8	.03
31	---	---	---	1.6	e7	.03	---	---	---
TOTAL	53.9	---	2.33	60.3	---	6.05	37.4	---	0.87
		JULY			AUGUST			SEPTEMBER	
1	1.2	e8	.03	1.3	e3	.01	1.0	e5	.01
2	1.2	e8	.03	1.3	e3	.01	1.1	e5	.01
3	1.2	e8	.03	1.4	e3	.01	1.1	e5	.01
4	1.3	e8	.03	1.2	e2	.01	1.1	e5	.01
5	1.2	e8	.03	1.2	e2	.01	1.0	e4	.01
6	1.7	e15	.09	1.1	e2	.01	1.1	e4	.01
7	1.4	e7	.03	.89	e2	.00	1.1	e4	.01
8	1.4	e7	.03	.72	e2	.00	1.0	e4	.01
9	1.8	e11	.08	.67	e1	.00	1.2	e4	.01
10	1.6	e10	.05	.64	e1	.00	1.0	e4	.01
11	1.5	e7	.03	1.1	e1	.00	.98	e4	.01
12	1.5	e6	.02	1.2	1	.00	1.9	e18	.61
13	1.4	e5	.02	1.1	e2	.01	1.3	e9	.04
14	1.3	e5	.02	1.2	e4	.01	1.6	e15	.12
15	1.3	4	.02	1.2	7	.02	1.3	e8	.03
16	.93	e5	.01	1.5	e12	.21	1.3	e7	.03
17	1.1	e6	.02	4.2	e72	8.5	1.2	e6	.02
18	1.2	e8	.03	1.2	e8	.03	1.4	e10	.04
19	1.9	e21	.23	1.1	e8	.02	1.3	e10	.04
20	1.3	e9	.03	.94	e7	.02	1.5	e12	.08
21	1.5	e9	.04	.95	e7	.02	4.9	e136	9.1
22	2.8	e26	.31	1.0	e7	.02	1.6	e11	.05
23	1.4	e9	.04	1.1	e7	.02	1.6	e10	.05
24	1.5	e8	.03	1.1	e6	.02	1.4	e8	.03
25	1.4	e8	.03	1.0	e6	.02	1.3	e8	.03
26	1.3	e7	.02	1.3	e11	.08	1.3	e8	.03
27	1.2	e6	.02	1.1	e4	.01	1.3	e8	.03
28	1.2	e5	.02	1.1	e5	.01	1.2	e8	.03
29	1.2	e5	.02	1.3	e8	.04	1.3	e8	.03
30	1.2	e4	.01	1.1	e5	.02	1.2	e8	.03
31	1.1	e4	.01	1.2	e5	.02	---	---	---
TOTAL	43.23	---	1.41	37.41	---	9.16	41.58	---	10.53
YEAR	554.45		134.75						

e Estimated

HAWAII, ISLAND OF OAHU

16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	1.2	e2	.01	6.0	70	3.5	2.2	9	.17
2	1.5	e3	.02	1.3	2	.01	1.6	3	.01
3	2.5	8	.07	1.4	e2	.01	1.5	e2	.01
4	2.5	8	.07	1.3	e2	.01	1.5	1	.00
5	1.6	3	.02	3.3	15	.23	1.3	e1	.01
6	1.4	e1	.00	1.6	1	.01	1.5	e2	.01
7	1.4	e1	.01	1.5	e1	.01	1.5	e3	.02
8	1.5	e2	.01	1.6	e1	.01	1.3	e2	.01
9	1.7	3	.03	1.5	e1	.01	1.3	e3	.01
10	1.2	e3	.02	1.5	e2	.01	1.2	<0	.00
11	2.6	7	.14	1.7	e2	.01	1.2	<0	.00
12	1.3	e1	.01	1.9	7	.07	1.3	<0	.00
13	1.3	e1	.00	1.5	1	.00	1.3	<0	.00
14	1.3	e1	.00	1.5	<0	.00	1.4	e0	.00
15	1.2	e1	.00	1.6	e1	.01	1.4	e1	.00
16	1.1	e1	.00	1.6	e1	.01	1.4	e1	.00
17	1.1	e1	.00	1.6	e2	.01	1.3	e1	.00
18	1.3	e1	.01	1.6	e3	.01	2.6	20	.56
19	1.1	e1	.00	1.5	e2	.01	1.4	2	.01
20	1.3	e1	.00	1.6	e2	.01	1.4	e3	.01
21	1.2	e1	.00	1.6	e2	.01	1.2	e1	.00
22	1.1	e2	.01	1.6	e2	.01	1.2	e1	.00
23	1.2	e1	.00	1.5	e2	.01	1.2	e1	.00
24	1.2	e1	.00	1.4	e2	.01	1.2	e1	.00
25	1.2	e1	.00	1.4	e2	.01	1.2	e1	.01
26	1.1	e1	.00	1.5	e2	.01	1.1	e2	.01
27	1.2	e1	.00	1.7	e5	.04	1.2	e2	.01
28	1.3	1	.00	1.6	e2	.01	3.7	36	1.2
29	1.2	e1	.00	1.6	e3	.01	1.5	2	.01
30	1.1	e1	.01	2.0	9	.08	2.2	14	.14
31	1.4	e2	.01	---	---	---	2.1	e10	.07
TOTAL	43.3	---	0.45	53.0	---	4.15	47.4	---	2.28
		JANUARY			FEBRUARY			MARCH	
1	12	89	6.9	.51	e1	.00	1.2	e3	.02
2	2.2	6	.04	.91	e2	.00	1.7	11	.31
3	1.8	e4	.03	1.2	e2	.01	.85	e2	.00
4	1.5	e2	.01	1.1	e2	.01	1.0	e1	.00
5	2.1	e13	.13	1.2	e2	.01	1.1	e1	.00
6	1.6	e2	.01	1.1	2	.01	.99	1	.00
7	1.6	e2	.01	1.1	e2	.01	1.1	e1	.00
8	1.6	e2	.01	1.2	e2	.01	1.1	e1	.00
9	1.6	e2	.01	1.1	e2	.01	1.1	e1	.00
10	1.5	e2	.01	1.1	e2	.01	.98	e2	.00
11	1.4	e2	.01	1.1	e2	.01	1.0	e2	.01
12	1.6	e2	.01	1.0	e1	.00	1.2	e2	.01
13	1.5	e2	.01	1.1	e1	.00	1.1	e2	.01
14	1.5	e2	.01	1.1	e1	.00	1.0	e2	.01
15	1.5	e2	.01	1.0	e1	.00	1.1	e2	.01
16	1.6	e2	.01	1.1	e1	.00	1.0	e2	.01
17	1.9	e5	.04	1.1	e1	.00	1.1	e2	.01
18	1.6	e2	.01	1.1	e1	.00	.98	e2	.00
19	1.4	e2	.01	1.0	e1	.00	1.1	e2	.00
20	1.4	e2	.01	1.1	1	.00	1.1	e2	.00
21	1.4	e2	.01	1.1	e1	.00	1.1	e1	.00
22	1.3	e2	.01	1.2	e1	.00	1.1	e1	.00
23	1.5	e3	.01	1.0	e1	.00	1.1	e1	.00
24	1.5	e3	.01	1.1	e2	.00	.95	e1	.00
25	1.4	e3	.01	.98	e2	.01	1.1	e1	.00
26	1.2	2	.01	1.3	e5	.03	1.1	e1	.00
27	1.2	e1	.00	1.0	e2	.01	.98	e1	.00
28	1.2	e1	.00	1.1	e2	.01	1.1	e1	.00
29	1.2	e1	.00	---	---	---	1.1	e1	.00
30	1.1	e1	.00	---	---	---	.97	e1	.00
31	.76	e1	.00	---	---	---	.99	<0	.00
TOTAL	56.66	---	7.35	30.00	---	0.15	33.39	---	0.40

e Estimated
< Actual value is known to be less than the value shown

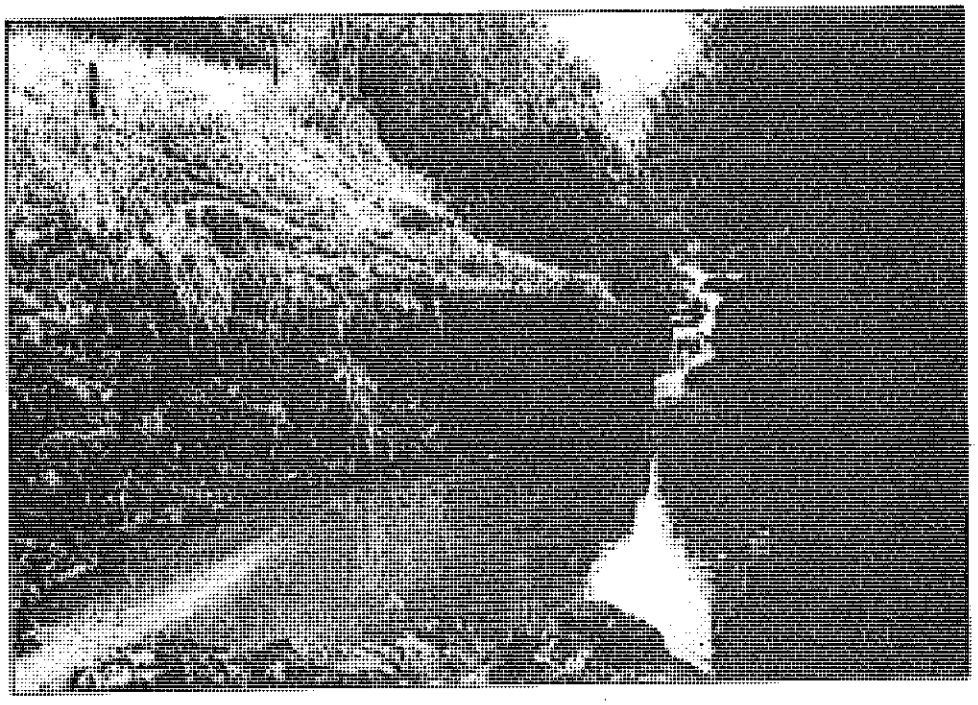
HAWAII, ISLAND OF OAHU

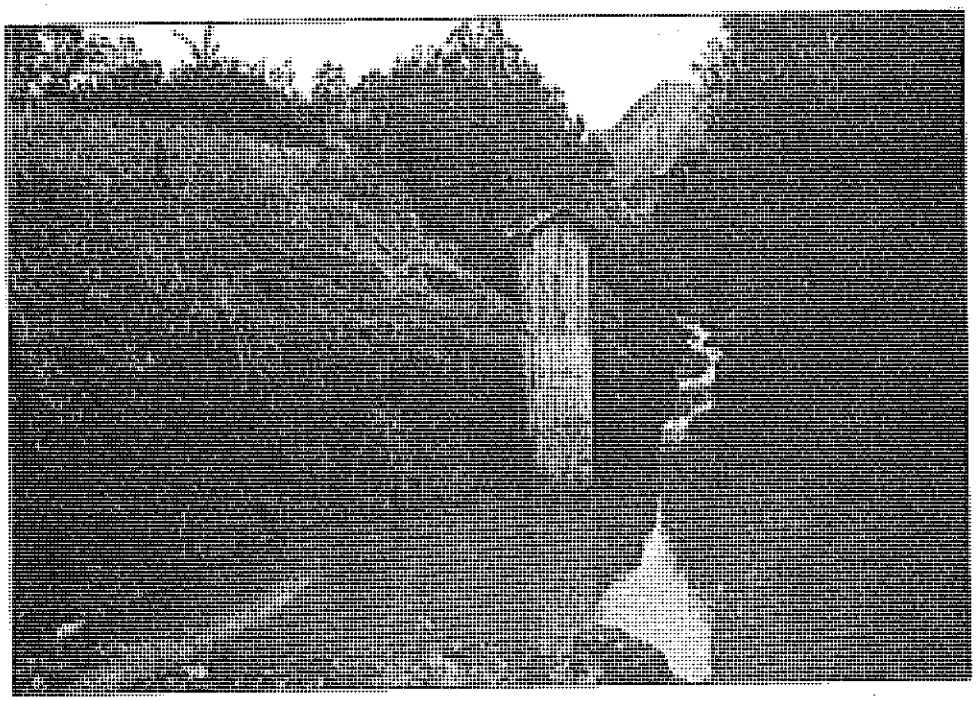
16270900 LULUKU STREAM AT ALTITUDE 220 FT, NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	.95	e1	.00	.74	e1	.00	.80	e1	.00
2	1.0	e1	.00	.65	e1	.00	.78	e1	.00
3	1.0	e1	.00	.71	e1	.00	.78	e2	.00
4	1.0	e1	.00	.57	e1	.00	.74	e4	.01
5	1.1	e1	.00	.73	e1	.00	.83	e2	.00
6	.95	e1	.00	.81	e1	.00	.77	e2	.00
7	.99	e1	.00	.72	e1	.00	.79	e2	.00
8	1.1	e1	.00	.75	e1	.00	.87	e4	.01
9	1.1	e1	.00	.73	e1	.00	.79	e2	.01
10	1.1	e1	.00	.71	e1	.00	.76	e1	.00
11	1.1	e1	.00	.73	e1	.00	.85	1	.00
12	1.1	e1	.00	.64	e1	.00	.99	<0	.00
13	1.0	e1	.00	.70	e1	.00	.91	2	.00
14	1.1	e1	.00	.68	e1	.00	.75	1	.00
15	1.1	e1	.00	.70	e1	.00	1.1	1	.00
16	1.1	e1	.00	.72	e1	.00	.94	<0	.00
17	1.1	e1	.00	.71	e1	.00	.98	<0	.00
18	1.3	e2	.01	.63	e1	.00	.83	1	.00
19	1.2	e3	.01	.75	e1	.00	.95	1	.00
20	1.1	e3	.01	.71	e1	.00	1.1	<0	.00
21	.90	2	.01	.69	e1	.00	.91	1	.00
22	.86	e2	.00	.75	e1	.00	.66	1	.00
23	.74	e1	.00	.73	e1	.00	.93	e2	.01
24	.85	1	.00	.62	e1	.00	1.2	5	.03
25	.77	e1	.00	.70	e1	.00	.67	e1	.00
26	.81	e1	.00	.67	e1	.00	.78	e1	.00
27	.77	e1	.00	.63	e1	.00	.69	e2	.00
28	.78	e1	.00	.67	e1	.00	.69	e2	.00
29	.77	1	.00	.81	e1	.00	.98	e5	.02
30	.70	e1	.00	.73	e1	.00	1.1	3	.01
31	---	---	---	.80	e1	.00	---	---	---
TOTAL	29.44	---	0.04	21.89	---	0.00	25.92	---	0.10
	JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---

e Estimated
< Actual value is known to be less than the value shown





Kamooalii Stream, Oahu

HAWAII, ISLAND OF OAHU

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 downstream from Luluku Stream, 1.0 mi southwest of Castle High School, and 1.9 mi northwest of the intersection of State Highways 61 and 83.

DRAINAGE AREA.--3.81 mi^2.

PERIOD OF RECORD.--November 1976 to current year.

REVISED RECORDS.--WDR HI-92-1: 1991(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 116.39 ft above mean sea level (levels by Corps of Engineers).

REMARKS.--Records computed by George Dayag. Records good. Flow regulated by a flood-control dam upstream.

AVERAGE DISCHARGE.--21 years (water years 1977-98), 11.0 ft^3/s (7,990 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,650 ft^3/s, December 31, 1987, gage height, 5.72 ft, from rating curve extended above 200 ft^3/s; minimum, 0.25 ft^3/s on several days in October 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 1	0815	*266	*3.11				

Minimum daily discharge, 3.2 ft^3/s, September 27 and 30. Minimum discharge, 1.1 ft^3/s, December 18, result of maintenance work on dam upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	30	21	96	7.9	7.7	6.3	5.8	4.6	5.3	3.9	3.9
2	8.8	11	11	23	7.7	16	6.3	5.3	5.4	4.6	3.9	5.3
3	14	8.2	9.0	17	8.2	10	6.7	5.5	5.3	4.8	3.9	4.6
4	19	8.0	8.3	15	8.5	7.8	6.2	5.7	5.9	6.3	4.2	3.8
5	13	23	7.9	32	8.4	7.6	6.7	5.9	5.8	5.7	4.1	3.7
6	10	11	8.7	15	8.2	7.2	6.5	5.9	4.8	4.7	4.2	4.3
7	10	9.3	11	12	8.2	7.1	6.7	5.5	4.5	4.7	4.1	3.6
8	9.2	8.7	10	12	8.2	7.2	7.6	5.4	5.6	5.0	4.9	3.4
9	10	8.7	11	12	7.8	7.2	6.0	5.4	4.9	5.3	5.0	3.8
10	10	8.0	11	11	7.8	6.8	6.1	5.3	4.7	4.7	4.9	3.8
11	15	8.0	8.6	10	7.9	6.7	5.8	5.3	4.8	4.4	4.1	3.4
12	11	9.5	5.6	11	7.5	7.0	6.2	5.2	5.6	4.2	4.1	4.1
13	9.9	9.0	7.6	10	7.8	6.7	6.0	5.2	4.9	5.1	3.9	3.7
14	9.2	8.2	7.8	10	7.8	6.7	5.9	5.0	4.7	5.2	3.8	3.5
15	9.0	7.8	7.9	9.9	7.6	6.7	5.7	5.0	6.0	7.0	3.9	3.5
16	8.7	7.7	8.9	9.7	7.4	6.7	5.6	5.1	5.4	5.0	3.9	4.2
17	8.3	7.7	9.2	13	7.4	6.7	5.6	5.2	5.3	4.7	3.9	3.6
18	8.8	9.3	19	12	7.4	6.6	5.8	5.4	4.8	4.3	3.9	3.6
19	8.2	8.6	19	11	7.3	6.5	6.3	5.6	4.8	4.3	3.7	3.6
20	7.7	8.0	11	9.8	7.2	6.7	6.8	5.1	5.6	4.2	3.6	3.4
21	8.3	7.7	9.1	9.2	7.1	6.6	6.6	4.8	6.0	4.2	3.8	5.1
22	8.3	7.5	8.5	9.0	7.4	6.8	7.2	5.6	5.4	4.2	4.3	4.1
23	8.1	7.5	9.3	8.9	7.0	6.8	5.8	5.1	6.1	4.1	3.9	3.6
24	7.9	7.3	8.5	8.6	7.1	6.3	5.4	4.6	7.6	4.4	3.7	3.4
25	7.7	8.4	8.2	8.6	7.1	6.7	5.5	4.8	5.6	4.5	4.3	3.7
26	7.8	7.3	8.2	8.5	9.4	7.0	5.4	4.7	5.9	4.3	3.6	3.5
27	7.6	9.5	8.4	8.7	9.0	6.5	5.5	4.6	5.3	4.2	3.7	3.2
28	7.4	11	28	8.8	7.3	6.3	5.3	4.4	5.5	4.4	3.9	3.5
29	8.0	9.5	23	8.8	---	6.7	4.9	4.7	7.1	4.3	3.4	3.6
30	7.2	12	14	8.3	---	6.6	5.3	4.7	6.6	4.2	3.6	3.2
31	7.7	---	18	8.0	---	6.3	---	4.7	---	4.1	3.4	---
TOTAL	293.4	297.4	356.7	446.8	217.6	224.2	181.7	160.5	164.5	146.4	123.5	113.7
MEAN	9.46	9.91	11.5	14.4	7.77	7.23	6.06	5.18	5.48	4.72	3.98	3.79
MAX	19	30	28	96	9.4	16	7.6	5.9	7.6	7.0	5.0	5.3
MIN	7.2	7.3	5.6	8.0	7.0	6.3	4.9	4.4	4.5	4.1	3.4	3.2
AC-FT	582	590	708	886	432	445	360	318	326	290	245	226

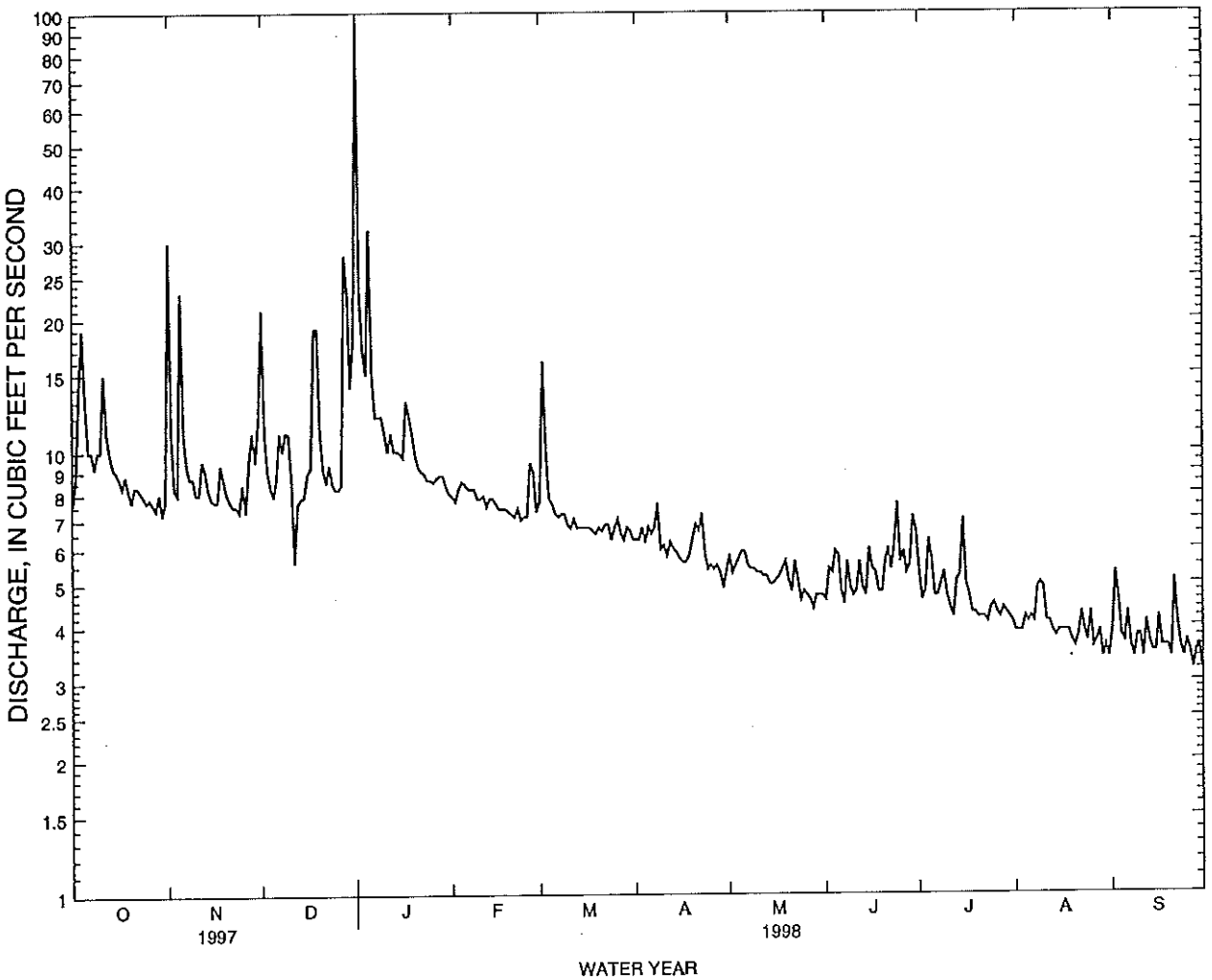
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1998, BY WATER YEAR (WY)

MEAN	8.30	11.5	12.6	15.6	12.7	13.9	12.7	10.9	9.09	8.09	7.54	7.48
MAX	16.8	29.6	37.2	53.4	35.9	34.3	49.1	23.0	25.7	19.9	24.0	16.9
(WY)	1983	1987	1988	1988	1979	1982	1989	1981	1982	1982	1982	1982
MIN	2.91	3.90	4.56	4.05	3.83	4.03	5.32	4.53	3.59	3.19	2.91	2.94
(WY)	1985	1985	1978	1977	1978	1978	1985	1984	1984	1984	1984	1984

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1977 - 1998	
ANNUAL TOTAL	5080.6		2726.4			
ANNUAL MEAN	13.9		7.47		11.0	
HIGHEST ANNUAL MEAN					22.0	1982
LOWEST ANNUAL MEAN					4.36	1984
HIGHEST DAILY MEAN	109	Jan 3	96	Jan 1	723	Jan 1 1988
LOWEST DAILY MEAN	5.6	Dec 12	3.2	Sep 27	.29	Oct 10 1984
ANNUAL SEVEN-DAY MINIMUM	7.2	Sep 3	3.4	Sep 24	.30	Oct 10 1984
ANNUAL RUNOFF (AC-FT)	10080		5410		7990	
10 PERCENT EXCEEDS	20		11		17	
50 PERCENT EXCEEDS	12		6.6		7.5	
90 PERCENT EXCEEDS	7.8		3.9		4.5	



HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

PERIOD OF RECORD.--November 1976 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: November 1976 to current year (discontinued). Upstream dam was completed in 1980.

INSTRUMENTATION.--Automatic pumping sediment sampler since November 1976.

REMARKS.--Samples for water years 1995-97 with concentrations of about 1,000 mg/L and higher were analyzed using method 2540D (Standard Methods, 19th edition, 1995) for total suspended solids.

Water year 1997: Water-quality samples were collected at this site. Sediment records computed by C.W. Yeung. Records fair.

Water year 1998: Water-quality samples were collected at this site. Sediment records computed by B.R. Hill. Records fair.

EXTREMES FOR PERIOD OF RECORD.--

Water year 1997:

Sediment Concentrations: Maximum daily mean 879 mg/L, March 18, 1980; minimum daily mean, 1 mg/L, on several days in 1988, 1990, 1991.

Sediment Discharge: Maximum daily, 1,380 tons, March 18, 1980; minimum daily, 0.01 ton, October 9-11, 1981, August 13, 1993.

Water year 1998:

Sediment Concentrations: Maximum daily mean 879 mg/L, March 18, 1980; minimum daily mean, 1 mg/L, on several days in 1988, 1990, 1991.

Sediment Discharge: Maximum daily, 1,380 tons, March 18, 1980; minimum daily, 0.01 ton, October 9-11, 1981, August 13, 1993.

EXTREMES FOR CURRENT YEAR.--

Water year 1997:

Sediment Concentrations: Maximum daily mean 113 mg/L, March 17; minimum daily mean, 2 mg/L on many days.

Sediment Discharge: Maximum daily, 59 tons, March 17; minimum daily, 0.05 ton, October 25.

Water year 1998:

Sediment Concentrations: Maximum daily mean 191 mg/L, December 29; minimum daily mean, 3 mg/L, February 21, 25 and March 6-9.

Sediment Discharge: Maximum daily, 21 tons, January 1; minimum daily, 0.09 ton, August 31.

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)
NOV 1997												
12...	0945	23.5	28.0	765	9.38	1.52	1.5	178	8.9	7.8	--	--
DEC												
22...	0925	22.5	23.5	765	8.6	1.50	2.0	185	9.1	7.5	--	4
JAN 1998												
26...	0930	21.5	21.0	760	8.60	1.50	.8	188	9.0	7.6	7.8	<1
APR												
21...	1105	25.0	31.0	764	5.65	1.42	2.2	187	9.0	7.6	--	--

DATE	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)
NOV 1997												
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
22...	--	.1	.34	.02	--	--	--	--	--	--	--	--
JAN 1998												
26...	<1	.1	.41	<.01	1.5	9.4	8.2	14	1.1	18	8.1	<.1
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)
NOV 1997												
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
22...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1998												
26...	20	<1	6	<100	<10	<1	<1.0	<12	<1	1	230	56
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
NOV 1997												
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
22...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 1998												
26...	<1	20	<4	<60	<1.0	<1	<1	<1	<1	75	<10	<10
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SELENIUM, TOTAL (UG/L AS SE) (01147)	DETERGENT SUDS (SEVERITY) (01305)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CHLORPYRIFOS TOTAL RECOVER (UG/L) (38932)	DISULFOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	140	--	--	--
JAN 1998											
26...	60	<10.0	<4	<10	<1	<1	--	87	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	1	--	--	--	--

DATE	PERTHANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNB UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN I TOTAL (UG/L) (39388)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
JAN 1998											
26...	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01	.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOXAPHENE, TOTAL (UG/L) (39400)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	METHOXYCHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALATHION, TOTAL (UG/L) (39530)	PARATHION, TOTAL (UG/L) (39540)	DIAZINON, TOTAL (UG/L) (39570)	METHYL PARATHION, TOTAL (UG/L) (39600)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
JAN 1998											
26...	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRITHION (UG/L) (39786)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DYFONATE) WATER WHOLE TOT.REC (UG/L) (82614)	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
NOV 1997											
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
22...	--	--	--	--	--	--	--	--	--	--	--
JAN 1998											
26...	<.01	<.01	<.01	<.01	<.01	125	<.1	<.01	<.01	191	57
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	6.0	e12	.19	5.8	e6	.10	12	16	.50
2	5.9	e11	.17	11	e20	.63	11	25	.76
3	5.7	e10	.16	7.3	e8	.16	12	10	.32
4	5.6	e10	.15	5.9	e6	.10	12	2	.06
5	5.5	e9	.13	28	e23	3.2	12	6	.18
6	5.2	e8	.12	13	13	.52	11	18	.52
7	5.4	e8	.12	7.1	e8	.16	12	14	.47
8	5.5	e7	.11	35	e29	2.8	10	20	.56
9	5.7	e7	.11	11	22	.71	9.9	19	.50
10	5.6	e6	.10	6.9	10	.18	11	30	.85
11	5.4	6	.09	6.4	9	.16	13	22	.77
12	5.5	e6	.09	73	54	22	12	5	.15
13	5.3	e6	.09	67	e65	18	11	e6	.17
14	5.8	e6	.09	100	e94	40	13	12	.47
15	5.7	e6	.09	41	96	11	10	8	.21
16	6.0	e6	.10	51	65	11	9.5	15	.38
17	6.7	e8	.15	36	41	4.1	9.3	42	1.0
18	5.9	e6	.10	23	30	1.9	9.0	10	.25
19	9.3	e11	.43	19	24	1.2	8.9	11	.27
20	8.2	e10	.23	18	e18	.86	8.6	5	.13
21	6.4	e6	.11	17	e14	1.2	9.0	e6	.16
22	7.8	8	.29	12	4	.15	8.8	e8	.18
23	6.3	e7	.18	14	14	.53	11	e11	.33
24	4.7	e7	.11	22	15	1.1	10	e10	.29
25	3.7	e4	.05	15	3	.12	8.8	e9	.21
26	5.8	e6	.10	14	34	1.3	11	e12	.41
27	5.3	e6	.09	13	44	1.6	27	e25	1.9
28	5.3	e6	.09	12	50	1.7	12	e15	.53
29	5.3	e6	.09	12	13	.43	10	e11	.29
30	5.3	e6	.09	12	11	.34	9.5	e10	.25
31	5.7	e6	.09	---	---	---	14	e14	.60
TOTAL	181.5	---	4.11	708.4	---	127.25	348.3	---	13.67
		JANUARY			FEBRUARY			MARCH	
1	13	e14	.51	14	e13	.49	12	6	.20
2	12	e10	.33	13	e13	.46	12	e10	.32
3	109	70	43	13	e13	.43	11	6	.16
4	31	e28	2.4	13	e12	.43	15	e12	.57
5	18	e19	.91	13	e12	.41	27	e14	1.2
6	15	e14	.56	12	e12	.41	13	9	.31
7	14	e14	.51	13	e13	.49	12	7	.22
8	14	e13	.48	12	e12	.40	11	6	.19
9	13	e13	.46	12	e12	.38	11	9	.27
10	13	e13	.43	12	e12	.38	11	8	.23
11	13	e12	.42	11	e12	.36	26	e23	1.8
12	15	e14	.57	11	e12	.35	13	15	.56
13	15	e15	.63	11	e11	.34	15	e15	.64
14	12	e12	.40	11	e11	.33	13	12	.43
15	12	e11	.37	11	e11	.34	19	e15	.81
16	14	e13	.51	10	e11	.31	14	12	.47
17	12	e11	.37	10	e11	.31	98	113	59
18	12	e11	.35	10	e11	.30	17	33	1.6
19	45	e33	15	9.9	11	.28	13	25	.92
20	44	e53	10	9.9	e8	.22	13	18	.63
21	48	e39	9.8	10	7	.19	13	14	.49
22	22	e26	1.8	19	e15	1.1	12	12	.40
23	15	e13	.54	14	10	.38	74	32	8.4
24	14	e13	.49	10	7	.21	25	25	1.8
25	14	e13	.48	10	7	.18	22	15	.93
26	13	e13	.47	14	24	1.1	18	9	.44
27	13	e13	.47	15	14	.62	17	9	.41
28	13	e13	.46	11	6	.17	19	e9	.50
29	18	e17	.85	---	---	---	16	9	.39
30	16	e17	.72	---	---	---	14	5	.21
31	16	e15	.65	---	---	---	13	4	.13
TOTAL	648	---	94.94	334.8	---	11.37	619	---	84.63

e Estimated

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	23	e15	1.6	13	6	.20	14	e4	.15
2	69	e26	7.9	13	5	.17	15	e8	.37
3	63	e41	8.4	13	4	.12	14	e7	.25
4	23	20	1.2	13	3	.11	14	e5	.20
5	20	24	1.3	17	e7	.45	14	e5	.18
6	21	e8	.52	22	e25	1.5	14	e5	.18
7	18	6	.27	41	e27	4.4	13	e5	.17
8	17	8	.36	48	e28	4.4	14	e5	.18
9	17	8	.39	22	8	.53	12	e5	.17
10	18	e10	.52	17	6	.28	13	e5	.17
11	21	e9	.57	19	9	.48	12	e5	.17
12	16	8	.33	27	e14	1.3	13	e5	.17
13	16	7	.29	18	7	.33	12	e5	.16
14	15	5	.21	42	e21	3.0	12	e5	.16
15	15	5	.20	33	e16	1.5	12	e5	.16
16	14	6	.23	33	e16	1.5	12	e5	.16
17	14	12	.44	22	5	.28	12	e5	.16
18	13	15	.55	21	3	.19	12	5	.17
19	13	6	.23	18	9	.47	12	8	.24
20	13	7	.24	18	9	.42	12	15	.46
21	13	3	.09	17	7	.32	14	e10	.41
22	13	6	.19	19	e11	.68	12	e8	.25
23	12	18	.60	20	20	1.2	13	e11	.36
24	15	e14	.59	17	5	.23	15	e13	.52
25	14	10	.38	16	5	.21	13	e11	.42
26	20	e15	.78	16	5	.21	16	e14	.61
27	22	e20	1.3	15	e4	.17	15	e14	.57
28	15	10	.41	15	e4	.16	13	e8	.29
29	14	5	.21	14	e4	.16	13	e7	.25
30	14	5	.18	14	e4	.15	11	e7	.21
31	---	---	---	15	e4	.16	---	---	---
TOTAL	591	---	30.48	648	---	25.28	393	---	7.92
		JULY			AUGUST			SEPTEMBER	
1	11	6	.17	9.0	5	.12	7.4	4	.07
2	11	3	.10	9.0	6	.16	7.6	12	.24
3	11	2	.07	9.0	8	.18	7.3	34	.66
4	12	5	.14	8.6	5	.11	7.6	13	.27
5	11	6	.18	8.5	5	.12	7.1	10	.19
6	13	e11	.38	8.2	4	.09	7.1	13	.25
7	11	6	.19	8.2	3	.07	7.1	5	.10
8	11	5	.13	8.3	4	.09	7.0	6	.11
9	13	e10	.38	8.2	3	.07	7.2	8	.15
10	14	5	.19	7.9	4	.09	7.4	e9	.18
11	12	3	.08	8.6	6	.13	7.5	10	.21
12	11	4	.13	8.1	6	.14	14	e20	.82
13	11	6	.17	7.9	8	.16	11	13	.38
14	10	11	.31	8.1	6	.14	10	18	.52
15	11	6	.18	8.2	5	.12	8.4	8	.19
16	10	5	.13	11	e10	.31	8.3	15	.34
17	10	3	.08	16	e16	1.1	7.8	10	.22
18	9.7	6	.15	12	e7	.25	9.5	7	.19
19	14	e11	.43	8.8	e5	.13	9.9	e9	.25
20	10	9	.23	8.8	5	.12	10	18	.48
21	10	e11	.29	8.3	4	.10	17	38	2.5
22	21	e15	.82	7.8	3	.07	12	34	1.2
23	13	e9	.32	7.8	4	.08	11	16	.49
24	11	e6	.18	7.8	3	.06	17	23	1.2
25	11	e5	.16	7.7	3	.06	9.3	6	.15
26	10	e5	.13	9.5	26	.73	8.9	5	.11
27	9.7	e4	.11	7.8	5	.11	8.4	6	.14
28	9.6	e3	.09	8.0	5	.10	8.1	6	.14
29	9.4	3	.07	9.5	e10	.27	8.0	6	.13
30	9.6	2	.06	7.9	18	.39	7.8	7	.15
31	9.0	4	.09	8.1	7	.14	---	---	---
TOTAL	350.0	---	6.14	272.6	---	5.81	276.7	---	12.03
YEAR	5371.3		423.63						

e Estimated

HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	7.6	7	.15	30	22	2.7	21	40	2.5
2	8.8	e13	.33	11	13	.39	11	e15	.46
3	14	e17	.71	8.2	e11	.24	9.0	e11	.28
4	19	e25	1.3	8.0	e9	.19	8.3	9	.19
5	13	e20	.72	23	27	1.8	7.9	e8	.17
6	10	e17	.45	11	e18	.53	8.7	e8	.19
7	10	e15	.42	9.3	e15	.37	11	e8	.24
8	9.2	e14	.35	8.7	e14	.33	10	e8	.22
9	10	e18	.53	8.7	e13	.32	11	e9	.29
10	10	e17	.47	8.0	e13	.28	11	e17	.89
11	15	33	1.4	8.0	e12	.27	8.6	e13	.50
12	11	e21	.65	9.5	e15	.39	5.6	e7	.10
13	9.9	e20	.53	9.0	e13	.32	7.6	e7	.14
14	9.2	e18	.46	8.2	e12	.26	7.8	e7	.14
15	9.0	e17	.42	7.8	e10	.22	7.9	e6	.14
16	8.7	e16	.38	7.7	e9	.19	8.9	e6	.15
17	8.3	e15	.34	7.7	e8	.17	9.2	e7	.24
18	8.8	e16	.39	9.3	e11	.29	19	e23	1.8
19	8.2	e13	.30	8.6	e9	.22	19	e28	1.6
20	7.7	e12	.24	8.0	e9	.20	11	e18	.51
21	8.3	e11	.25	7.7	e9	.19	9.1	e14	.33
22	8.3	e11	.24	7.5	e9	.18	8.5	e13	.29
23	8.1	e10	.22	7.5	e9	.18	9.3	e12	.30
24	7.9	e10	.21	7.3	e9	.18	8.5	e11	.26
25	7.7	e9	.20	8.4	e9	.20	8.2	e11	.24
26	7.8	e9	.19	7.3	e9	.18	8.2	e10	.22
27	7.6	e9	.18	9.5	e12	.36	8.4	e9	.21
28	7.4	e8	.17	11	e15	.49	28	33	3.3
29	8.0	7	.16	9.5	e10	.25	23	191	8.4
30	7.2	e6	.12	12	e15	.55	14	e174	6.6
31	7.7	e8	.17	---	---	---	18	68	3.1
TOTAL	293.4	---	12.65	297.4	---	12.44	356.7	---	34.00
		JANUARY			FEBRUARY			MARCH	
1	96	72	21	7.9	e12	.25	7.7	9	.20
2	23	20	1.4	7.7	e12	.24	16	e21	1.5
3	17	e12	.54	8.2	e12	.25	10	12	.38
4	15	e11	.46	8.5	e11	.26	7.8	5	.10
5	32	e33	3.4	8.4	e11	.26	7.6	4	.09
6	15	e19	.78	8.2	e11	.25	7.2	e3	.06
7	12	e14	.47	8.2	e11	.25	7.1	e3	.06
8	12	16	.52	8.2	e11	.25	7.2	e3	.07
9	12	62	1.9	7.8	e11	.23	7.2	e3	.07
10	11	29	.87	7.8	e11	.23	6.8	e4	.07
11	10	e33	.92	7.9	e11	.23	6.7	e4	.07
12	11	e29	.84	7.5	e11	.22	7.0	e4	.07
13	10	e25	.70	7.8	e11	.22	6.7	e4	.07
14	10	e22	.60	7.8	e11	.22	6.7	e4	.08
15	9.9	e19	.51	7.6	e10	.21	6.7	e4	.08
16	9.7	e17	.44	7.4	e10	.21	6.7	e5	.08
17	13	e21	.75	7.4	e10	.21	6.7	e5	.09
18	12	e19	.60	7.4	e10	.20	6.6	e5	.09
19	11	e16	.46	7.3	e10	.20	6.5	e5	.09
20	9.8	e13	.34	7.2	9	.17	6.7	e5	.10
21	9.2	e13	.32	7.1	3	.07	6.6	e6	.10
22	9.0	e13	.31	7.4	4	.09	6.8	e6	.11
23	8.9	e13	.30	7.0	e6	.12	6.8	e6	.11
24	8.6	e13	.29	7.1	7	.14	6.3	e6	.11
25	8.6	e12	.29	7.1	3	.06	6.7	e7	.12
26	8.5	e12	.28	9.4	e8	.29	7.0	e7	.13
27	8.7	e12	.29	9.0	6	.16	6.5	e7	.12
28	8.8	e12	.29	7.3	8	.15	6.3	e7	.13
29	8.8	e12	.28	---	---	---	6.7	e8	.14
30	8.3	e12	.27	---	---	---	6.6	e8	.14
31	8.0	e12	.25	---	---	---	6.3	e8	.14
TOTAL	446.8	---	40.67	217.6	---	5.64	224.2	---	4.77

e Estimated

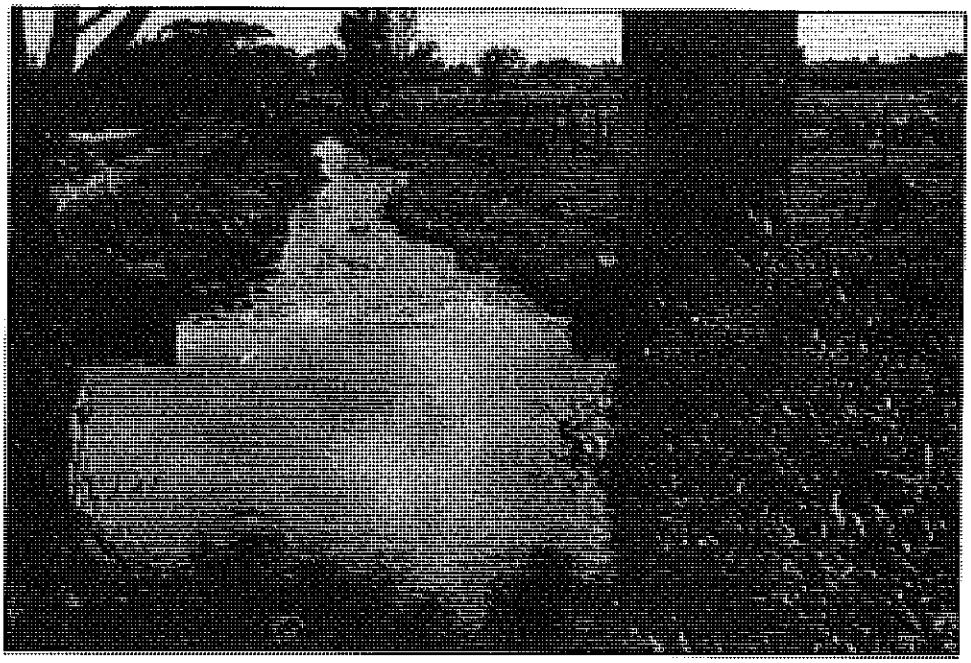
HAWAII, ISLAND OF OAHU

16272200 KAMOOALII STREAM BELOW LULUKU STREAM NEAR KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	6.3	e9	.15	5.8	e14	.22	4.6	e7	.09
2	6.3	e9	.15	5.3	e14	.19	5.4	e7	.11
3	6.7	e9	.17	5.5	e13	.20	5.3	e7	.11
4	6.2	e10	.16	5.7	e13	.20	5.9	e7	.12
5	6.7	e10	.18	5.9	e13	.20	5.8	e8	.12
6	6.5	e11	.18	5.9	e12	.20	4.8	e8	.10
7	6.7	12	.22	5.5	e12	.18	4.5	e8	.09
8	7.6	e8	.28	5.4	e12	.17	5.6	e8	.12
9	6.0	e7	.11	5.4	e11	.17	4.9	e8	.10
10	6.1	e8	.13	5.3	e11	.16	4.7	e8	.10
11	5.8	e8	.12	5.3	e11	.15	4.8	e8	.10
12	6.2	e8	.13	5.2	e11	.15	5.6	e8	.12
13	6.0	e8	.12	5.2	e10	.14	4.9	e8	.11
14	5.9	e8	.12	5.0	e10	.13	4.7	e8	.11
15	5.7	e7	.11	5.0	e10	.13	6.0	e8	.14
16	5.6	e7	.11	5.1	e9	.13	5.4	e8	.12
17	5.6	e7	.11	5.2	e9	.13	5.3	e8	.12
18	5.8	e7	.11	5.4	e9	.13	4.8	e9	.11
19	6.3	e7	.12	5.6	e9	.13	4.8	e9	.11
20	6.8	e10	.19	5.1	e9	.12	5.6	e9	.13
21	6.6	e10	.18	4.8	e8	.11	6.0	e9	.14
22	7.2	e10	.20	5.6	e8	.12	5.4	e9	.13
23	5.8	e7	.11	5.1	e8	.11	6.1	9	.14
24	5.4	7	.10	4.6	e8	.10	7.6	e13	.28
25	5.5	e9	.13	4.8	e8	.10	5.6	e9	.14
26	5.4	e10	.15	4.7	e7	.09	5.9	e9	.14
27	5.5	e13	.19	4.6	e7	.09	5.3	e8	.12
28	5.3	15	.21	4.4	7	.08	5.5	e8	.12
29	4.9	e15	.19	4.7	e7	.09	7.1	e14	.27
30	5.3	e14	.20	4.7	e7	.09	6.6	e12	.21
31	---	---	---	4.7	e7	.09	---	---	---
TOTAL	181.7	---	4.63	160.5	---	4.30	164.5	---	3.92
		JULY			AUGUST			SEPTEMBER	
1	5.3	14	.20	3.9	e6	.07	3.9	e9	.10
2	4.6	12	.15	3.9	e7	.07	5.3	e12	.17
3	4.8	10	.13	3.9	e7	.07	4.6	8	.11
4	6.3	e8	.14	4.2	e7	.08	3.8	e7	.07
5	5.7	8	.12	4.1	e7	.08	3.7	e7	.07
6	4.7	e7	.09	4.2	7	.08	4.3	e7	.09
7	4.7	e7	.09	4.1	e6	.07	3.6	e8	.07
8	5.0	e7	.09	4.9	e8	.11	3.4	e8	.07
9	5.3	e7	.09	5.0	e8	.11	3.8	e8	.08
10	4.7	e6	.08	4.9	e8	.11	3.8	7	.07
11	4.4	e6	.08	4.1	e8	.09	3.4	e5	.05
12	4.2	e6	.07	4.1	e8	.08	4.1	e5	.06
13	5.1	e6	.09	3.9	e7	.08	3.7	e5	.05
14	5.2	e6	.09	3.8	e7	.07	3.5	e5	.05
15	7.0	e13	.26	3.9	e7	.07	3.5	e5	.05
16	5.0	e8	.12	3.9	e7	.07	4.2	e8	.09
17	4.7	e8	.10	3.9	e7	.07	3.6	9	.09
18	4.3	e8	.09	3.9	e7	.07	3.6	e8	.08
19	4.3	e7	.09	3.7	e6	.06	3.6	e7	.07
20	4.2	e7	.08	3.6	e6	.06	3.4	e7	.07
21	4.2	e7	.08	3.8	e6	.06	5.1	e11	.16
22	4.2	e7	.08	4.3	e7	.08	4.1	e10	.11
23	4.1	e7	.07	3.9	e7	.08	3.6	e10	.10
24	4.4	e6	.08	3.7	e7	.07	3.4	e10	.10
25	4.5	e6	.08	4.3	e8	.10	3.7	e10	.10
26	4.3	e6	.07	3.6	e7	.07	3.5	e11	.10
27	4.2	6	.07	3.7	e7	.07	3.2	e11	.09
28	4.4	e6	.07	3.9	e6	.06	3.5	e11	.10
29	4.3	e6	.07	3.4	e5	.05	3.6	e11	.11
30	4.2	e6	.07	3.6	e5	.05	3.2	12	.10
31	4.1	e6	.07	3.4	e4	.04	---	---	---
TOTAL	146.4	---	3.06	123.5	---	2.30	113.7	---	2.63
YEAR	2726.4		131.01						

e Estimated



Pearl Harbor Spring, Oahu

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE

LOCATION.--Lat 21°24′21″, long 157°48′31″, Hydrologic Unit 20060000, on right bank, 0.8 mi west of Castle High School, 1.2 mi northwest of Hawaiian Memorial Park Cemetery, and 2.4 mi northwest of Pali Golf Course.

DRAINAGE AREA.--0.40 mi^2.

PERIOD OF RECORD.--August 1983 to July 1987 (discharge measurements only). October 1987 to September 1996, October 1996 to September 1997 (discharge measurements only), September 1997 to June 1998 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 111.26 ft above mean sea level (from stadia survey).

REMARKS.--Records computed by S.T.M. Young. Records good except for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--9 years (water years 1988-96), 2.38 ft^3/s (1,720 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 207 ft^3/s, December 31, 1987, gage height, 5.18 ft, from rating curve extended above 21 ft^3/s; minimum, 1.4 ft^3/s, January 22, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft^3/s and maximum (*) during the period October 1997 to June 1998:

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 1	0630	*32	*2.76				

Minimum daily discharge during the period October 1997 to June 1998 is 1.7 ft^3/s for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	3.3	2.3	7.3	2.0	1.9	1.8	e1.8	2.3	---	---	---
2	2.0	2.0	1.9	2.8	1.9	2.6	1.8	e1.7	2.3	---	---	---
3	2.4	1.9	1.9	2.5	1.9	1.9	1.9	e1.7	2.4	---	---	---
4	2.4	1.9	1.9	2.4	1.9	1.9	1.8	e1.7	2.5	---	---	---
5	2.1	3.2	1.9	2.9	1.9	1.9	1.9	e1.8	2.5	---	---	---
6	1.9	2.0	1.9	2.2	1.9	1.8	1.9	e1.8	2.5	---	---	---
7	2.0	1.9	2.1	2.1	1.9	1.9	1.9	e1.8	2.5	---	---	---
8	1.9	1.9	2.1	2.1	1.8	1.9	1.9	e1.7	2.6	---	---	---
9	1.8	1.8	2.0	2.1	1.8	1.9	1.9	e1.7	2.6	---	---	---
10	1.9	1.8	2.0	2.1	1.8	1.8	1.9	e1.7	2.6	---	---	---
11	2.5	1.8	2.0	2.1	1.8	1.8	1.8	e1.7	2.4	---	---	---
12	2.2	1.9	2.0	2.1	1.8	1.8	1.9	e1.7	2.2	---	---	---
13	1.9	1.8	2.0	2.1	1.7	1.8	1.9	e1.7	2.0	---	---	---
14	1.9	1.8	2.0	2.1	1.7	1.8	1.8	e1.7	2.1	---	---	---
15	1.9	1.8	2.0	2.1	1.7	1.8	1.9	e1.7	2.2	---	---	---
16	1.8	1.8	2.0	2.1	1.7	1.8	1.9	e1.7	2.1	---	---	---
17	1.8	1.8	1.9	2.4	1.8	1.8	1.9	e1.7	2.0	---	---	---
18	1.9	1.9	2.8	2.1	1.8	1.8	1.9	e1.7	2.0	---	---	---
19	1.8	1.8	2.1	2.0	1.8	1.7	1.9	e1.8	2.0	---	---	---
20	1.8	1.8	2.1	2.0	1.8	1.7	1.9	e1.7	2.0	---	---	---
21	1.9	1.8	2.0	1.9	1.8	1.7	2.0	e1.7	2.0	---	---	---
22	1.8	1.8	1.9	1.9	1.8	1.8	1.9	e1.8	1.9	---	---	---
23	1.8	1.8	2.0	1.9	1.8	1.8	1.8	e1.7	1.9	---	---	---
24	1.7	1.8	1.9	1.9	1.9	1.8	1.8	e1.7	2.3	---	---	---
25	1.8	1.8	1.9	1.9	1.9	1.8	1.9	e1.7	1.9	---	---	---
26	1.8	1.8	1.9	1.9	2.1	1.8	1.9	e1.7	2.0	---	---	---
27	1.8	2.0	1.9	2.0	1.9	1.8	1.9	e1.7	1.9	---	---	---
28	1.8	1.9	3.6	1.9	1.9	1.8	e1.8	e1.7	2.0	---	---	---
29	1.8	1.9	2.4	1.9	---	1.8	e1.7	2.2	2.3	---	---	---
30	1.8	2.2	2.4	1.9	---	1.8	e1.7	2.3	2.1	---	---	---
31	1.8	---	2.6	1.9	---	1.8	---	2.2	---	---	---	---
TOTAL	59.5	58.7	65.4	70.6	51.5	57.0	55.9	54.9	66.1	---	---	---
MEAN	1.92	1.96	2.11	2.28	1.84	1.84	1.86	1.77	2.20	---	---	---
MAX	2.5	3.3	3.6	7.3	2.1	2.6	2.0	2.3	2.6	---	---	---
MIN	1.7	1.8	1.9	1.9	1.7	1.7	1.7	1.7	1.9	---	---	---
AC-FT	118	116	130	140	102	113	111	109	131	---	---	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1998, BY WATER YEAR (WY)

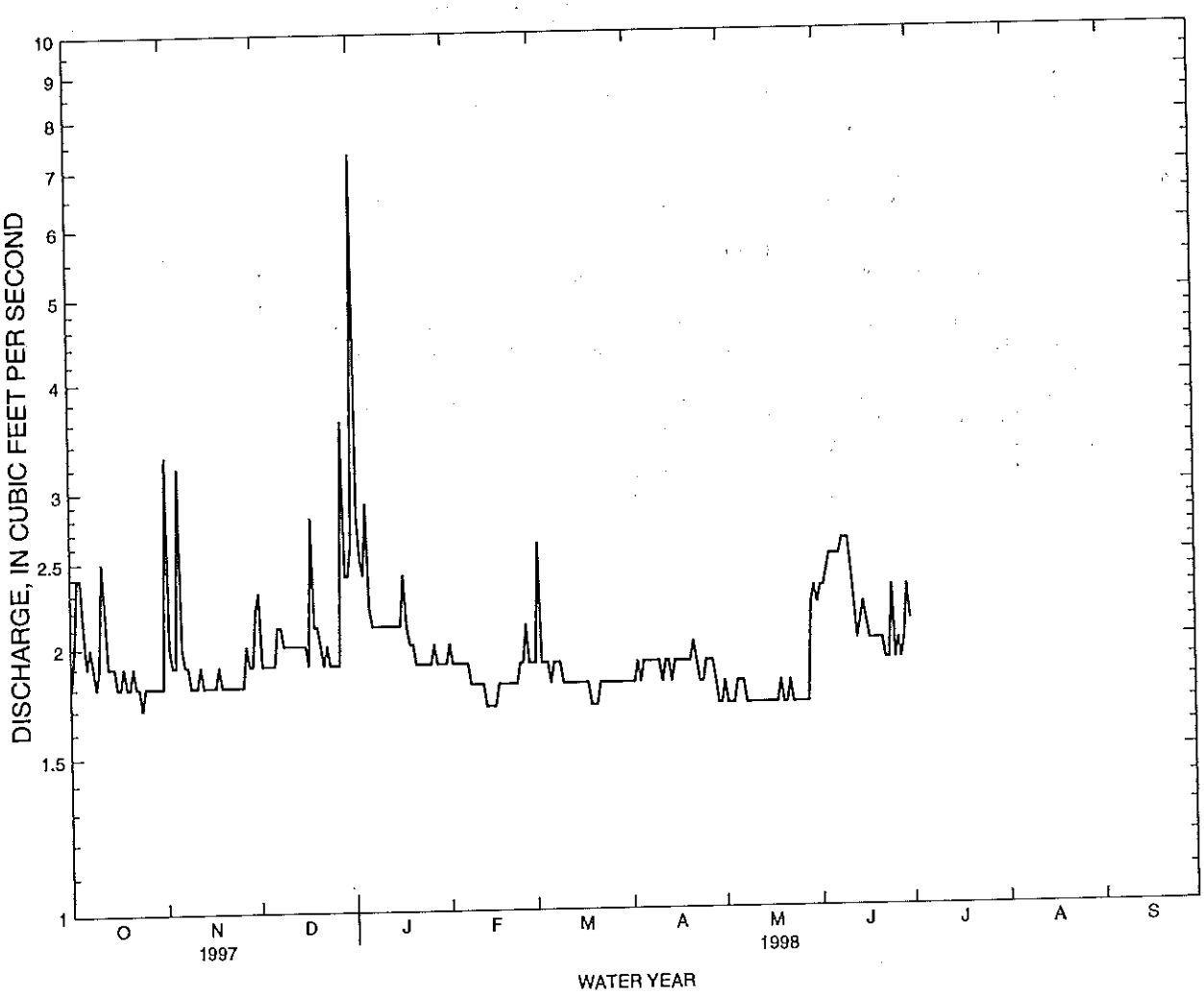
MEAN	2.13	2.50	2.64	2.65	2.45	2.51	2.25	2.17	2.09	2.07	2.06	2.07
MAX	3.07	3.47	5.54	4.68	3.58	3.78	2.73	2.91	2.30	2.36	2.48	2.44
(WY)	1992	1997	1988	1988	1994	1991	1997	1997	1988	1993	1991	1992
MIN	1.71	1.82	1.93	1.96	1.84	1.84	1.86	1.77	1.93	1.72	1.76	1.64
(WY)	1997	1995	1995	1995	1998	1998	1998	1998	1995	1996	1995	1995

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		WATER YEARS 1988 - 1998	
ANNUAL TOTAL	855.5			
ANNUAL MEAN	2.34		2.33	
HIGHEST ANNUAL MEAN			2.84	1988
LOWEST ANNUAL MEAN			1.93	1995
HIGHEST DAILY MEAN	11	Jan 3	31	Dec 31 1987
LOWEST DAILY MEAN	1.7	Oct 24	1.5	Sep 30 1988
ANNUAL SEVEN-DAY MINIMUM	1.8	Oct 22	1.6	Oct 22 1996
ANNUAL RUNOFF (AC-FT)	1700		1690	
10 PERCENT EXCEEDS	2.6		2.8	
50 PERCENT EXCEEDS	2.1		2.1	
90 PERCENT EXCEEDS	1.8		1.8	



PERIOD OF RECORD.--October 1987 to current year (discontinued June 30, 1998).

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: October 1987 to current year (discontinued June 30, 1998).

INSTRUMENTATION.--Automatic pumping sediment sampler since August 1984.

REMARKS.--Samples for water years 1995-97 with concentrations of about 1,000 mg/L and higher were analyzed using method 2540D (Standard Methods, 19th edition, 1995) for total suspended solids.

Water year 1988: Water-quality samples were collected at this site. Sediment records computed by A.H.M. Okihara. Records fair.

Water year 1989: Water-quality samples were collected at this site. Sediment records computed by A.H.M. Okihara. Records good.

Water year 1990: Water-quality samples were collected at this site. Sediment records computed by A.H.M. Okihara. Records good except for days with estimated discharge which are fair.

Water year 1997: Water-quality samples were collected at this site. Sediment records computed by M.F. Wong. Records poor.

Water year 1998: Water-quality samples were collected at this site. Sediment records computed by S.T.M. Young. Records poor. Station discontinued June 30, 1998

EXTREMES FOR PERIOD OF RECORD.--

Water year 1988:
Sediment Concentrations: Maximum daily mean 222 mg/L, December 12, 1987; minimum daily mean, 4 mg/L, March 29, April 2, 1988.
Sediment Discharge: Maximum daily, 47 tons, December 12, 1987; minimum daily, 0.02 ton, March 29, April 2, 1988.

Water year 1989:
Sediment Concentrations: Maximum daily mean 821 mg/L, June 1, 1989; minimum daily mean, 4 mg/L, March 29, April 2, 1988.
Sediment Discharge: Maximum daily, 121 tons, June 1, 1989; minimum daily, 0.02 ton, March 29, April 2, 1988.

Water year 1990:
Sediment Concentrations: Maximum daily mean 821 mg/L, June 1, 1989; minimum daily mean, 4 mg/L, March 29, April 2, 1988.
Sediment Discharge: Maximum daily, 121 tons, June 1, 1989; minimum daily, 0.02 ton, March 29, April 2, 1988.

Water year 1997:
Sediment Concentrations: Maximum daily mean 1,010 mg/L, March 19, 1991; minimum daily mean, 2 mg/L, on several days in 1995.
Sediment Discharge: Maximum daily, 121 tons, June 1, 1989; minimum daily, 0.01 ton on several days in 1995.

Water year 1998:
Sediment Concentrations: Maximum daily mean 1,010 mg/L, March 19, 1991; minimum daily mean, 2 mg/L, on several days in 1995.
Sediment Discharge: Maximum daily, 121 tons, June 1, 1989; minimum daily, 0.01 ton on several days in 1995.

EXTREMES FOR CURRENT YEAR.--

Water year 1988:
Sediment Concentrations: Maximum daily mean, 222 mg/L, December 12; minimum daily mean, 4 mg/L, March 29, April 2, 1988.
Sediment Discharge: Maximum daily, 47 tons, December 31; minimum daily, 0.02 ton, March 29, April 2, 1988.

Water year 1989:
Sediment Concentrations: Maximum daily mean, 821 mg/L, June 1; minimum daily mean, 8 mg/L on many days in August.
Sediment Discharge: Maximum daily, 121 tons, June 1; minimum daily, 0.06 ton on many days in July and August.

Water year 1990:
Sediment Concentrations: Maximum daily mean, 117 mg/L (estimated), July 9; minimum daily mean, 5 mg/L, February 7, 8.
Sediment Discharge: Maximum daily, 11 tons, October 3; minimum daily, 0.03 ton on many days.

Water year 1997:
Sediment Concentrations: Maximum daily mean unknown; minimum daily mean unknown.
Sediment Discharge: Maximum daily unknown; minimum daily unknown.

Water year 1998 (discontinued June 30, 1998):
Sediment Concentrations: Maximum daily mean, 61 mg/L, January 1; minimum daily mean, 7 mg/L, October 9.
Sediment Discharge: Maximum daily, 1.7 tons (estimated), January 1; minimum daily, 0.03 ton, October 9.

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)
NOV 1997												
10...	1215	--	--	--	1.78	1.45	--	--	--	--	--	--
12...	0920	21.5	22.5	765	1.96	1.31	2.5	198	8.3	7.7	--	--
DEC												
29...	1335	22.0	23.0	760	2.3	1.49	4.9	209	8.6	7.8	--	10
FEB 1998												
02...	0930	20.0	19.5	770	1.93	1.47	3.9	195	8.5	7.4	7.9	3
APR												
21...	1045	22.5	26.0	765	1.74	1.45	2.7	180	8.2	7.8	--	--

DATE	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)
NOV 1997												
10...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	<.1	.11	.03	--	--	--	--	--	--	--	--
FEB 1998												
02...	<1	<.1	.09	.03	2.7	12	6.6	16	1.1	20	4.9	<.1
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)
NOV 1997												
10...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
02...	32	<1	3	<100	<10	<1	2.2	<12	<1	1	600	40
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
NOV 1997												
10...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
02...	<1	30	11	<60	<1.0	<1	<1	<1	<1	66	13	<10
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SELENIUM, TOTAL (UG/L AS SE) (01147)	TURBIDITY (SEVERITY) (01350)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CHLORPYRIFOS TOTAL RECOVER (UG/L) (38932)	DISULFOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)	PERTHANE TOTAL (UG/L) (39034)
NOV 1997												
10...	--	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
02...	210	<10.0	<4	<10	<1	<1	--	2000	<.01	<.01	<.01	<.1
APR												
21...	--	--	--	--	--	--	1	--	--	--	--	--

DATE	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)
NOV 1997											
10...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	ETHION, TOTAL (UG/L) (39398)	TOXAPHENE, TOTAL (UG/L) (39400)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	METHOXYCHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALATHION, TOTAL (UG/L) (39530)	PARATHION, TOTAL (UG/L) (39540)	DIAZINON, TOTAL (UG/L) (39570)	METHYL PARATHION, TOTAL (UG/L) (39600)	2,4-D, TOTAL (UG/L) (39730)
NOV 1997											
10...	--	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<.01	<1	<.01	<.01	<.01	<.1	<.01	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRITHION (UG/L) (39786)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	SEDIMENT, SUSPENDED (MG/L) (80154)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DYFONATE) WATER WHOLE TOT.REC (UG/L) (82614)	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
NOV 1997											
10...	--	--	--	--	--	--	9.00	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<.01	<.01	<.01	<.01	136	<.1	--	<.01	<.01	200	62
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

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

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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	2.0	17	.10	2.1	e17	.10	1.9	9	.05
2	2.3	e22	.21	2.2	e21	.14	1.9	10	.05
3	1.7	12	.06	2.9	e24	.24	1.9	11	.06
4	1.7	e17	.08	1.9	18	.09	2.0	14	.08
5	2.9	40	.95	4.6	66	3.2	2.0	29	.16
6	1.8	e14	.07	3.1	e32	.47	2.0	e27	.15
7	1.9	e16	.09	4.0	30	.56	2.0	e25	.14
8	1.8	13	.06	2.3	11	.07	2.4	e23	.15
9	1.8	14	.07	2.1	11	.06	2.3	e22	.14
10	1.7	15	.07	1.9	11	.06	2.3	e20	.12
11	2.1	e18	.19	1.8	8	.04	2.2	e21	.13
12	2.0	e17	.11	1.8	e12	.06	23	222	36
13	1.7	e11	.05	1.8	12	.06	6.6	54	1.6
14	1.7	e11	.05	2.5	e19	.18	4.2	47	1.2
15	1.9	e11	.06	2.1	e13	.08	2.9	e15	.12
16	1.8	e11	.05	1.8	e12	.08	2.8	e15	.16
17	1.8	e11	.05	6.4	71	2.2	5.1	43	1.3
18	1.8	e11	.05	3.4	e26	.33	6.2	68	2.6
19	1.8	e11	.05	2.1	e15	.08	17	95	8.8
20	1.8	e11	.05	3.2	e26	.30	4.2	e16	.19
21	1.8	e11	.06	2.9	e22	.28	3.3	e12	.11
22	2.1	e16	.14	2.3	e17	.11	2.8	9	.07
23	1.8	12	.06	2.2	8	.05	2.9	13	.10
24	2.0	12	.06	2.2	9	.05	3.0	13	.10
25	2.0	13	.07	2.1	10	.06	2.6	9	.06
26	2.0	15	.08	2.0	11	.06	2.8	14	.10
27	1.9	16	.08	1.9	9	.05	2.7	13	.09
28	1.8	14	.07	1.9	e9	.05	2.5	10	.07
29	1.8	12	.06	2.3	e16	.11	2.5	11	.07
30	1.8	17	.08	1.9	8	.04	5.6	40	1.3
31	1.8	e13	.06	---	---	---	29	210	47
TOTAL	58.8	---	3.29	75.7	---	9.26	154.6	---	102.27
		JANUARY			FEBRUARY			MARCH	
1	27	127	17	3.0	10	.08	2.2	e11	.06
2	5.4	e20	.32	2.8	10	.08	2.1	12	.07
3	5.6	46	1.2	2.7	e19	.14	2.2	e11	.06
4	3.2	9	.08	4.3	e41	.66	2.1	e10	.06
5	3.1	8	.07	2.8	11	.08	2.1	9	.05
6	3.1	9	.08	3.0	e16	.13	2.2	11	.06
7	2.9	7	.06	2.9	8	.06	2.1	12	.07
8	2.9	5	.04	2.9	6	.05	2.1	12	.07
9	2.8	20	.16	2.7	7	.05	2.1	e12	.07
10	4.4	30	.59	2.5	7	.05	2.1	e12	.07
11	2.8	5	.04	2.5	6	.04	2.1	e12	.07
12	2.8	5	.04	2.5	6	.04	2.1	17	.10
13	2.9	5	.04	2.5	12	.08	2.3	20	.12
14	2.7	5	.04	2.5	14	.09	2.9	e22	.19
15	2.5	6	.04	2.6	e6	.04	2.3	13	.08
16	2.6	11	.08	2.6	e6	.04	2.9	e20	.18
17	4.3	e40	.56	2.6	e6	.04	2.4	19	.13
18	5.7	56	3.4	2.6	e6	.04	2.8	e21	.17
19	2.6	10	.07	2.6	e6	.04	2.3	8	.05
20	2.6	7	.05	2.6	e6	.04	2.1	7	.04
21	2.7	e7	.05	2.6	e6	.04	2.2	6	.04
22	2.6	e7	.05	2.7	e9	.07	2.3	7	.04
23	2.6	e8	.06	2.9	e24	.20	2.2	9	.05
24	2.5	e8	.05	2.3	e16	.11	4.6	85	5.4
25	3.2	e11	.10	2.7	e18	.15	6.7	60	7.0
26	2.8	e9	.07	2.3	e11	.07	2.2	7	.04
27	3.1	e12	.11	2.2	e11	.06	2.1	6	.03
28	8.9	83	2.9	2.2	e11	.06	2.1	5	.03
29	7.0	90	3.8	2.2	11	.06	2.0	4	.02
30	3.2	11	.10	---	---	---	2.2	6	.04
31	3.0	10	.08	---	---	---	2.2	11	.06
TOTAL	133.5	---	31.33	77.3	---	2.69	76.3	---	14.52

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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	2.3	e6	.04	2.5	e7	.05	2.7	e15	.11
2	2.3	4	.02	2.5	e7	.05	2.8	e15	.11
3	2.6	e5	.04	2.9	33	.25	3.0	e15	.12
4	4.9	e9	.13	2.5	e21	.15	2.7	e15	.11
5	3.9	6	.06	2.9	e36	.38	2.7	e15	.11
6	2.1	7	.04	2.5	e15	.10	2.7	32	.30
7	2.2	10	.06	3.1	e32	.30	2.4	e15	.10
8	2.2	8	.05	2.4	e16	.10	2.5	e15	.10
9	2.2	6	.04	2.4	e15	.10	2.5	e15	.10
10	2.2	6	.04	2.5	e17	.12	2.3	e14	.09
11	2.2	6	.04	2.5	e17	.11	2.2	e14	.08
12	2.2	6	.04	3.2	e23	.20	2.2	e14	.08
13	2.3	7	.04	3.5	e25	.27	2.2	e14	.08
14	2.3	8	.05	2.9	e18	.14	2.1	e14	.08
15	2.2	6	.04	3.9	e30	.39	2.1	e14	.08
16	2.4	e8	.05	2.1	11	.06	2.1	e14	.08
17	2.4	8	.05	2.0	e11	.06	2.1	e13	.07
18	2.4	9	.06	2.0	e12	.06	2.1	e13	.07
19	2.4	8	.05	2.0	e12	.06	2.1	e13	.07
20	2.5	e7	.05	2.0	e12	.06	2.2	e13	.08
21	2.5	e7	.05	2.1	e12	.07	2.2	e13	.08
22	2.5	e7	.05	2.1	e12	.07	2.2	e13	.08
23	2.5	e7	.05	2.1	e13	.07	2.3	e13	.08
24	2.5	e7	.05	2.1	e13	.07	2.2	e12	.07
25	3.0	e10	.09	2.1	e13	.07	2.2	e12	.07
26	3.2	e10	.11	2.1	e13	.07	2.3	e12	.07
27	2.4	e7	.04	2.2	e14	.08	2.3	e12	.07
28	2.7	e8	.06	2.3	e19	.16	2.1	23	.13
29	2.5	e7	.05	2.2	e15	.09	1.9	e11	.06
30	2.4	e7	.04	2.3	e15	.09	1.9	e12	.06
31	---	---	---	2.5	e15	.10	---	---	---
TOTAL	76.4	---	1.58	76.4	---	3.95	69.3	---	2.79
		JULY			AUGUST			SEPTEMBER	
1	1.9	e12	.06	2.1	e12	.07	2.7	e18	.13
2	1.9	e12	.06	2.4	e17	.14	2.6	e17	.12
3	1.9	e12	.06	3.6	e35	.55	2.5	e16	.11
4	2.0	e12	.06	2.3	e13	.08	2.4	e16	.10
5	2.0	e13	.07	2.3	e13	.08	2.3	e15	.09
6	2.1	e13	.07	2.4	e13	.08	2.2	e15	.09
7	2.1	e13	.07	2.6	e18	.13	2.2	e14	.08
8	2.2	e15	.09	2.4	e15	.10	2.2	e14	.08
9	2.3	e20	.14	2.4	e15	.10	2.4	e15	.11
10	2.0	e14	.08	2.5	e18	.13	2.7	e18	.17
11	2.0	e12	.06	2.9	e20	.16	2.5	e19	.14
12	2.0	e11	.06	2.6	e16	.11	1.9	e10	.05
13	2.0	e11	.06	2.4	e15	.10	1.9	e11	.06
14	2.1	e14	.08	2.6	e17	.12	2.1	e17	.11
15	2.0	e13	.07	2.5	e15	.10	3.5	e36	.53
16	2.0	e12	.06	2.5	e15	.10	1.9	e11	.06
17	2.0	e12	.06	3.1	e23	.21	1.8	e11	.05
18	2.1	e13	.07	2.1	e13	.07	1.8	e11	.05
19	2.1	e12	.07	2.2	e13	.08	1.8	e12	.06
20	2.0	e12	.06	2.2	e13	.08	1.8	e12	.06
21	2.0	e12	.06	2.2	e13	.08	2.0	e12	.07
22	2.0	e13	.07	2.2	e14	.08	1.9	12	.06
23	2.0	e13	.07	2.2	e15	.09	3.1	24	.24
24	2.0	e13	.07	2.2	e12	.07	2.8	e15	.11
25	2.3	e22	.14	2.2	e12	.07	2.7	e15	.11
26	2.1	17	.08	2.2	e12	.07	2.6	e14	.10
27	2.2	e18	.11	2.5	e13	.08	7.2	38	1.4
28	2.4	e16	.10	2.5	e14	.09	8.8	43	4.4
29	2.4	e15	.10	2.6	e15	.10	5.2	23	.53
30	2.2	e14	.08	2.7	e16	.12	4.1	30	.33
31	2.2	e13	.08	2.7	e17	.12	---	---	---
TOTAL	64.5	---	2.37	76.3	---	3.56	85.6	---	9.60
YEAR	1024.7		187.21						

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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	4.0	e50	.54	2.4	e21	.14	2.5	e34	.23
2	3.9	e46	.48	2.5	e18	.12	2.6	e33	.23
3	3.3	e35	.31	2.6	e18	.13	2.3	e32	.20
4	2.5	e26	.18	8.3	191	7.0	2.3	e31	.19
5	2.1	e21	.12	3.2	e82	1.3	2.3	e36	.22
6	1.9	e19	.10	2.8	e40	.30	15	375	29
7	1.9	e18	.09	2.3	e30	.19	2.5	30	.20
8	1.9	e17	.09	2.2	e29	.17	2.3	e24	.15
9	1.8	e16	.08	2.2	e28	.17	2.3	e23	.14
10	1.7	e15	.07	2.1	e27	.15	2.2	e21	.12
11	1.8	e15	.07	2.1	e26	.15	2.2	e22	.13
12	2.1	e16	.09	2.1	e25	.14	3.2	e38	.40
13	2.0	e16	.09	2.7	e45	.36	2.4	e28	.21
14	2.0	e17	.09	2.1	e28	.16	2.2	e23	.14
15	1.9	e17	.09	2.1	e28	.16	2.2	e20	.12
16	2.2	e18	.11	2.1	e27	.15	5.9	85	1.9
17	2.3	e18	.11	2.2	e27	.16	3.7	e50	.52
18	2.1	e19	.11	2.1	e27	.15	3.3	e34	.30
19	2.1	e20	.11	2.2	e27	.16	3.1	e32	.27
20	2.2	e20	.12	2.2	e27	.16	3.0	e31	.25
21	3.4	e24	.27	2.2	e26	.15	3.0	e30	.24
22	3.9	e33	.63	2.1	e26	.15	3.0	e30	.24
23	2.7	e21	.15	2.7	e51	.41	3.4	e38	.40
24	3.1	e21	.18	2.3	e31	.19	3.0	e32	.26
25	2.5	e21	.14	4.0	e186	3.2	3.0	e31	.25
26	2.5	e21	.14	6.9	580	27	2.8	e30	.23
27	2.5	e22	.15	2.6	e36	.25	2.7	e30	.22
28	2.4	e22	.14	2.4	34	.32	2.9	e30	.24
29	2.4	e22	.14	5.2	309	12	3.0	e30	.24
30	2.6	e22	.15	2.6	e34	.24	2.9	e29	.23
31	2.5	e22	.15	---	---	---	2.8	e29	.22
TOTAL	76.2	---	5.29	85.5	---	55.33	100.0	---	37.69
		JANUARY			FEBRUARY			MARCH	
1	2.8	e31	.23	e2.4	e15	.10	4.8	102	2.3
2	2.9	e43	.35	e10	e137	3.7	6.4	386	16
3	3.1	e56	.48	e6.0	e111	1.8	6.0	147	6.1
4	3.0	e51	.42	e3.4	e52	.48	2.9	36	.29
5	e2.8	e45	.34	e3.1	e43	.36	3.4	e47	.52
6	e2.7	e42	.31	e2.9	e40	.42	3.1	e38	.32
7	e2.7	e38	.28	e2.8	e40	.30	2.8	19	.14
8	e2.6	e35	.25	e2.7	39	.28	2.6	19	.13
9	e2.7	e33	.24	e2.7	e45	.40	2.5	e19	.13
10	e2.7	e37	.27	e3.9	87	1.3	2.4	e20	.13
11	e6.4	e82	1.4	8.3	131	5.1	2.6	e23	.17
12	e4.0	e54	.58	3.0	e25	.20	3.2	e39	.51
13	e3.8	e45	.46	2.6	e24	.17	2.7	19	.14
14	e3.3	e37	.33	2.3	e23	.14	2.7	17	.12
15	e3.0	e30	.24	2.2	e22	.13	2.5	e19	.13
16	e2.8	e25	.18	2.2	e21	.12	2.6	e21	.15
17	e2.8	e23	.17	2.3	e20	.12	2.8	e27	.21
18	e2.7	e23	.17	2.4	e20	.13	2.6	e24	.17
19	e2.7	e22	.16	2.3	e19	.12	2.5	e23	.16
20	e2.8	e22	.17	2.3	e18	.11	2.5	e22	.15
21	e2.7	e21	.15	6.3	84	3.2	2.4	e21	.14
22	e2.6	e20	.14	2.6	e38	.31	2.5	e21	.14
23	e2.6	e20	.14	2.5	e21	.15	2.4	20	.13
24	e2.6	e19	.13	2.4	e19	.12	2.1	e17	.10
25	e2.6	e19	.13	2.2	e19	.11	2.6	e25	.25
26	e2.5	e18	.12	2.1	e18	.10	2.3	e19	.12
27	e2.5	e18	.12	2.2	e18	.11	2.3	e19	.12
28	e2.5	e17	.11	5.3	241	13	2.3	e19	.12
29	e2.5	e17	.11	---	---	---	2.3	e19	.12
30	e2.5	e16	.11	---	---	---	2.3	e20	.12
31	e2.4	e16	.10	---	---	---	2.4	e20	.13
TOTAL	90.3	---	8.39	95.4	---	32.58	89.5	---	29.46

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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	2.6	e20	.14	2.7	e20	.15	12	821	121
2	2.5	e22	.15	2.6	e20	.14	1.9	e15	.08
3	5.0	137	6.1	2.4	e21	.14	1.7	e15	.07
4	9.6	311	26	2.3	e21	.13	1.7	e15	.07
5	4.1	41	.54	2.4	e21	.14	1.8	e15	.07
6	5.6	140	4.5	2.2	e22	.13	1.7	e17	.08
7	10	236	22	2.2	e22	.13	1.8	38	.18
8	30	497	64	2.2	e22	.13	1.9	e41	.21
9	14	313	21	2.2	e23	.14	1.9	e38	.20
10	3.5	26	.25	2.2	e23	.14	1.8	e34	.16
11	2.7	25	.18	2.2	e25	.15	2.1	e31	.18
12	11	215	15	2.2	e26	.15	2.3	e28	.17
13	4.5	140	1.7	2.3	e28	.17	2.3	26	.16
14	3.6	33	.32	2.2	e30	.18	2.0	e26	.14
15	3.5	26	.25	2.1	e33	.19	2.0	e25	.14
16	3.4	e25	.23	2.2	34	.20	2.1	e25	.14
17	3.1	e25	.21	2.2	e33	.20	2.0	e24	.13
18	3.2	e25	.22	2.2	e30	.18	2.0	e24	.13
19	3.1	e25	.21	2.6	e28	.20	2.0	e24	.13
20	3.1	e25	.21	2.3	e26	.16	2.0	e23	.12
21	3.2	e26	.22	2.2	e25	.15	2.0	e23	.12
22	3.2	e26	.22	2.2	e24	.14	2.0	e22	.12
23	3.2	e26	.22	2.1	e22	.12	1.9	e22	.11
24	3.3	e26	.23	2.2	e21	.12	1.9	e22	.11
25	3.3	e26	.23	2.1	e20	.11	1.9	e21	.11
26	3.3	e26	.23	2.1	e19	.11	1.9	21	.11
27	5.4	e111	2.9	2.2	e19	.11	1.8	e21	.10
28	3.6	e30	.34	2.1	e18	.10	1.9	e21	.11
29	3.5	e29	.29	2.0	e17	.09	1.9	e22	.11
30	3.1	e26	.24	1.9	e16	.08	2.0	e22	.12
31	---	---	---	2.7	65	1.9	---	---	---
TOTAL	163.2	---	168.33	69.7	---	6.18	68.2	---	124.68
		JULY			AUGUST			SEPTEMBER	
1	2.0	e22	.12	2.7	8	.06	2.2	e15	.09
2	2.0	e22	.12	2.9	10	.08	2.3	e16	.10
3	1.9	e23	.12	2.6	16	.11	2.2	e17	.10
4	1.9	e23	.12	2.7	13	.09	2.1	e18	.10
5	2.0	e45	.29	2.6	10	.07	2.3	e19	.12
6	1.8	e24	.12	2.5	13	.09	2.3	e21	.13
7	1.7	e20	.09	2.6	13	.09	2.3	e22	.14
8	1.8	e20	.10	2.6	9	.06	2.2	e24	.14
9	1.8	e21	.10	2.5	e8	.05	2.3	e26	.16
10	1.9	e22	.11	2.4	e8	.05	2.3	e28	.17
11	1.9	e26	.16	2.4	e8	.05	2.3	e27	.17
12	1.7	e19	.09	2.3	e8	.05	2.2	e25	.15
13	1.9	e30	.17	2.4	e8	.05	2.1	e24	.14
14	1.9	e34	.22	2.4	e9	.06	2.1	e23	.13
15	1.8	e25	.13	2.3	e9	.06	2.0	e22	.12
16	1.6	e20	.09	2.4	e9	.06	1.9	e21	.11
17	1.6	e19	.08	2.4	e9	.06	2.0	e22	.12
18	1.5	e19	.08	2.4	e9	.06	2.0	e23	.12
19	1.6	e18	.08	2.8	e23	.23	2.1	e25	.14
20	4.4	96	2.7	3.8	48	2.1	2.2	e26	.15
21	3.9	e77	1.2	2.7	59	.60	2.1	e27	.15
22	3.0	e44	.48	2.2	e15	.09	2.1	e28	.16
23	2.7	e24	.18	2.1	e15	.08	2.0	e28	.15
24	2.9	27	.21	2.2	e15	.09	2.0	e29	.16
25	2.7	11	.08	2.1	e14	.08	2.1	30	.17
26	2.6	9	.06	2.1	e14	.08	2.1	e28	.16
27	2.4	10	.06	2.1	e14	.08	2.0	e26	.14
28	2.7	11	.08	4.0	87	3.1	2.0	e25	.14
29	2.8	11	.08	2.2	25	.15	2.0	e23	.12
30	2.5	12	.08	2.1	e15	.08	1.9	e22	.11
31	2.5	11	.07	2.1	e15	.08	---	---	---
TOTAL	69.4	---	7.67	77.6	---	8.04	63.7	---	4.06
YEAR	1048.7		487.70						

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	2.0	e18	.10	1.8	e11	.05	2.1	e13	.07
2	1.9	e13	.07	1.8	e11	.05	2.2	e13	.08
3	10	103	11	1.8	e11	.05	2.2	e13	.08
4	2.7	e16	.12	1.8	e11	.05	2.2	e13	.08
5	2.3	e15	.09	1.8	e11	.05	2.2	e13	.08
6	2.1	e13	.07	1.8	e12	.06	2.2	e13	.08
7	1.9	e12	.06	1.9	e12	.06	2.2	e14	.08
8	2.0	e11	.06	2.0	e12	.06	2.3	e14	.09
9	2.5	20	.25	2.0	e12	.06	4.7	52	2.7
10	4.3	31	.93	1.8	e12	.06	1.8	e11	.05
11	2.1	e12	.07	1.8	e12	.06	1.7	e11	.05
12	2.0	e11	.06	1.9	e12	.06	1.8	e11	.05
13	2.2	e13	.09	2.7	30	.36	1.8	e12	.06
14	2.5	e25	.30	1.7	e11	.05	1.7	e12	.06
15	3.6	e43	.58	2.0	e16	.10	1.7	e12	.06
16	2.3	e13	.09	1.6	e10	.04	1.7	e12	.06
17	2.2	e12	.07	1.7	e10	.04	1.7	e12	.06
18	2.4	e12	.08	1.9	e10	.05	1.9	e13	.07
19	2.4	e12	.08	1.9	e11	.06	3.9	25	.99
20	2.4	e11	.07	1.9	e11	.06	3.9	29	.78
21	2.4	e11	.07	1.9	e11	.06	2.0	e16	.09
22	2.4	e11	.07	2.0	e11	.06	1.9	e15	.08
23	2.4	e11	.07	2.0	e11	.06	1.9	e14	.07
24	2.5	e11	.07	2.0	e11	.06	1.9	e13	.07
25	2.4	e11	.07	2.0	e12	.06	1.8	e12	.06
26	2.2	e10	.06	2.0	e12	.06	1.9	e13	.07
27	2.2	e10	.06	2.0	e12	.06	2.0	e15	.10
28	2.1	e10	.06	2.0	e12	.06	2.0	e17	.10
29	6.3	87	3.5	2.1	e12	.07	1.8	e11	.05
30	2.0	e11	.06	2.2	e12	.07	1.9	e11	.06
31	1.9	e11	.06	---	---	---	2.0	e11	.06
TOTAL	84.6	---	18.39	57.8	---	2.05	67.0	---	6.44
		JANUARY			FEBRUARY			MARCH	
1	2.1	e11	.06	2.6	e19	.15	11	112	8.5
2	2.0	e11	.06	2.2	e12	.07	3.5	16	.15
3	2.0	e11	.06	2.4	e14	.10	3.0	10	.08
4	2.0	e11	.06	2.2	8	.05	2.8	9	.07
5	2.0	e11	.06	2.3	18	.11	2.8	9	.07
6	2.0	e11	.06	2.2	15	.09	3.4	e23	.26
7	1.9	e12	.06	2.2	5	.03	3.7	12	.14
8	2.0	e12	.06	2.2	5	.03	2.8	9	.07
9	1.9	e12	.06	2.2	10	.06	2.7	9	.07
10	1.9	e12	.06	2.2	13	.08	2.6	10	.07
11	1.9	e12	.06	2.2	9	.05	2.5	9	.06
12	1.9	e12	.06	2.3	10	.06	2.5	9	.06
13	2.0	e12	.06	2.3	10	.06	2.6	9	.06
14	2.3	e16	.14	2.3	9	.06	2.5	16	.11
15	5.1	41	1.4	2.3	12	.07	2.7	11	.08
16	6.0	49	1.8	2.3	14	.09	2.4	8	.05
17	2.7	20	.14	2.9	e22	.20	2.4	8	.05
18	2.7	12	.09	2.6	15	.10	2.4	9	.06
19	6.1	50	1.3	2.8	14	.11	2.4	15	.10
20	2.6	e14	.10	3.0	16	.13	2.3	10	.06
21	2.6	e13	.09	3.2	15	.13	2.3	11	.07
22	2.6	e11	.08	3.3	13	.12	2.3	10	.06
23	2.7	10	.07	3.6	14	.14	2.3	8	.05
24	3.1	e22	.34	4.0	19	.23	2.3	9	.06
25	2.2	7	.04	9.0	78	2.6	2.2	11	.06
26	2.1	7	.04	3.0	15	.12	2.8	e21	.21
27	2.2	8	.05	3.1	e17	.16	3.8	e38	.56
28	2.1	9	.05	7.4	71	4.2	2.7	e16	.12
29	2.2	7	.04	---	---	---	2.3	8	.05
30	2.1	7	.04	---	---	---	2.3	14	.09
31	2.1	8	.04	---	---	---	2.3	12	.07
TOTAL	79.1	---	6.63	84.3	---	9.40	90.6	---	11.57

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

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	2.2	10	.06	2.1	e16	.10	1.7	e9	.04
2	2.2	11	.06	2.1	e19	.11	1.7	e9	.04
3	2.1	8	.04	2.4	e24	.18	1.7	e10	.05
4	2.2	7	.04	1.9	e10	.05	1.7	e10	.05
5	2.3	19	.12	2.0	e10	.05	1.7	e10	.05
6	2.4	19	.12	1.9	e11	.06	1.7	e10	.05
7	2.4	e14	.09	2.0	e11	.06	1.8	e10	.05
8	2.3	10	.06	1.9	e11	.06	1.8	e10	.05
9	2.4	9	.06	2.0	e11	.06	1.8	e10	.05
10	2.2	9	.05	2.0	e11	.06	1.9	e10	.05
11	2.2	8	.05	2.0	e12	.06	1.9	e10	.05
12	2.2	7	.04	2.1	e12	.07	1.8	e10	.05
13	2.2	7	.04	2.1	e12	.07	1.9	12	.06
14	2.2	9	.05	2.6	e20	.15	1.9	e10	.05
15	2.2	9	.05	1.7	e11	.05	1.9	11	.06
16	2.2	8	.05	1.7	e10	.05	2.0	e11	.06
17	2.2	10	.06	1.9	e10	.05	2.0	e10	.05
18	2.2	10	.06	1.8	e9	.04	1.9	17	.09
19	2.3	11	.07	1.8	e9	.04	2.1	e10	.06
20	2.4	11	.07	1.8	e9	.04	1.9	e10	.05
21	2.5	10	.07	1.9	e8	.04	2.0	e10	.05
22	2.4	9	.06	1.9	e11	.06	1.9	e10	.05
23	2.3	e11	.07	2.7	e30	.31	1.9	e10	.05
24	2.7	e24	.19	1.7	e9	.04	2.0	e10	.05
25	2.0	11	.06	1.6	e9	.04	2.1	e10	.06
26	1.9	e10	.05	1.6	e9	.04	2.0	e10	.06
27	1.9	e10	.05	1.6	e9	.04	2.3	e16	.11
28	1.9	e10	.05	1.6	e9	.04	2.0	e12	.06
29	1.9	e10	.05	1.6	e9	.04	2.3	e12	.07
30	1.9	e10	.05	1.7	e9	.04	2.3	e13	.08
31	---	---	---	1.7	e9	.04	---	---	---
TOTAL	66.4	---	1.94	59.4	---	2.14	57.6	---	1.70
		JULY			AUGUST			SEPTEMBER	
1	2.2	e13	.08	1.9	e10	.05	2.0	e11	.06
2	2.3	e13	.08	1.9	e10	.05	2.0	e11	.06
3	2.3	e13	.08	1.9	e10	.05	2.0	e12	.06
4	2.3	e13	.08	1.9	e10	.05	2.1	e12	.07
5	2.3	e13	.08	1.9	e10	.05	2.3	e13	.08
6	2.3	e14	.09	1.9	e10	.05	2.1	e12	.07
7	2.3	e14	.09	1.9	e10	.05	2.0	e11	.06
8	2.5	69	.58	2.0	e11	.06	1.9	e10	.05
9	e13	e117	6.2	2.0	e11	.06	1.8	e9	.04
10	e5.0	e46	.62	2.0	e11	.06	1.6	e8	.03
11	e3.0	e26	.21	2.0	e11	.06	1.7	e9	.04
12	e2.5	e14	.09	1.9	e11	.06	1.8	e9	.04
13	e2.4	e14	.09	2.0	e11	.06	2.0	e10	.05
14	e2.4	e13	.08	1.9	e11	.06	2.1	e11	.06
15	e2.3	e13	.08	1.9	e11	.06	2.2	e12	.07
16	e2.3	e13	.08	1.9	e11	.06	2.2	e12	.07
17	e2.2	e12	.07	1.9	e10	.05	2.3	18	.11
18	e2.4	e12	.08	1.9	e10	.05	2.0	16	.09
19	e2.2	e12	.07	2.3	e13	.09	2.0	e11	.06
20	e2.1	e12	.07	2.2	e12	.07	2.2	e14	.08
21	e2.1	e11	.06	2.2	e12	.07	2.0	e16	.11
22	e2.0	e11	.06	2.0	e11	.06	1.6	e9	.04
23	e1.9	e12	.06	1.9	e11	.06	1.7	e10	.05
24	e1.9	e18	.09	2.0	e10	.05	1.6	e8	.04
25	1.8	e10	.05	1.9	e10	.05	1.7	e8	.04
26	1.8	e10	.05	2.1	e10	.06	1.7	e8	.04
27	2.4	e22	.19	2.0	e10	.05	1.6	e9	.04
28	1.9	e11	.06	2.0	e11	.06	1.7	e9	.04
29	1.9	e11	.06	2.0	e11	.06	1.6	e9	.04
30	2.0	e11	.06	2.0	e11	.06	1.7	e9	.04
31	1.9	e11	.06	2.0	e11	.06	---	---	---
TOTAL	81.9	---	9.70	61.3	---	1.79	57.2	---	1.73
YEAR	847.2		73.48						

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Day	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		SEPTEMBER	
20	2.1	e21	.13
21	2.7	41	.53
22	2.0	e28	.15
23	1.9	e22	.11
24	1.8	e19	.09
25	1.8	e18	.09
26	1.8	e17	.08
27	1.8	e16	.08
28	1.8	e15	.07
29	1.8	e15	.07
30	1.8	14	.07

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	1.8	e12	.06	3.3	23	.35	2.3	19	.15
2	2.0	e14	.09	2.0	e14	.08	1.9	e14	.07
3	2.4	e24	.17	1.9	e14	.08	1.9	e13	.07
4	2.4	e20	.15	1.9	e15	.08	1.9	13	.07
5	2.1	e16	.11	3.2	e26	.28	1.9	e13	.07
6	1.9	e13	.07	2.0	e14	.07	1.9	e14	.07
7	2.0	e13	.07	1.9	e13	.07	2.1	e15	.09
8	1.9	e8	.04	1.9	e13	.07	2.1	e15	.09
9	1.8	7	.03	1.8	e11	.06	2.0	e14	.08
10	1.9	e12	.07	1.8	10	.05	2.0	e14	.07
11	2.5	18	.14	1.8	e12	.06	2.0	e14	.08
12	2.2	e15	.10	1.9	e16	.09	2.0	e14	.08
13	1.9	e14	.07	1.8	e12	.06	2.0	e14	.08
14	1.9	e13	.07	1.8	e13	.06	2.0	e14	.08
15	1.9	e15	.08	1.8	e13	.06	2.0	e14	.08
16	1.8	e13	.07	1.8	e13	.06	2.0	e15	.08
17	1.8	e13	.06	1.8	e14	.07	1.9	e13	.07
18	1.9	e12	.06	1.9	e15	.08	2.8	28	.38
19	1.8	e13	.07	1.8	e14	.07	2.1	e15	.09
20	1.8	e13	.07	1.8	e15	.07	2.1	e16	.09
21	1.9	e13	.07	1.8	e15	.07	2.0	e14	.08
22	1.8	13	.06	1.8	e15	.07	1.9	e14	.07
23	1.8	e12	.06	1.8	e16	.08	2.0	e14	.08
24	1.7	e12	.05	1.8	16	.08	1.9	e14	.07
25	1.8	e11	.05	1.8	e15	.07	1.9	e14	.07
26	1.8	e10	.05	1.8	e15	.07	1.9	e15	.07
27	1.8	e10	.05	2.0	e15	.09	1.9	e15	.08
28	1.8	9	.04	1.9	e13	.07	3.6	39	.70
29	1.8	e10	.05	1.9	e12	.06	2.4	e18	.12
30	1.8	e10	.05	2.2	e19	.14	2.4	20	.14
31	1.8	e11	.05	---	---	---	2.6	e22	.16
TOTAL	59.5	---	2.23	58.7	---	2.67	65.4	---	3.58
		JANUARY			FEBRUARY			MARCH	
1	7.3	61	1.7	2.0	e16	.09	1.9	e14	.08
2	2.8	e22	.17	1.9	e17	.09	2.6	33	.61
3	2.5	e19	.13	1.9	e17	.09	1.9	e15	.08
4	2.4	e17	.11	1.9	e18	.09	1.9	e16	.08
5	2.9	e26	.25	1.9	e18	.10	1.9	e16	.08
6	2.2	e15	.09	1.9	19	.10	1.8	17	.08
7	2.1	17	.09	1.9	e18	.09	1.9	e17	.08
8	2.1	e18	.10	1.8	e18	.09	1.9	e17	.08
9	2.1	e17	.10	1.8	e17	.08	1.9	e16	.08
10	2.1	e17	.10	1.8	e16	.08	1.8	e16	.08
11	2.1	e17	.10	1.8	e16	.08	1.8	e16	.08
12	2.1	e16	.09	1.8	e15	.07	1.8	e16	.08
13	2.1	e16	.09	1.7	e14	.07	1.8	e16	.08
14	2.1	e16	.09	1.7	e14	.06	1.8	e16	.08
15	2.1	e16	.09	1.7	e13	.06	1.8	e15	.07
16	2.1	e15	.09	1.7	e13	.06	1.8	e15	.07
17	2.4	e17	.12	1.8	e12	.06	1.8	e15	.07
18	2.1	e14	.08	1.8	e12	.06	1.8	e15	.07
19	2.0	e14	.08	1.8	e11	.06	1.7	e15	.07
20	2.0	e14	.08	1.8	11	.06	1.7	e15	.07
21	1.9	e14	.07	1.8	e12	.06	1.7	e14	.07
22	1.9	e14	.07	1.8	e12	.06	1.8	e14	.07
23	1.9	e14	.07	1.8	e13	.06	1.8	e14	.07
24	1.9	e14	.07	1.9	e14	.07	1.8	e14	.07
25	1.9	e14	.07	1.9	e14	.07	1.8	e14	.07
26	1.9	e14	.07	2.1	e16	.10	1.8	e14	.07
27	2.0	e15	.08	1.9	e14	.07	1.8	e14	.07
28	1.9	e14	.07	1.9	e14	.07	1.8	e13	.07
29	1.9	e15	.08	---	---	---	1.8	e13	.07
30	1.9	e15	.08	---	---	---	1.8	e13	.07
31	1.9	e16	.08	---	---	---	1.8	13	.06
TOTAL	70.6	---	4.56	51.5	---	2.10	57.0	---	2.83

e Estimated

HAWAII, ISLAND OF OAHU

16273950 SOUTH FORK KAPUNAHALA STREAM AT KANEOHE--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	1.8	e13	.06	e1.8	e12	.06	2.3	e15	.10
2	1.8	e12	.06	e1.7	e12	.06	2.3	e17	.11
3	1.9	e13	.06	e1.7	e12	.06	2.4	e17	.11
4	1.8	e12	.06	e1.7	e12	.06	2.5	e19	.13
5	1.9	e12	.06	e1.8	e12	.06	2.5	e19	.13
6	1.9	e11	.06	e1.8	e12	.06	2.5	e18	.12
7	1.9	11	.06	e1.8	e12	.06	2.5	e19	.12
8	1.9	e14	.07	e1.7	e12	.06	2.6	e19	.14
9	1.9	e14	.07	e1.7	e12	.06	2.6	e20	.14
10	1.9	e13	.07	e1.7	e12	.06	2.6	e19	.13
11	1.8	e13	.06	e1.7	e12	.06	2.4	e18	.11
12	1.9	e13	.07	e1.7	e12	.06	2.2	e17	.10
13	1.9	e13	.07	e1.7	e12	.06	2.0	e14	.08
14	1.8	e13	.07	e1.7	e12	.06	2.1	e14	.08
15	1.9	e13	.07	e1.7	e12	.06	2.2	e16	.09
16	1.9	e13	.07	e1.7	e12	.06	2.1	e15	.08
17	1.9	e13	.07	e1.7	e12	.06	2.0	e17	.09
18	1.9	e13	.07	e1.7	e12	.06	2.0	e15	.08
19	1.9	e15	.08	e1.8	e12	.06	2.0	e15	.08
20	1.9	e17	.09	e1.7	e12	.06	2.0	e16	.09
21	2.0	e17	.09	e1.7	e12	.06	2.0	e15	.08
22	1.9	e14	.07	e1.8	e12	.06	1.9	e15	.07
23	1.8	e12	.06	e1.7	e12	.06	1.9	e13	.07
24	1.8	11	.06	e1.7	e12	.06	2.3	19	.16
25	1.9	e12	.06	e1.7	e12	.06	1.9	e15	.08
26	1.9	e12	.06	e1.7	e12	.06	2.0	e15	.08
27	1.9	e13	.06	e1.7	e11	.05	1.9	e15	.08
28	e1.8	8	.04	e1.7	e10	.05	2.0	e14	.08
29	e1.7	e11	.05	2.2	e13	.08	2.3	e20	.15
30	e1.7	e12	.06	2.3	e14	.08	2.1	e15	.09
31	---	---	---	2.2	e14	.09	---	---	---
TOTAL	55.9	---	1.96	54.9	---	1.91	66.1	---	3.05
		JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---

e Estimated

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA

LOCATION.--Lat 21°24′461″, long 157°49′33″, Hydrologic Unit 20060000, on left bank, 1.7 mi west of Kaneohe Post Office, and 1.8 mi southwest of Heeia.

DRAINAGE AREA.--0.97 mi^2.

PERIOD OF RECORD.--January 1914 to October 1919, July 1939 to September 1977, October 1982 to current year.

REVISED RECORDS (FISCAL YEARS).--WSP 935: 1940. WSP 1319: 1916-19(M). WSP 1569: Drainage area. WSP 1719: 1942-43, 1946(M), 1947, 1949, 1951, 1954(M), 1955, 1957-59. WSP 1937: 1940-45(M), 1947(M), 1948-50(P), 1951, 1952(P), 1953(M), 1955-57(P), 1958-59, 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 271.9 ft above mean sea level (levels by City and County of Honolulu). Prior to April 28, 1914, nonrecording gage and April 28, 1914 to October 25, 1919, water-stage recorder, at same site at different datums.

REMARKS.--Records computed by Ben Shimizu. Records poor. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1943.

AVERAGE DISCHARGE (since diversion from tunnel began).--50 years (water years 1944-77, 1983-98), 2.23 ft^3/s, (1,610 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,740 ft^3/s, May 2, 1965, gage height, 7.94 ft, from rating curve extended above 57 ft^3/s on basis of slope-area measurements at gage heights 3.87 ft, 3.88 ft, and 7.94 ft; minimum, 0.20 ft^3/s, July 20, 1957, September 17, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 340 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 9	1430	*189	*2.70				

Minimum discharge, 1.2 ft^3/s, September 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	12	2.7	32	1.7	1.7	1.5	1.5	1.5	1.6	1.4	1.4
2	2.2	2.7	2.3	6.1	1.8	1.7	1.5	1.5	1.5	1.5	1.4	1.4
3	5.7	2.3	2.0	3.6	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.4
4	5.1	2.2	1.9	2.9	1.7	1.6	1.5	1.5	1.5	1.6	1.4	1.3
5	2.7	4.8	1.9	3.3	1.7	1.6	1.5	1.5	1.5	1.7	1.4	1.3
6	2.3	2.6	1.9	2.6	1.7	1.6	1.5	1.5	1.5	1.6	1.4	1.3
7	2.8	2.3	1.9	2.4	1.7	1.5	1.5	1.5	1.5	1.6	1.4	1.3
8	2.5	2.3	1.9	2.4	1.7	1.5	1.5	1.5	1.6	1.5	1.4	1.3
9	9.6	2.5	1.9	2.3	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.4
10	3.2	2.3	1.9	2.1	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.3
11	3.9	2.1	1.9	2.1	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.3
12	2.6	2.1	1.8	2.1	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4
13	2.3	2.1	1.8	2.0	1.6	1.6	1.7	1.5	1.5	1.5	1.3	1.3
14	2.1	2.0	1.8	1.9	1.6	1.6	1.7	1.5	1.5	1.5	1.3	1.3
15	2.0	2.0	1.8	1.9	1.6	1.6	1.6	1.5	1.5	1.5	1.3	1.3
16	1.9	2.0	1.9	1.9	1.6	1.6	1.6	1.5	1.5	1.5	1.3	1.3
17	1.9	2.0	1.8	2.3	1.6	1.5	1.6	1.5	1.5	1.4	1.3	1.3
18	1.8	2.0	4.9	2.4	1.7	1.5	1.7	1.5	1.5	1.4	1.3	1.3
19	1.8	1.9	2.7	2.2	1.6	1.5	1.6	1.5	1.5	1.4	1.3	1.3
20	1.8	1.9	2.1	2.1	1.6	1.5	1.6	1.5	1.5	1.4	1.3	1.3
21	1.8	1.9	2.0	2.1	1.6	1.5	1.6	1.5	1.5	1.5	1.3	1.4
22	1.8	1.8	1.9	2.0	1.6	1.5	1.6	1.6	1.5	1.5	1.4	1.3
23	1.8	1.8	1.9	1.9	1.7	1.6	1.5	1.6	1.4	1.5	1.4	1.3
24	1.8	1.9	1.8	1.9	1.6	1.6	1.5	1.6	1.5	1.4	1.3	1.3
25	1.7	1.9	1.8	1.9	1.6	1.6	1.5	1.6	1.5	1.4	1.3	1.3
26	1.8	1.8	1.8	1.9	1.7	1.6	1.5	1.5	1.6	1.4	1.3	1.3
27	1.7	2.2	1.9	1.9	1.7	1.6	1.5	1.5	1.5	1.4	1.3	1.3
28	1.7	2.1	3.7	1.8	1.6	1.6	1.5	1.5	1.5	1.4	1.3	1.3
29	1.7	2.0	2.6	1.8	---	1.5	1.5	1.4	1.5	1.4	1.3	1.3
30	1.7	2.1	7.3	1.8	---	1.5	1.5	1.5	1.6	1.4	1.3	1.3
31	1.7	---	8.9	1.8	---	1.5	---	1.5	---	1.4	1.3	---
TOTAL	79.1	75.6	78.4	101.4	46.5	48.7	46.6	46.8	45.2	45.9	41.7	39.6
MEAN	2.55	2.52	2.53	3.27	1.66	1.57	1.55	1.51	1.51	1.48	1.35	1.32
MAX	9.6	12	8.9	32	1.8	1.7	1.7	1.6	1.6	1.7	1.4	1.4
MIN	1.7	1.8	1.8	1.8	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.3
AC-FT	157	150	156	201	92	97	92	93	90	91	83	79

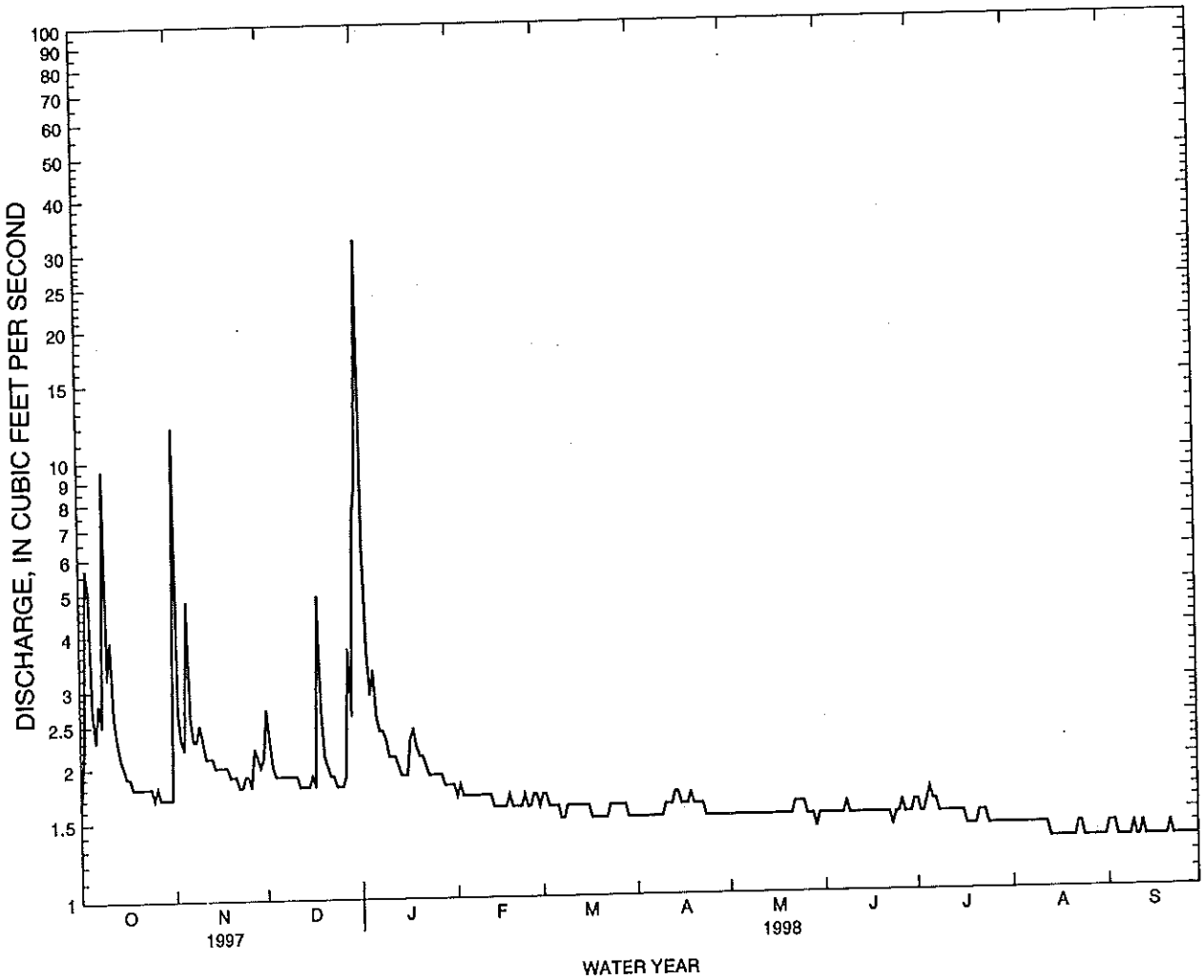
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 1998, BY WATER YEAR (WY)

MEAN	1.94	2.80	2.69	2.66	2.51	3.28	2.54	2.34	1.40	1.57	1.59	1.46
MAX	11.6	15.7	9.72	9.68	10.7	16.5	13.0	27.3	2.34	3.25	4.24	3.62
(WY)	1959	1966	1988	1949	1955	1958	1989	1965	1989	1989	1967	1992
MIN	.32	.33	.64	.94	.86	.60	.50	.51	.38	.41	.56	.36
(WY)	1946	1946	1960	1977	1963	1946	1946	1961	1946	1945	1961	1945

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1944 - 1998	
ANNUAL TOTAL	978.4		695.5			
ANNUAL MEAN	2.68		1.91		2.23	
HIGHEST ANNUAL MEAN					4.82	1965
LOWEST ANNUAL MEAN					.67	1946
HIGHEST DAILY MEAN	31	Jan 3	32	Jan 1	620	May 2 1965
LOWEST DAILY MEAN	1.6	Sep 7	1.3	Aug 13	.29	Jul 13 1945
ANNUAL SEVEN-DAY MINIMUM	1.7	Sep 5	1.3	Aug 13	.29	Oct 19 1945
ANNUAL RUNOFF (AC-FT)	1940		1380		1610	
10 PERCENT EXCEEDS	3.6		2.3		2.7	
50 PERCENT EXCEEDS	2.1		1.6		1.5	
90 PERCENT EXCEEDS	1.7		1.3		.88	



HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

PERIOD OF RECORD.--October 1982 to September 1985, October 1986 to current year.

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: December 1983 to September 1984, July 1987 to current year (discontinued).

INSTRUMENTATION.--Automatic pumping sediment sampler since December 1983.

REMARKS.--
Water year 1997: Samples with concentrations of about 1,000 mg/L and higher were analyzed using method 2540D (Standard Methods, 19th edition, 1995) for total suspended solids. Sediment records computed by A.H.M. Okihara. Records poor.
Water year 1998: Sediment records computed by A.H.M. Okihara. Records fair.

EXTREMES FOR PERIOD OF RECORD.--
Water year 1997:
Sediment Concentrations: Maximum daily mean 2,130 mg/L (estimated), April 8, 1989; minimum daily mean, 1 mg/L on many days in 1984, 1988-96, less than 0.5 mg/L on many days in 1997.
Sediment Discharge: Maximum daily, 1,800 tons (estimated), April 8, 1989; minimum daily, less than 0.01 ton on many days in 1984, 1988-93, 0.00 tons on many days in 1997.
Water year 1998:
Sediment Concentrations: Maximum daily mean 2,130 mg/L (estimated), April 8, 1989; minimum daily mean, 1 mg/L on many days in 1984, 1988-96, less than 0.5 mg/L on many days in 1997-98.
Sediment Discharge: Maximum daily, 1,800 tons (estimated), April 8, 1989; minimum daily, less than 0.01 ton on many days in 1984, 1988-93, 0.00 tons on many days in 1997-98.

EXTREMES FOR CURRENT YEAR.--
Water year 1997:
Sediment Concentrations: Maximum daily mean, 627 mg/L (estimated), March 17; minimum daily mean, less than 0.5 mg/L on many days.
Sediment Discharge: Maximum daily, 329 tons (estimated), March 17; minimum daily, 0.00 ton on many days.
Water year 1998:
Sediment Concentrations: Maximum daily mean, 214 mg/L (estimated), January 1; minimum daily mean, less than 0.5 mg/L on many days.
Sediment Discharge: Maximum daily, 41 tons (estimated), January 1; minimum daily, 0.00 ton on many days.

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)
NOV 1997												
13...	1410	21.0	24.0	760	2.14	1.16	.3	152	8.7	7.7	--	--
DEC												
29...	1125	20	20.5	755	2.6	1.21	.4	152	9.1	7.6	--	<1
FEB 1998												
02...	0910	18.0	18.0	760	1.9	1.12	.3	146	9.1	7.6	7.9	1
APR												
22...	0915	20.0	21.0	770	1.54	1.10	.5	144	9.2	7.5	--	--

DATE	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	<.1	.06	.02	--	--	--	--	--	--	--	--
FEB 1998												
02...	<1	<.1	.11	.01	.3	8.4	5.7	12	.8	15	3.2	<.1
APR												
22...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
02...	27	<1	1	<100	<10	<1	<1.0	<12	<1	<1	150	74
APR												
22...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<1	10	7	<60	<1.0	<1	<1	<1	<1	53	<10
APR											
22...	--	--	--	--	--	--	--	--	--	--	--

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ALUM-INUM, TOTAL RECOV-ERABLE (UG/L AS AL) (01105)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	LITHIUM TOTAL RECOV-ERABLE (UG/L AS LI) (01132)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CHLOR-PYRIFOS TOTAL RECOVER (UG/L) (38932)	DISUL-FOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<10	30	<10.0	<4	<10	<1	<1	48	<.01	<.01	<.01
APR											
22...	--	--	--	--	--	--	--	--	--	--	--

DATE	PER-THANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLOR-DANE, TECH-NICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDO-SULFAN I TOTAL (UG/L) (39388)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01	<.01	<.01
APR											
22...	--	--	--	--	--	--	--	--	--	--	--

DATE	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOX-APHENE, TOTAL (UG/L) (39400)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALA-THION, TOTAL (UG/L) (39530)	PARA-THION, TOTAL (UG/L) (39540)	DI-AZINON, TOTAL (UG/L) (39570)	METHYL PARA-THION, TOTAL (UG/L) (39600)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01	<.01	<.01	<.01
APR											
22...	--	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRI-THION (UG/L) (39786)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DY-FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
02...	<.01	<.01	<.01	<.01	<.01	102	<.1	<.01	<.01	153	47
APR											
22...	--	--	--	--	--	--	--	--	--	--	--

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	1.4	e5	.02	1.3	e1	.00	2.0	e3	.02
2	1.4	e4	.02	2.6	e20	.48	2.0	e3	.02
3	1.4	e3	.01	2.3	e12	.08	2.2	e3	.02
4	1.3	e1	.00	1.6	e3	.01	2.3	e3	.02
5	1.3	e1	.00	5.3	e96	3.3	2.3	e3	.02
6	1.3	e1	.00	3.2	e30	.29	2.1	e3	.02
7	1.3	e1	.00	2.0	e7	.04	2.2	e3	.02
8	1.3	e1	.00	8.4	e110	3.2	2.2	e3	.02
9	1.3	e1	.00	4.5	e46	.60	2.1	e3	.02
10	1.3	e1	.00	2.8	e12	.09	2.0	e3	.02
11	1.3	e1	.00	2.0	e4	.02	1.9	e3	.02
12	1.3	e1	.00	22	e370	64	1.9	e3	.02
13	1.3	e1	.00	23	e590	53	1.9	e3	.02
14	1.3	e1	.00	29	e569	99.9	1.9	e3	.02
15	1.3	e1	.00	12	21	.74	1.8	e3	.01
16	1.3	e1	.00	13	e127	7.4	1.7	e3	.01
17	1.3	e1	.00	11	e201	6.3	1.7	e3	.01
18	1.3	e1	.00	6.5	e71	1.3	1.6	e3	.01
19	1.4	e2	.01	4.2	e27	.32	1.6	e3	.01
20	1.4	e2	.01	3.3	e11	.10	1.6	e3	.01
21	1.3	e1	.01	2.9	e9	.07	1.7	e4	.02
22	1.3	e1	.00	2.6	e8	.06	1.6	e3	.01
23	1.3	e1	.00	2.5	e7	.05	1.7	e3	.01
24	1.2	e1	.00	3.5	e37	.38	1.7	e3	.01
25	1.2	e1	.00	2.8	e16	.12	1.6	e3	.01
26	1.2	e1	.00	2.4	e8	.06	1.8	e5	.03
27	1.2	e1	.00	2.3	e5	.03	3.1	e34	.30
28	1.2	e1	.00	2.2	e3	.02	2.5	e9	.06
29	1.3	e1	.00	2.1	e3	.02	1.9	e3	.02
30	1.3	e1	.00	2.1	e3	.02	1.8	e3	.01
31	1.3	e1	.00	---	---	---	1.9	e3	.02
TOTAL	40.3	---	0.08	185.4	---	242.00	60.3	---	0.84
		JANUARY			FEBRUARY			MARCH	
1	1.8	e2	.01	2.2	e1	.01	1.8	e2	.01
2	1.8	2	.01	2.0	e1	.01	1.8	e2	.01
3	31	235	46	1.9	e1	.01	1.7	e2	.01
4	7.7	e103	2.3	1.9	1	.01	2.0	e5	.05
5	4.8	e21	.29	1.9	e1	.01	3.0	e24	.23
6	3.2	e4	.03	1.8	e1	.01	2.5	e10	.07
7	2.5	1	.01	1.9	e2	.01	2.2	e5	.03
8	e2.2	1	.01	1.8	2	.01	2.1	e3	.02
9	e2.2	1	.01	1.8	e2	.01	2.0	e3	.02
10	e2.1	1	.01	1.8	14	.07	2.0	e3	.02
11	e2.0	1	.01	1.8	e3	.01	2.9	20	.46
12	e2.4	1	.01	1.8	2	.01	2.1	1	.01
13	e2.2	1	.01	1.7	1	.01	3.8	e32	.87
14	e2.1	<1	.00	1.7	2	.01	2.6	1	.01
15	e2.0	1	.01	1.7	2	.01	4.0	e31	1.7
16	2.1	1	.01	1.8	e2	.01	2.5	33	.21
17	2.1	1	.01	1.8	e2	.01	24	e627	329
18	2.0	1	.01	1.7	e2	.01	5.3	e60	.91
19	8.4	251	41	1.7	e2	.01	3.7	e14	.15
20	5.2	228	5.1	1.7	e2	.01	3.2	e4	.03
21	4.2	e100	2.0	1.9	e2	.01	2.9	e3	.02
22	3.2	69	.60	2.9	e22	.47	2.8	e3	.02
23	2.5	24	.17	1.8	e3	.01	17	e280	31
24	2.2	6	.03	1.7	e2	.01	6.1	e64	1.2
25	2.1	33	.18	1.7	e2	.01	5.8	e41	.75
26	2.0	60	.33	1.7	e2	.01	4.1	1	.02
27	2.0	31	.17	1.8	e2	.01	3.4	1	.01
28	1.9	18	.09	1.7	e2	.01	3.3	1	.01
29	2.1	e7	.04	---	---	---	3.2	1	.01
30	2.2	2	.01	---	---	---	2.9	1	.01
31	2.4	2	.01	---	---	---	2.8	1	.01
TOTAL	116.6	---	98.48	51.6	---	0.80	129.5	---	366.88

e Estimated
< Actual value is known to be less than the value shown

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	2.7	1	.01	2.6	e1	.01	2.1	e1	.01
2	12	23	1.7	2.6	e1	.01	2.2	e1	.01
3	10	45	1.6	2.6	e1	.01	2.2	e1	.01
4	4.4	6	.08	2.7	e1	.01	2.1	e1	.01
5	3.4	e2	.02	4.8	e65	2.4	2.1	e1	.01
6	3.3	5	.04	4.1	e68	.85	2.1	e1	.01
7	2.9	6	.05	3.4	e42	.39	2.1	e1	.01
8	2.8	e2	.02	7.8	e149	6.6	2.0	e1	.01
9	2.6	1	.01	3.5	e40	.38	2.0	e1	.01
10	5.2	51	8.5	2.9	e32	.26	2.1	e1	.01
11	3.4	161	2.6	3.0	e35	.30	2.1	e3	.02
12	2.4	16	.11	3.4	e37	.34	2.3	e3	.02
13	3.6	34	.71	3.1	e31	.26	2.4	e3	.02
14	2.3	10	.07	8.0	e246	18	2.4	e3	.02
15	2.1	e3	.02	6.4	e96	2.7	2.3	e3	.02
16	2.0	e2	.01	3.3	e13	.11	2.2	e3	.02
17	1.9	e2	.01	2.7	e4	.03	2.1	8	.05
18	1.9	e1	.01	2.5	e3	.02	2.1	e1	.01
19	1.9	e1	.01	2.3	e3	.02	2.0	e1	.01
20	1.9	e1	.01	2.2	e3	.02	2.0	e1	.01
21	2.1	e1	.01	2.2	e3	.02	2.1	e1	.01
22	2.1	e1	.01	2.3	e5	.03	2.0	e1	.01
23	2.2	e1	.01	2.2	e3	.02	2.1	e1	.01
24	2.5	e11	.08	2.2	e2	.02	2.1	e1	.01
25	2.5	e24	.17	2.1	e2	.01	2.0	e1	.01
26	3.2	e32	.29	2.1	e2	.01	2.3	e4	.03
27	4.4	e46	.61	2.1	e2	.01	2.3	e3	.02
28	3.1	e5	.04	2.1	e1	.01	2.2	e3	.02
29	2.8	e2	.02	2.1	e1	.01	2.3	e4	.02
30	2.7	e1	.01	2.1	e1	.01	2.2	e3	.02
31	---	---	---	2.1	e1	.01	---	---	---
TOTAL	100.3	---	16.84	97.5	---	32.88	64.5	---	0.46
		JULY			AUGUST			SEPTEMBER	
1	2.1	e3	.02	1.7	<1	.00	1.7	e1	.01
2	2.1	e3	.02	1.7	1	.01	1.8	e1	.01
3	2.0	e3	.02	1.7	1	.01	1.8	e1	.01
4	2.1	e4	.02	1.7	1	.01	1.8	e1	.01
5	2.0	e3	.01	1.7	1	.01	1.7	e1	.01
6	2.0	e2	.01	1.8	1	.01	1.7	e1	.00
7	2.0	e2	.01	1.8	1	.01	1.6	e1	.00
8	1.9	2	.01	1.8	1	.01	1.7	e1	.00
9	2.7	e22	.28	1.8	1	.01	1.7	e1	.00
10	2.8	e17	.13	1.8	2	.01	1.7	e1	.00
11	2.4	e7	.04	1.8	2	.01	1.7	e1	.00
12	2.1	e3	.02	1.8	1	.01	1.7	e1	.01
13	2.0	e3	.02	1.9	3	.02	1.7	e1	.01
14	2.0	e3	.02	1.8	10	.05	1.7	e1	.01
15	2.0	e3	.02	1.9	1	.01	1.7	e1	.01
16	2.1	e3	.02	2.2	e10	.10	1.7	e1	.01
17	2.1	e3	.02	3.2	e46	1.2	1.7	e1	.01
18	2.0	e3	.02	2.2	2	.01	1.7	e1	.00
19	2.9	e14	.16	2.0	1	.01	1.7	e1	.01
20	2.2	e4	.03	1.9	1	.01	1.9	e4	.02
21	2.1	e3	.02	1.9	1	.01	7.6	e88	7.4
22	3.2	e49	.52	1.8	e1	.01	2.9	e32	.42
23	2.4	e10	.07	1.8	e1	.01	2.1	e5	.03
24	2.4	e4	.03	1.7	e1	.01	1.9	e3	.02
25	2.7	e11	.09	1.7	e1	.01	1.8	e3	.01
26	2.3	e3	.02	1.9	e1	.01	1.7	e3	.01
27	2.1	e3	.02	1.8	e1	.01	1.7	e3	.01
28	2.0	e3	.02	1.8	e1	.01	1.8	e5	.03
29	1.8	e2	.01	1.8	e1	.01	1.7	e2	.01
30	1.8	<1	.00	1.7	e1	.01	1.7	1	.01
31	1.8	<1	.00	1.8	e1	.01	---	---	---
TOTAL	68.1	---	1.70	57.9	---	1.63	59.3	---	8.09
YEAR	1031.3		770.78						

e Estimated
< Actual value is known to be less than the value shown

HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	1.7	e3	.01	12	e97	15	2.7	e4	.03
2	2.2	e4	.03	2.7	4	.03	2.3	4	.02
3	5.7	e16	.52	2.3	4	.02	2.0	5	.03
4	5.1	e8	.16	2.2	3	.02	1.9	2	.01
5	2.7	e3	.02	4.8	e8	.15	1.9	4	.02
6	2.3	e3	.02	2.6	2	.01	1.9	2	.01
7	2.8	e4	.03	2.3	5	.03	1.9	2	.01
8	2.5	e3	.02	2.3	e4	.03	1.9	2	.01
9	9.6	e87	23	2.5	e4	.03	1.9	2	.01
10	3.2	e3	.03	2.3	2	.01	1.9	2	.01
11	3.9	e5	.06	2.1	3	.02	1.9	<1	.00
12	2.6	e3	.02	2.1	3	.02	1.8	<1	.00
13	2.3	e3	.02	2.1	2	.01	1.8	1	.01
14	2.1	e2	.01	2.0	8	.04	1.8	2	.01
15	2.0	e2	.01	2.0	3	.02	1.8	2	.01
16	1.9	e2	.01	2.0	3	.02	1.9	<1	.00
17	1.9	e2	.01	2.0	6	.03	1.8	<1	.00
18	1.8	e2	.01	2.0	4	.02	4.9	e15	1.1
19	1.8	e2	.01	1.9	5	.02	2.7	3	.02
20	1.8	e2	.01	1.9	3	.02	2.1	1	.01
21	1.8	e2	.01	1.9	3	.02	2.0	2	.01
22	1.8	e1	.01	1.8	8	.04	1.9	2	.01
23	1.8	e1	.01	1.8	4	.02	1.9	1	.01
24	1.8	e1	.01	1.9	7	.04	1.8	2	.01
25	1.7	e1	.01	1.9	4	.02	1.8	2	.01
26	1.8	e1	.01	1.8	3	.02	1.8	1	.01
27	1.7	e1	.01	2.2	e4	.02	1.9	2	.01
28	1.7	1	.01	2.1	5	.03	3.7	e6	.15
29	1.7	11	.05	2.0	7	.04	2.6	4	.03
30	1.7	e3	.01	2.1	5	.03	7.3	e19	.82
31	1.7	3	.01	---	---	---	8.9	e24	.81
TOTAL	79.1	---	24.16	75.6	---	15.83	78.4	---	3.20
		JANUARY			FEBRUARY			MARCH	
1	32	e214	41	1.7	1	.01	1.7	1	.01
2	6.1	6	.10	1.8	3	.01	1.7	e1	.01
3	3.6	3	.03	1.7	3	.01	1.6	2	.01
4	2.9	6	.05	1.7	2	.01	1.6	2	.01
5	3.3	e5	.06	1.7	1	.01	1.6	e2	.01
6	2.6	e3	.02	1.7	3	.01	1.6	2	.01
7	2.4	2	.01	1.7	1	.01	1.5	2	.01
8	2.4	2	.01	1.7	1	.01	1.5	3	.01
9	2.3	2	.01	1.7	2	.01	1.6	2	.01
10	2.1	1	.01	1.7	1	.01	1.6	e2	.01
11	2.1	2	.01	1.7	3	.01	1.6	2	.01
12	2.1	3	.02	1.7	2	.01	1.6	1	.01
13	2.0	2	.01	1.6	1	.01	1.6	2	.01
14	1.9	2	.01	1.6	2	.01	1.6	2	.01
15	1.9	1	.01	1.6	e1	.01	1.6	1	.01
16	1.9	3	.02	1.6	1	.01	1.6	2	.01
17	2.3	e5	.03	1.6	2	.01	1.5	1	.01
18	2.4	e4	.03	1.7	e1	.01	1.5	2	.01
19	2.2	2	.01	1.6	1	.01	1.5	1	.01
20	2.1	2	.01	1.6	e1	.00	1.5	3	.01
21	2.1	2	.01	1.6	1	.00	1.5	e3	.01
22	2.0	1	.01	1.6	1	.01	1.5	5	.02
23	1.9	2	.01	1.7	2	.01	1.6	2	.01
24	1.9	2	.01	1.6	1	.01	1.6	e1	.01
25	1.9	3	.02	1.6	2	.01	1.6	1	.01
26	1.9	4	.02	1.7	e3	.02	1.6	2	.01
27	1.9	2	.01	1.7	e2	.01	1.6	2	.01
28	1.8	1	.01	1.6	2	.01	1.6	2	.01
29	1.8	2	.01	---	---	---	1.5	3	.01
30	1.8	2	.01	---	---	---	1.5	e2	.01
31	1.8	1	.01	---	---	---	1.5	2	.01
TOTAL	101.4	---	41.59	46.5	---	0.27	48.7	---	0.32

e Estimated

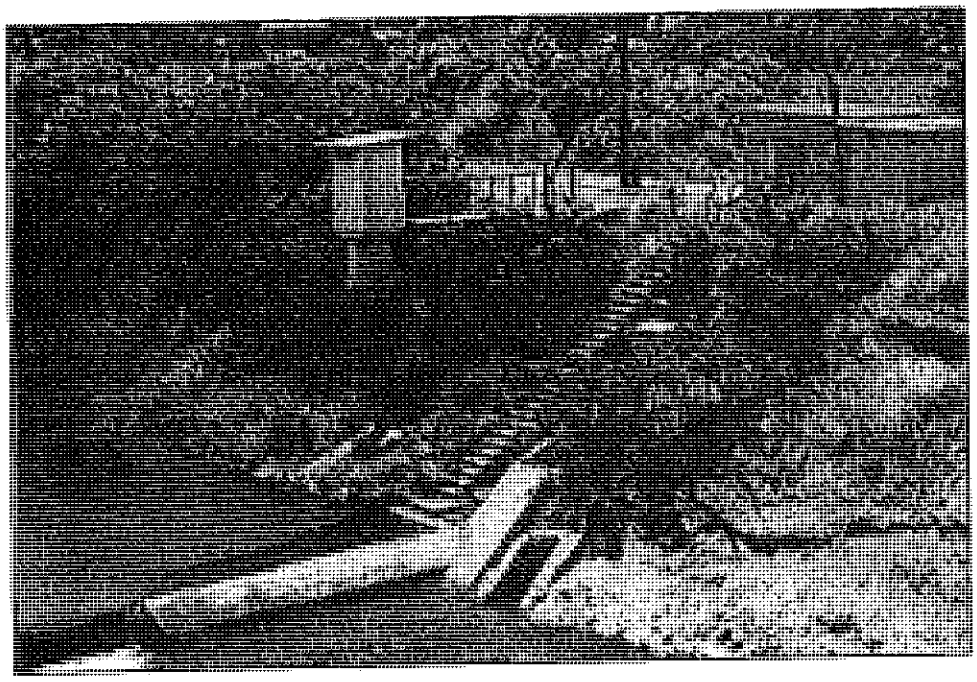
HAWAII, ISLAND OF OAHU

16275000 HAIKU STREAM NEAR HEEIA--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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	1.5	7	.03	1.5	e1	.00	1.5	e3	.01
2	1.5	5	.02	1.5	e1	.00	1.5	e3	.01
3	1.5	3	.01	1.5	e1	.00	1.5	e3	.01
4	1.5	3	.01	1.5	e1	.00	1.5	e3	.01
5	1.5	2	.01	1.5	e1	.00	1.5	e3	.01
6	1.5	2	.01	1.5	e1	.00	1.5	e3	.01
7	1.5	1	.00	1.5	e1	.00	1.5	e3	.01
8	1.5	2	.01	1.5	e1	.00	1.6	e3	.01
9	1.5	2	.01	1.5	e1	.00	1.5	e3	.01
10	1.6	3	.02	1.5	e1	.00	1.5	e3	.01
11	1.6	2	.01	1.5	e1	.00	1.5	e3	.01
12	1.6	1	.01	1.5	e1	.00	1.5	e3	.01
13	1.7	1	.00	1.5	e1	.00	1.5	e3	.01
14	1.7	1	.00	1.5	e1	.00	1.5	e3	.01
15	1.6	1	.00	1.5	e1	.00	1.5	e3	.01
16	1.6	1	.01	1.5	e1	.00	1.5	e3	.01
17	1.6	2	.01	1.5	e1	.00	1.5	e3	.01
18	1.7	2	.01	1.5	e1	.00	1.5	e3	.01
19	1.6	2	.01	1.5	e1	.00	1.5	e3	.01
20	1.6	1	.01	1.5	e1	.00	1.5	e3	.01
21	1.6	2	.01	1.5	e1	.00	1.5	e3	.01
22	1.6	3	.01	1.6	e1	.00	1.5	e3	.01
23	1.5	2	.01	1.6	e1	.00	1.4	e3	.01
24	1.5	6	.02	1.6	e1	.00	1.5	e3	.01
25	1.5	2	.01	1.6	e1	.00	1.5	e3	.01
26	1.5	2	.01	1.5	e1	.00	1.6	e3	.01
27	1.5	<1	.00	1.5	e1	.00	1.5	e3	.01
28	1.5	<1	.00	1.5	<1	.00	1.5	e3	.01
29	1.5	e1	.00	1.4	<1	.00	1.5	e3	.01
30	1.5	e1	.00	1.5	e2	.01	1.6	e3	.01
31	---	---	---	1.5	e2	.01	---	---	---
TOTAL	46.6	---	0.27	46.8	---	0.02	45.2	---	0.30
		JULY			AUGUST			SEPTEMBER	
1	1.6	e3	.01	1.4	e3	.01	1.4	e1	.00
2	1.5	e3	.01	1.4	e3	.01	1.4	e1	.00
3	1.5	e3	.01	1.4	e3	.01	1.4	1	.00
4	1.6	e3	.01	1.4	e3	.01	1.3	e1	.00
5	1.7	e3	.01	1.4	e3	.01	1.3	e1	.00
6	1.6	e3	.01	1.4	8	.03	1.3	e1	.01
7	1.6	e3	.01	1.4	e3	.01	1.3	e1	.01
8	1.5	e3	.01	1.4	e3	.01	1.3	e2	.01
9	1.5	e3	.01	1.4	e3	.01	1.4	e2	.01
10	1.5	e3	.01	1.4	e2	.01	1.3	2	.01
11	1.5	e3	.01	1.4	e2	.01	1.3	e2	.01
12	1.5	e3	.01	1.4	e2	.01	1.4	e2	.01
13	1.5	e3	.01	1.3	e2	.01	1.3	e2	.01
14	1.5	e3	.01	1.3	e2	.01	1.3	e2	.01
15	1.5	e3	.01	1.3	e2	.01	1.3	e2	.01
16	1.5	e3	.01	1.3	e2	.01	1.3	e2	.01
17	1.4	e3	.01	1.3	e2	.01	1.3	3	.01
18	1.4	e3	.01	1.3	e2	.01	1.3	e2	.01
19	1.4	e3	.01	1.3	e1	.01	1.3	1	.00
20	1.4	e3	.01	1.3	e1	.01	1.3	1	.00
21	1.5	e3	.01	1.3	e1	.01	1.4	e3	.01
22	1.5	e3	.01	1.4	e1	.00	1.3	2	.01
23	1.5	e3	.01	1.4	e1	.00	1.3	2	.01
24	1.4	e3	.01	1.3	e1	.00	1.3	1	.00
25	1.4	e3	.01	1.3	1	.00	1.3	2	.01
26	1.4	e3	.01	1.3	e1	.00	1.3	3	.01
27	1.4	e3	.01	1.3	e1	.00	1.3	2	.01
28	1.4	e3	.01	1.3	e1	.00	1.3	2	.01
29	1.4	e3	.01	1.3	e1	.00	1.3	3	.01
30	1.4	e3	.01	1.3	e1	.00	1.3	2	.01
31	1.4	e3	.01	1.3	e1	.00	---	---	---
TOTAL	45.9	---	0.31	41.7	---	0.23	39.6	---	0.22
YEAR	695.5		86.72						

e Estimated



Waikele Stream, Oahu

HAWAII, ISLAND OF OAHU

16283200 KAHALUU STREAM NEAR AHUIMANU

LOCATION.--Lat 21°26′32″, long 157°50′47″, Hydrologic Unit 20060000, on left bank, 1.1 mi west of Valley of the Temples Memorial Park, 1.3 mi south of Kahaluu School, and 2.7 mi northwest of Heeia Elementary School.

DRAINAGE AREA.--0.99 mi^2.

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 150 ft above mean sea level (from topographic map).

REMARKS.--Records computed by George Dayag. Records good except for discharges greater than 30 ft^3/s which are poor. Honolulu Board of Water Supply has diverted ground water from tunnel in drainage area since 1947. At times, farmers upstream of gage pump and/or divert small amounts of water from the stream.

AVERAGE DISCHARGE.--15 years (water years 1984-98), 3.47 ft^3/s (2,510 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 728 ft^3/s, September 18, 1994, gage height, 6.05 ft; minimum, 0.58 ft^3/s on several days in September, October, November 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 180 ft^3/s and maximum(*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1145	*163	*3.45				

Minimum discharge, 0.90 ft^3/s, August 13 and September 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	18	3.7	30	3.3	2.9	2.7	2.7	2.4	2.2	1.8	1.7
2	3.0	3.9	3.1	7.4	3.2	3.0	2.9	2.5	2.4	2.2	1.8	1.8
3	7.5	3.2	2.9	5.0	3.3	2.8	2.7	2.6	2.4	2.2	1.9	1.8
4	4.3	3.1	2.8	4.4	3.3	2.3	2.7	2.5	2.5	2.6	1.8	1.6
5	3.8	9.5	2.9	5.0	3.3	2.5	2.7	2.5	2.3	2.4	1.9	1.6
6	3.5	3.9	2.8	4.1	3.3	2.9	2.7	2.5	2.3	2.2	1.9	1.6
7	3.4	3.4	3.1	3.9	3.2	2.9	2.8	2.6	2.2	2.2	1.8	1.5
8	4.1	3.5	3.2	3.8	3.2	2.8	2.7	2.5	2.5	2.2	1.9	1.6
9	15	4.0	3.5	3.7	3.3	2.8	2.7	2.4	2.3	2.2	2.0	1.7
10	4.9	3.1	3.1	3.6	3.2	2.7	2.7	2.5	2.2	2.0	1.8	1.7
11	6.3	3.1	2.9	3.5	3.3	2.8	2.6	2.5	2.2	2.1	1.7	1.6
12	4.0	3.1	2.9	3.5	3.1	2.8	2.5	2.5	2.4	2.1	1.6	1.6
13	3.5	3.0	2.8	3.5	3.2	2.8	2.6	2.5	2.3	2.2	1.4	1.6
14	3.4	3.3	2.8	3.5	3.1	2.7	2.7	2.5	2.3	2.1	1.7	1.6
15	3.6	3.1	2.7	3.5	3.0	2.7	2.6	2.5	2.2	2.1	1.7	1.7
16	3.2	2.9	2.9	3.5	3.1	2.5	2.6	2.4	2.2	2.0	1.7	1.6
17	3.1	2.9	2.7	4.2	3.0	2.4	2.7	2.4	2.2	2.0	1.6	1.6
18	3.0	3.0	6.2	3.6	3.1	2.6	2.6	2.4	2.2	2.1	1.7	1.6
19	3.0	3.0	3.7	3.5	3.1	2.6	2.8	2.5	2.2	2.1	1.6	1.5
20	2.9	3.0	3.1	3.4	3.1	2.7	2.7	2.5	2.2	1.8	1.7	1.5
21	3.0	2.9	2.9	3.4	3.0	2.7	2.8	2.5	2.4	1.9	1.6	2.0
22	3.0	2.8	3.1	3.4	3.1	2.6	2.7	2.6	2.3	2.0	1.7	1.5
23	3.1	2.8	3.2	3.5	3.1	2.3	2.6	2.4	2.2	1.9	1.6	1.5
24	2.9	2.9	3.1	3.3	3.1	2.7	2.6	2.5	2.3	2.0	1.6	1.4
25	2.9	2.9	3.0	3.3	3.1	2.7	2.7	2.3	2.2	1.9	1.7	1.5
26	2.8	2.9	2.9	3.3	3.2	2.9	2.6	2.3	2.3	1.9	1.7	1.4
27	2.8	4.0	2.9	3.3	3.1	2.8	2.7	2.2	2.2	1.9	1.7	1.4
28	2.8	3.1	3.6	3.3	2.9	2.7	2.7	2.3	2.3	2.0	1.7	1.5
29	2.7	2.9	3.3	3.3	---	2.7	2.5	2.3	2.4	1.9	1.7	1.5
30	3.2	3.4	7.2	3.3	---	2.7	2.6	2.2	2.3	1.9	1.6	1.5
31	3.1	---	9.2	3.2	---	2.8	---	2.3	---	1.8	1.7	---
TOTAL	120.3	116.6	108.2	143.2	88.3	83.8	80.2	75.9	68.8	64.1	53.3	47.7
MEAN	3.88	3.89	3.49	4.62	3.15	2.70	2.67	2.45	2.29	2.07	1.72	1.59
MAX	15	18	9.2	30	3.3	3.0	2.9	2.7	2.5	2.6	2.0	2.0
MIN	2.5	2.8	2.7	3.2	2.9	2.3	2.5	2.2	2.2	1.8	1.4	1.4
AC-FT	239	231	215	284	175	166	159	151	136	127	106	95

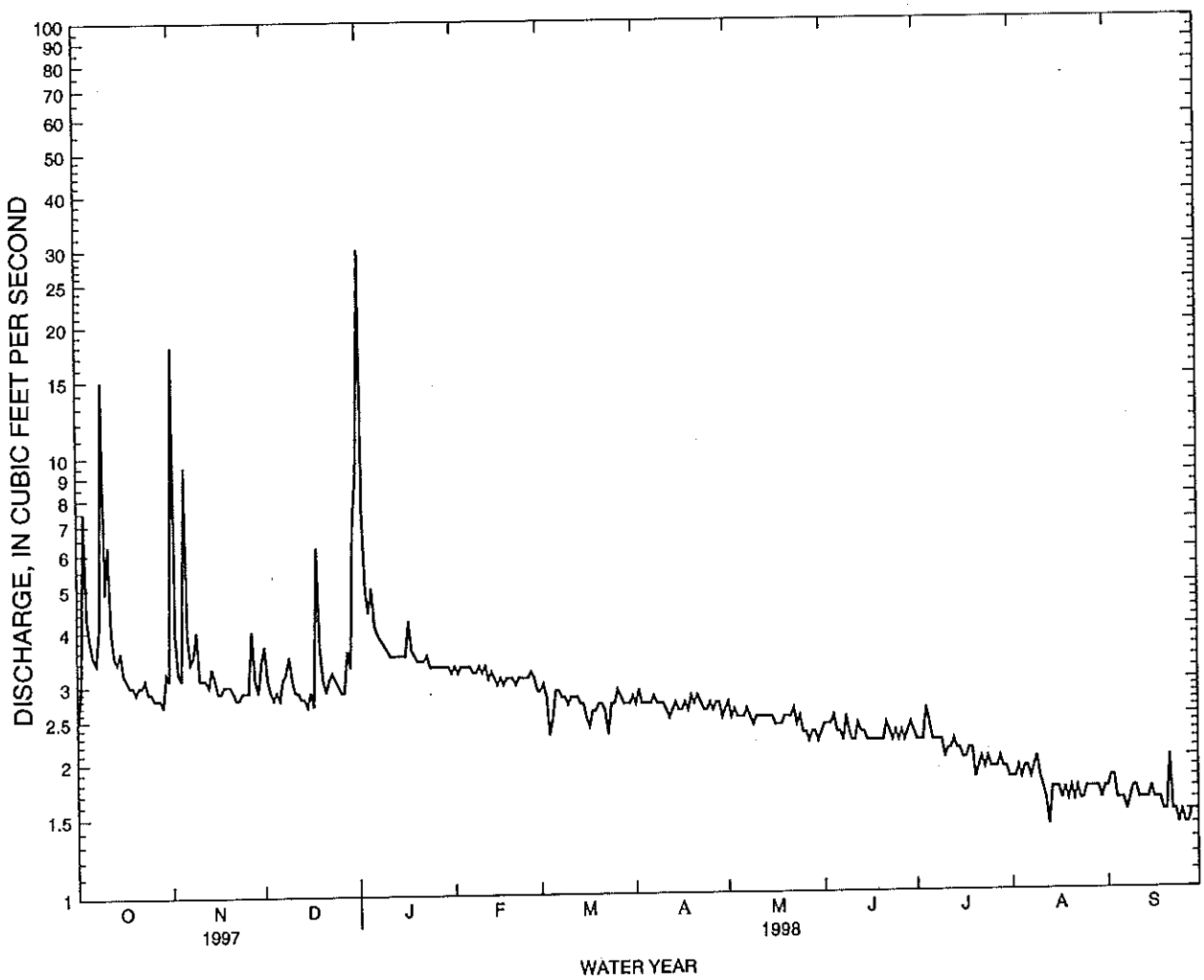
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

MEAN	3.22	4.00	3.81	3.85	3.81	4.33	3.65	3.21	2.81	3.09	2.78	3.06
MAX	6.69	10.6	9.56	8.65	7.55	11.8	10.6	5.52	4.78	5.89	5.78	5.81
(WY)	1992	1991	1988	1988	1989	1991	1989	1988	1991	1989	1991	1992
MIN	.66	1.24	1.09	.95	1.03	1.03	.92	.85	.73	.74	.67	.67
(WY)	1985	1986	1986	1986	1986	1984	1985	1984	1984	1984	1984	1984

HAWAII, ISLAND OF OAHU

16283200 KAHALUU STREAM NEAR AHUIMANU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1984 - 1998	
ANNUAL TOTAL	1540.7		1050.4			
ANNUAL MEAN	4.22		2.88		3.47	
HIGHEST ANNUAL MEAN					5.97	1991
LOWEST ANNUAL MEAN					1.07	1984
HIGHEST DAILY MEAN	28	Jan 3	30	Jan 1	97	Mar 19 1991
LOWEST DAILY MEAN	2.5	Oct 1	1.4	Aug 13	.58	Sep 22 1984
ANNUAL SEVEN-DAY MINIMUM	2.8	Dec 11	1.5	Sep 22	.59	Nov 5 1984
ANNUAL RUNOFF (AC-FT)	3060		2080		2510	
10 PERCENT EXCEEDS	5.5		3.5		4.9	
50 PERCENT EXCEEDS	3.6		2.7		2.9	
90 PERCENT EXCEEDS	3.0		1.7		.97	



HAWAII, ISLAND OF OAHU

16284200 WAIHEE STREAM NEAR KAHALUU

LOCATION.--Lat 21°27′04″, long 157°51′36″, Hydrologic Unit 20060000, on right bank, 0.2 mi downstream from forest-reserve boundary, 1.0 mi south of Kahaluu School, and 1.6 mi west of Ahuimanu sewage treatment plant.

DRAINAGE AREA.--0.97 mi^2.

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 170 ft above mean sea level (from topographic map).

REMARKS.--Records computed by George Dayag. Records good. Honolulu Board of Water Supply diverts water from tunnel and wells in drainage area.

AVERAGE DISCHARGE.--24 years (water years 1975-98), 6.24 ft^3/s (4,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,530 ft^3/s, March 21, 1991, gage height, 7.93 ft, from rating curve extended above 100 ft^3/s on basis of slope area measurement at gage height 7.93 ft; minimum, 1.1 ft^3/s, April 7, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 280 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1145	*228	*4.76				

Minimum discharge, 3.6 ft^3/s, on September 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	28	7.1	45	5.5	5.5	5.2	4.6	4.5	5.1	4.4	3.7
2	5.3	6.2	6.1	10	5.5	5.5	5.2	4.6	4.6	5.0	4.4	3.7
3	9.2	5.8	5.9	7.5	5.5	5.5	5.2	4.7	4.8	4.9	4.4	3.8
4	6.6	5.8	5.8	6.9	5.5	5.5	5.2	4.6	4.9	5.5	4.3	3.7
5	6.1	9.7	5.8	6.7	5.5	5.5	5.2	4.6	4.8	5.2	4.2	3.7
6	5.9	6.2	5.7	6.5	5.5	5.5	5.2	4.6	4.7	5.0	4.2	3.7
7	6.1	5.9	6.0	6.2	5.5	5.5	5.2	4.6	4.6	5.0	4.2	3.7
8	6.0	5.9	5.9	6.1	5.5	5.5	5.2	4.6	4.8	4.9	4.2	3.7
9	12	6.2	5.9	6.1	5.5	5.5	5.1	4.6	4.7	5.2	4.2	3.7
10	6.5	5.8	5.9	5.9	5.5	5.5	5.0	4.6	4.6	5.0	4.2	3.7
11	8.0	5.8	5.8	5.9	5.5	5.5	5.0	4.6	4.6	5.0	4.2	3.7
12	6.2	5.7	5.6	5.9	5.5	5.5	5.0	4.7	4.9	4.7	4.2	3.7
13	5.9	5.6	5.6	5.9	5.5	5.5	5.0	4.6	4.7	4.7	4.2	3.7
14	5.8	5.8	5.6	5.9	5.5	5.4	5.0	4.6	4.6	4.7	4.2	3.7
15	5.7	5.8	5.6	5.9	5.5	5.3	5.0	4.6	4.8	4.7	4.2	3.7
16	5.5	5.7	5.6	5.8	5.5	5.3	5.0	4.6	4.7	4.7	4.2	3.7
17	5.5	5.6	5.6	6.1	5.5	5.3	5.0	4.6	4.6	4.7	4.2	3.7
18	5.5	5.7	7.6	6.0	5.5	5.3	4.9	4.6	4.6	4.5	4.2	3.7
19	5.5	5.6	6.4	5.9	5.5	5.3	5.0	4.6	4.6	4.5	4.2	3.7
20	5.5	5.6	5.9	5.9	5.5	5.3	4.9	4.6	4.6	4.5	4.1	3.7
21	5.5	5.6	5.8	5.9	5.5	5.3	4.9	4.6	4.7	4.5	4.1	4.3
22	5.5	5.6	5.8	5.8	5.5	5.3	4.9	4.6	4.7	4.5	4.1	3.9
23	5.5	5.6	5.7	5.7	5.5	5.3	4.8	4.6	4.6	4.5	4.0	3.8
24	5.4	5.7	5.8	5.6	5.5	5.3	4.7	4.5	5.1	4.5	4.0	3.7
25	5.3	5.6	5.7	5.6	5.5	5.3	4.8	4.5	5.0	4.5	3.8	3.7
26	5.3	5.6	5.6	5.6	5.6	5.3	4.8	4.5	4.9	4.5	3.8	3.7
27	5.3	6.2	5.6	5.6	5.5	5.2	4.7	4.5	4.8	4.5	3.8	3.7
28	5.3	6.0	6.0	5.6	5.5	5.2	4.7	4.5	4.9	4.5	4.0	3.7
29	5.3	5.8	6.1	5.6	---	5.2	4.7	4.5	4.9	4.5	3.7	3.8
30	5.3	7.0	8.2	5.6	---	5.2	4.6	4.5	5.1	4.4	3.7	3.6
31	5.3	---	11	5.6	---	5.2	---	4.5	---	4.4	3.7	---
TOTAL	187.1	201.1	190.7	228.3	154.1	166.5	149.1	142.0	142.4	146.8	127.3	112.0
MEAN	6.04	6.70	6.15	7.36	5.50	5.37	4.97	4.58	4.75	4.74	4.11	3.73
MAX	12	28	11	45	5.6	5.5	5.2	4.7	5.1	5.5	4.4	4.3
MIN	5.3	5.6	5.6	5.6	5.5	5.2	4.6	4.5	4.5	4.4	3.7	3.6
AC-FT	371	399	378	453	306	330	296	282	282	291	252	222

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

MEAN	5.85	6.72	6.53	6.87	6.59	7.43	6.33	5.90	5.66	5.79	5.65	5.60
MAX	9.81	14.3	15.5	12.1	13.2	17.7	15.1	8.46	8.88	9.95	10.6	9.43
(WY)	1983	1991	1988	1988	1979	1991	1989	1981	1982	1989	1982	1982
MIN	2.70	4.08	3.60	3.71	3.05	2.85	2.72	3.18	3.36	2.40	2.61	2.74
(WY)	1976	1978	1976	1977	1977	1977	1977	1977	1976	1977	1976	1976

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
	Length	
inch (in.)	2.54×10^{1}	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^{0}	kilometer
	Area	
acre	4.047×10^{3}	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi^2)	2.590×10^{0}	square kilometer
	Volume	
gallon (gal)	3.785×10^{0}	liter
	3.785×10^{0}	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^{3}	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft^3)	2.832×10^{1}	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft^3/s) d]	2.447×10^{3}	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^{3}	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
	Flow	
cubic foot per second (ft^3/s)	2.832×10^{1}	liter per second
	2.832×10^{1}	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^{1}	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
	Mass	
ton (short)	9.072×10^{-1}	megagram or metric ton

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui			
16588000	Wailoa ditch at Honopou, near Huelo	Lat 20°53′20″, long 156°15′19″, on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mi west of Lupi, and 2.2 mi southwest of Huelo.	1924-87≠, 1988-97	12-18-97 01-14-98 04-30-98 07-13-98	300 101 294 196
16589000	New Hamakua ditch at Honopou, near Huelo	Lat 20°53′28″, long 156°15′22″, on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing and 2.1 mi southwest of Huelo.	1919-85≠, 1986-97	12-08-97 01-14-98 04-30-98 07-13-98	141 1.92 13.2 18.7
16592000	Lowrie ditch at Honopou Gulch, near Huelo	Lat 20°54′57″, long 156°15′08″, on left bank 0.2 mi downstream from siphon across Honopou Stream, 1.6 mi west of Huelo, and 2.7 mi northwest of Kailua.	1911-26≠, 1931-85≠, 1986-97	11-17-97 01-14-98 05-11-98 07-15-98	14.1 17.5 30.3 28.7
16594000	Haiku ditch at Honopou Gulch, near Kailua	Lat 20°55′07″, long 156°14′58″, on right bank on west side of Honopou Gulch, 160 ft below Hana Highway, 2.5 mi northwest of Kailua, and 5.0 mi east of Haiku.	1911≠, 1914≠, 1916-28≠, 1931-85≠, 1986-97	11-17-97 02-26-98 05-28-98 07-14-98	1.77 1.32 2.81 3.14
205915156360001	Honokohau Stream 4.0	Lat 20°59′15″, long 156°36′00″, Honokohau Stream, upstream from Taro Gate release, at altitude 410 ft.	1995, 1997	10-23-97	1.89
205922156360101	Honokohau Stream 5.0	Lat 20°59′22″, long 156°36′01″, Honokohau Stream, downstream from Taro Gate release, at altitude 380 ft.	1995, 1997	10-23-97	3.19
205928156360601	Honokohau Stream 5.9	Lat 20°59′28″, long 156°36′06″, Honokohau Stream, 350 ft upstream from dam, at altitude 350 ft.	1997	10-23-97	3.61
205933156360801	Honokohau Stream 6.1	Lat 20°59′33″, long 156°36′08″, Honokohau Stream, 200 ft downstream from dam, at altitude 330 ft.	1997	10-23-97	2.61
205940156360901	Honokohau Stream 6.2	Lat 20°59′40″, long 156°36′09″, Honokohau Stream, 940 ft downstream from dam, at altitude 310 ft.	1997	10-23-97	3.04
210012156362801	Honokohau Stream 7.6	Lat 21°00′12″, long 156°36′28″, Honokohau Stream, downstream from return flow on right bank, at altitude 180 ft.	1997	10-23-97	3.12
210041156363001	Honokohau Stream 7.9	Lat 21°00′41″, long 156°36′30″, Honokohau Stream, 350 ft downstream from road ford, at altitude 100 ft.	1997	10-23-97	2.50
210045156363301	Honokohau Stream 8.0	Lat 21°00′45″, long 156°36′33″, Honokohau Stream, 15 ft downstream from Chun's dam, at altitude 80 ft.	1995, 1997	10-23-97	1.81

≠ Operated as a continuous-record gaging station

Discharge measurements made at miscellaneons sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
210128156364201	Honokohau Stream 9.1	Lat 21°01′28″, long 156°36′42″, Honokohau Stream, 100 ft downstream of highway 340 bridge, at altitude 5 ft.	1997	10-23-97	1.81
205559156142901	Hoolawa Stream 1	Lat 20°55′59″, long 156°14′29″, Hoolawa Stream at altitude 15 ft.	--	02-05-98	0.30
205501156144001	Hoolawa Stream 2	Lat 20°55′01″, long 156°14′40″, Hoolawa Stream at altitude 315 ft.	--	02-05-98	0.12
205458156143801	Hoolawa Stream 3	Lat 20°54′58″, long 156°14′38″, Hoolawa Stream, downstream from Haiku Ditch diversion, at altitude 400 ft.	--	02-05-98	0.00
205443156144601	Hoolawa Stream 4	Lat 20°54′43″, long 156°14′46″, Hoolawa Stream, upstream from Haiku Ditch diversion, at altitude 450 ft.	--	02-05-98	0.39
205430156144701	Hoolawa Stream 5	Lat 20°54′30″, long 156°14′47″, Hoolawanui Stream, downstream from Lowrie Ditch diversion, at altitude 590 ft.	--	02-05-98	0.11
205427156144901	Hoolawa Stream 6	Lat 20°54′27″, long 156°14′49″, Hoolawanui Stream, upstream from Lowrie Ditch diversion, at altitude 600 ft.	--	02-05-98	0.38
205329156145801	Hoolawa Stream 7	Lat 20°53′29″, long 156°14′58″, Hoolawanui Stream, downstream from Wailoa Ditch diversion, at altitude 1,080 ft.	--	02-05-98	0.00
16585000	Hoolawanui Stream near Hnelo	Lat 20°53′15″, long 156°14′55″, Hoolawanui Stream, upstream from Wailoa Ditch diversion, at altitude 1,218 ft.	1910-71≠	02-05-98	1.92
205427156144001	Hoolawa Stream 9	Lat 20°54′27″, long 156°14′40″, Hoolawaliilii Stream, downstream from Lowrie Ditch diversion, at altitude 590 ft.	--	02-05-98	0.04
205424156144001	Hoolawa Stream 10	Lat 20°54′24″, long 156°14′40″, Hoolawaliilii Stream, upstream from Lowrie Ditch diversion, at altitude 620 ft.	--	02-05-98	0.82
205322156143501	Hoolawa Stream 11	Lat 20°53′22″, long 156°14′35″, Hoolawaliilii Stream, downstream from Wailoa Ditch diversion, at altitude 1,190 ft.	--	02-05-98	0.00
16586000	Hoolawaliilii Stream near Huelo	Lat 20°53′17″, long 156°14′35″, Hoolawaliilii Stream, upstream from Wailoa Ditch diversion, at altitude 1,245 ft.	1911-57≠	02-05-98	1.89
205324156144701	Hoolawa Stream 12.1	Lat 20°53′24″, long 156°14′47″, Unnamed tributary to Hoolawaliilii Stream, at altitude 1,200 ft.	--	02-05-98	0.01

≠ Operated as a continuous-record gaging station

Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
205642156191601	Kuiaha Gulch 1	Lat 20°56′42″, long 156°19′16″, Kuiaha Gulch at altitude 5 ft.	--	10-29-97	0.00
205620156190101	Kuiaha Gulch 2	Lat 20°56′20″, long 156°19′01″, Kuiaha Gulch at altitude 110 ft.	--	10-29-97	0.00
205604156190101	Kuiaha Gulch 3	Lat 20°56′04″, long 156°19′01″, Kuiaha Gulch at altitude 180 ft.	--	10-29-97	0.00
205557156190001	Kuiaha Gulch 4	Lat 20°55′57″, long 156°19′00″, Kuiaha Gulch at altitude 200 ft.	--	10-29-97	0.00
205546156191401	Kuiaha Gulch 5	Lat 20°55′46″, long 156°19′14″, Lilikoi Gulch at altitude 305 ft.	--	10-29-97	0.00
205545156191601	Kuiaha Gulch 6	Lat 20°55′45″, long 156°19′16″, Lilikoi Gulch at altitude 310 ft.	--	10-29-97	0.36
205528156191901	Kuiaha Gulch 7.1	Lat 20°55′28″, long 156°19′19″, Lilikoi Gulch at altitude 360 ft.	--	10-29-97	0.29
205523156193001	Kuiaha Gulch 7.2	Lat 20°55′23″, long 156°19′30″, Lilikoi Gulch at altitude 380 ft.	--	10-29-97	0.14
205458156192601	Kuiaha Gulch 8	Lat 20°54′58″, long 156°19′26″, Lilikoi Gulch at altitude 490 ft.	--	10-29-97	0.00
205456156193001	Kuiaha Gulch 9	Lat 20°54′56″, long 156°19′30″, Lilikoi Gulch at altitude 530 ft.	--	10-29-97	0.15
205348156190001	Kuiaha Gulch 10	Lat 20°53′48″, long 156°19′00″, Lilikoi Gulch at altitude 930 ft.	--	10-29-97	0.01
205343156185801	Kuiaha Gulch 11	Lat 20°53′43″, long 156°18′58″, Lilikoi Gulch at altitude 960 ft.	--	10-29-97	0.27
205238156182701	Kuiaha Gulch 12	Lat 20°52′38″, long 156°18′27″, Lilikoi Gulch at altitude 1,400 ft.	--	10-28-97	0.00
205544156190001	Kuiaha Gulch 13.1	Lat 20°55′44″, long 156°19′00″, Pauwela Gulch at altitude 300 ft.	--	10-28-97	0.01
205529156190601	Kuiaha Gulch 14	Lat 20°55′29″, long 156°19′06″, Pauwela Gulch at altitude 375 ft.	--	10-28-97	0.41
205503156191001	Kuiaha Gulch 15	Lat 20°55′03″, long 156°19′10″, Pauwela Gulch at altitude 475 ft.	--	10-28-97	0.39
205452156185701	Kuiaha Gulch 16.1	Lat 20°54′52″, long 156°18′57″, Pauwela Gulch at altitude 560 ft.	--	10-28-97	0.06
205451156185701	Kuiaha Gulch 16.2	Lat 20°54′51″, long 156°18′57″, Pauwela Gulch at altitude 560 ft.	--	10-28-97	0.32
205410156185001	Kuiaha Gulch 17	Lat 20°54′10″, long 156°18′50″, Pauwela Gulch at altitude 840 ft.	--	10-28-97	0.00
205351156184601	Kuiaha Gulch 18	Lat 20°53′51″, long 156°18′46″, Pauwela Gulch at altitude 960 ft.	--	10-28-97	0.00

Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
205545156185701	Kuiaha Gulch 19	Lat 20°55′45″, long 156°18′57″, Ohia Gulch at altitude 240 ft.	--	10-29-97	0.00
205510156185301	Kuiaha Gulch 20	Lat 20°55′10″, long 156°18′53″, Ohia Gulch at altitude 400 ft.	--	10-28-97	0.00
205453156185401	Kuiaha Gulch 21	Lat 20°54′53″, long 156°18′54″, Ohia Gulch at altitude 490 ft.	--	10-28-97	0.00
205443156184501	Kuiaha Gulch 22	Lat 20°54′43″, long 156°18′45″, Ohia Gulch at altitude 575 ft.	--	10-28-97	0.15
205344156182301	Kuiaha Gulch 23	Lat 20°53′44″, long 156°18′23″, Ohia Gulch at altitude 930 ft.	--	10-28-97	0.02
205338156182001	Kuiaha Gulch 24	Lat 20°53′38″, long 156°18′20″, Ohia Gulch at altitude 960 ft.	--	10-28-97	2.07
205252156182101	Kuiaha Gulch 25	Lat 20°52′52″, long 156°18′21″, Kapuaahoohui Gulch at altitude 1,260 ft.	--	10-28-97	1.99
205222156181101	Kuiaha Gulch 26	Lat 20°52′22″, long 156°18′11″, Kapuaahoohui Gulch at altitude 1,420 ft.	--	10-28-97	0.00
205225156181001	Kuiaha Gulch 27	Lat 20°52′25″, long 156°18′10″, Kaluanui Ditch at altitude 1,520 ft.	--	10-28-97	1.85
205316156180701	Kuiaha Gulch 28	Lat 20°53′16″, long 156°18′07″, Huluhulunui Gulch at altitude 1,140 ft.	--	10-28-97	0.00
205636156180501	Kaupakulua Gulch 1	Lat 20°56′36″, long 156°18′05″, Kaupakulua Gulch at altitude 5 ft.	--	11-17-97	0.00
205547156180801	Kaupakulua Gulch 2	Lat 20°55′47″, long 156°18′08″, Kaupakulua Gulch at altitude 340 ft.	--	11-17-97	0.00
205524156175801	Kaupakulua Gulch 4	Lat 20°55′24″, long 156°17′58″, Kaupakulua Gulch at altitude 480 ft.	--	11-17-97	0.00
205445156175501	Kaupakulua Gulch 5.1	Lat 20°54′45″, long 156°17′55″, Unnamed tributary to Kaupakulua Gulch at altitude 630 ft.	--	11-17-97	0.00
205347156174701	Kaupakulua Gulch 6	Lat 20°53′47″, long 156°17′47″, Unnamed tributary to Kaupakulua Gulch, downstream from diversion, at altitude 1,010 ft.	--	11-17-97	0.00
205346156174701	Kaupakulua Gulch 7	Lat 20°53′46″, long 156°17′47″, Unnamed tributary to Kaupakulua Gulch, upstream from diversion, at altitude 1,015 ft.	--	11-17-97	0.17
205420156172901	Kaupakulua Gulch 8	Lat 20°54′20″, long 156°17′1129″, Opaepilau Gulch at altitude 790 ft.	--	11-17-97	0.00
205339156173001	Kaupakulua Gulch 9	Lat 20°53′39″, long 156°17′30″, Opaepilau Gulch at altitude 1,030 ft.	--	11-18-97	0.00

Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
205308156172301	Kaupakulua Gulch 10	Lat 20°53′08″, long 156°17′23″, Awalau Gulch at altitude 1,230 ft.	--	11-17-97	0.00
205156156170602	Kaupakulua Gulch 11.1	Lat 20°51′56″, long 156°17′06″, Awalau Gulch, downstream from diversion, at altitude 1,780 ft.	--	11-18-97	0.03
205156156170601	Kaupakulua Gulch 11	Lat 20°51′56″, long 156°17′06″, Awalau Gulch, upstream from diversion, at altitude 1,780 ft.	--	11-18-97	2.87
205133156164801	Kaupakulua Gulch 12	Lat 20°51′33″, long 156°16′48″, Awalau Gulch at altitude 2,030 ft.	--	11-18-97	3.19
205110156162401	Kaupakulua Gulch 13	Lat 20°51′10″, long 156°16′24″, Awalau Gulch at altitude 2,250 ft.	--	11-18-97	2.02
205248156170201	Kaupakulua Gulch 14	Lat 20°52′48″, long 156°17′02″, Kalakohi Gulch at altitude 1,400 ft.	--	11-18-97	0.41
205345156172201	Kaupakulua Gulch 15.1	Lat 20°53′45″, long 156°17′22″, Kalakohi Gulch at altitude 1,020 ft.	--	11-18-97	0.00

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Water-quality partial-record stations are particular sites where chemical-quality, and/or sediment data are collected systematically over a period of years for use in hydrologic analyses. A schematic diagram showing water-quality stations in Kamooalii Stream basin, Kaneohe, Oahu is shown in figure 15 and the data are listed in downstream order.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU

16227100 HALAWA STREAM BELOW H1 (LAT 21°23′46″ LONG 157°55′57″)

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)
NOV 1997							
13...	0855	23.0	25.5	770	4.11	4.6	195
DEC							
17...	0925	22.5	24.0	770	.190	.7	503
FEB 1998							
03...	0955	24.0	22.0	770	E.01	2.0	770
JUL							
23...	0920	23.5	25.5	765	.13	1.5	912

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
NOV 1997							
13...	10	9.0	--	--	--	--	--
DEC							
17...	12	9.1	8	.5	<.05	.02	2800
FEB 1998							
03...	12	8.7	4	.5	<.05	<.01	1800
JUL							
23...	9.7	8.9	--	--	--	--	--

< Actual value is known to be less than the value shown
E Estimated

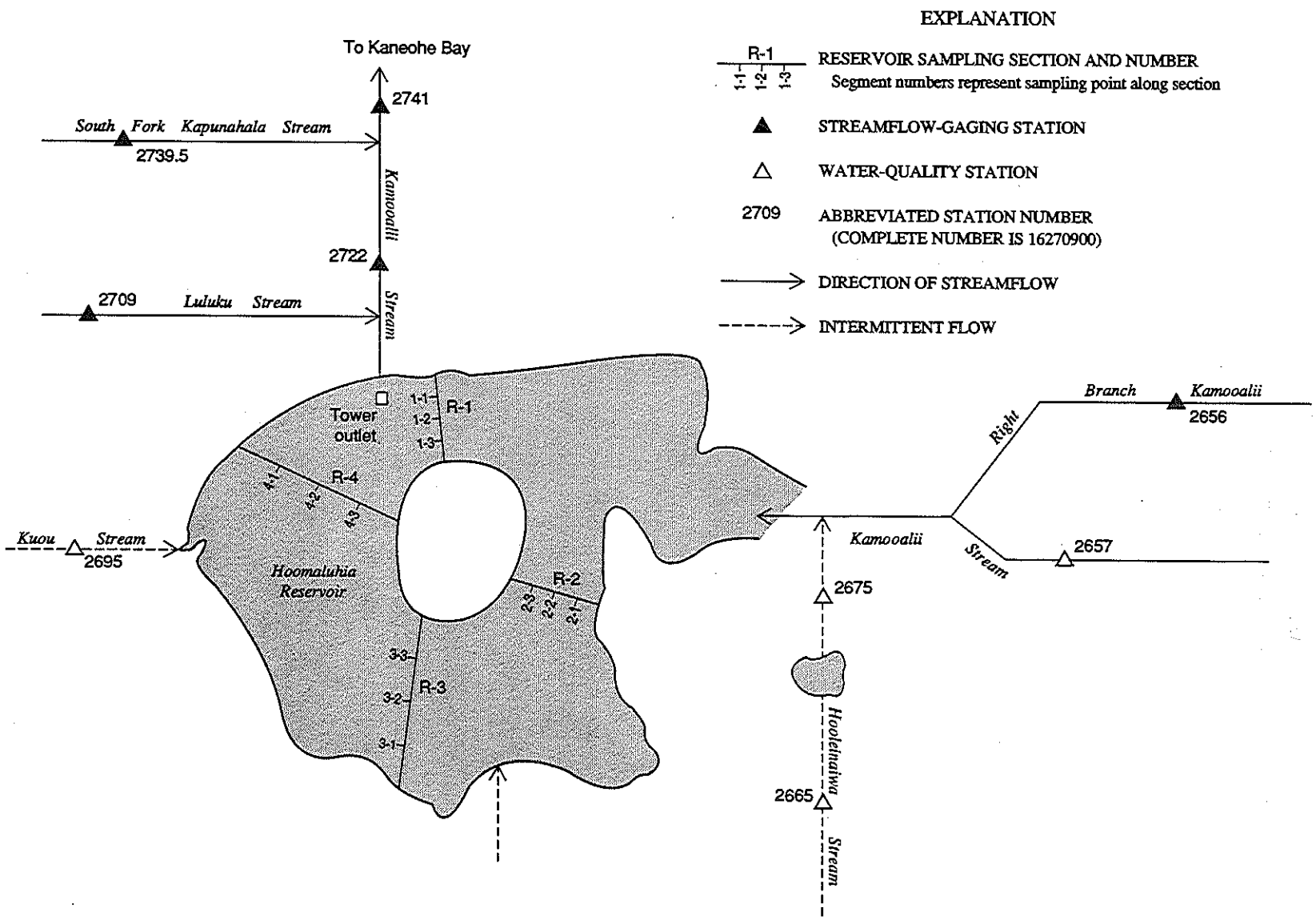


Figure 15. Diagram showing water-quality stations in Kamooalii Stream basin, Kaneohe, Oahu.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16265700 KAMOOALII STREAM AT ALTITUDE 200 FT, NEAR KANEOHE (LAT 21°23'12" LONG 157°47'56")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)
DEC 1997							
22...	0950	21.5	24.5	760	.72	1.1	225
JAN 1998							
27...	1040	20.0	21.5	760	1.22	.6	223

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
DEC 1997							
22...	7.5	6.9	4	<.1	.35	.01	160
JAN 1998							
27...	8.1	E6.5	<1	<.1	.30	<.01	70

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16267500 HOOLEINAIWA STREAM ABOVE CONFLUENCE WITH KAMOOALII STREAM, NEAR KANEOHE, OAHU

(LAT 21°23'18" LONG 157°48'18")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)
DEC 1997							
22...	1125	22.0	22.5	760	.80	3.1	186
JAN 1998							
27...	0920	20.0	18.0	760	.780	.4	186

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
DEC 1997							
22...	7.2	7.1	6	<.1	<.05	<.01	33
JAN 1998							
27...	7.4	6.9	1	<.1	.07	<.01	16

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16269500 KUOU STREAM AT ALTITUDE 220 FT NEAR KANEOHE, OAHU

(LAT 21°23'30" LONG 157°48'44")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)
DEC 1997							
22...	1040	22.0	22.0	760	1.0	305	7.0
JAN 1998							
27...	1120	21.5	20.5	760	1.4	313	6.0

DATE	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
DEC 1997						
22...	7.3	4	<.1	.17	.01	180
JAN 1998						
27...	E6.5	1	<.1	.28	<.01	61

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16274100 KANEOHE STREAM BELOW KAMEHAMEHA HWY, OAHU (LAT 21°24'54" LONG 157°48'03")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)
NOV 1997												
13...	1040	24.5	27.0	765	12.8	2.0	194	9.9	9.0	--	--	--
DEC												
29...	0938	21.5	20.5	760	25	5.1	195	9.1	7.9	--	6	--
FEB 1998												
03...	0950	21.0	23.0	765	12.5	2.5	197	9.9	8.5	8.3	5	<1
APR												
21...	0940	24.0	30.0	770	13.4	4.8	196	9.8	8.6	--	--	--

DATE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	.2	.40	.05	--	--	--	--	--	--	--	--	--
FEB 1998												
03...	.2	.27	<.01	2.2	11	8.2	16	1.0	20	6.5	<.1	22
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
03...	<1	4	<100	<10	<1	2.3	<12	1	3	1200	65	1
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
03...	60	11	<60	<1.0	<1	3	<1	<1	83	<10	10	700
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16274100 KANEOHE STREAM BELOW KAMEHAMEHA HWY, OAHU (LAT 21°24'54" LONG 157°48'03")

DATE	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SELENIUM, TOTAL (UG/L AS SE) (01147)	DEBRIS, FLOATING (SEVERITY) (01345)	TURBIDITY (SEVERITY) (01350)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CHLORPYRIFOS TOTAL RECOVER (UG/L) (38932)	DISULFOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<10.0	<4	<10	<1	<1	--	--	K1100	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	1	3	--	--	--	--

DATE	PERTHANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN I TOTAL (UG/L) (39388)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01	.02	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOXAPHENE, TOTAL (UG/L) (39400)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	METHOXYCHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALATHION, TOTAL (UG/L) (39530)	PARATHION, TOTAL (UG/L) (39540)	DIAZINON, TOTAL (UG/L) (39570)	METHYL PARATHION, TOTAL (UG/L) (39600)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRITHION (UG/L) (39786)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DYFONATE) WATER WHOLE TOT.REC (UG/L) (82614)	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.01	<.01	<.01	<.01	<.01	132	<.1	<.01	<.010	207	63
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown
K Results based on colony count outside the acceptance range (non-ideal colony count)

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157482601 HOOMALUHIA RES SEC 1-1 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'26")

DATE	TIME	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
JAN 1998						
28...	1017	1.0	22.5	196	7.1	7.5
28...	1018	3.0	22.5	196	7.2	7.5
28...	1019	5.0	22.5	196	7.2	7.5
28...	1020	7.0	22.5	196	7.1	7.5
28...	1021	8.0	22.5	196	7.0	7.4

212335157482602 HOOMALUHIA RES SEC 1-2 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'26")

DATE	TIME	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
JAN 1998						
28...	1009	1.0	22.5	196	7.1	7.5
28...	1010	3.0	22.5	196	7.1	7.5
28...	1011	5.0	22.5	196	7.1	7.5
28...	1012	7.00	22.5	196	7.1	7.5
28...	1013	9.0	22.5	196	7.1	7.5

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157482603 - HOOMALUHIA RES SEC 1-3 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'26")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CHLORPYRIFOS TOTAL RECOVER (UG/L) (38932)	DISULFOTON UNFILT RECOVER (UG/L) (39011)
JAN 1998											
28...	0956	1.0	22.5	8.2	196	7.1	7.5	<1	64	--	--
28...	0957	3.0	22.5	--	196	7.1	7.5	--	--	--	--
28...	0958	5.0	22.5	--	196	7.1	7.5	--	--	--	--
28...	0959	7.0	22.5	1.2	196	7.1	7.5	<1	38	--	--
28...	1000	9.0	22.5	--	196	7.1	7.5	--	--	--	--
28...	1001	11	22.0	1.4	204	5.7	7.3	<1	K85	--	--
28...	1130	--	--	--	--	--	--	--	--	<.01	<.01

DATE	PHORATE TOTAL (UG/L) (39023)	PERTHANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)
JAN 1998										
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	<.01	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01

DATE	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOXAPHENE, TOTAL (UG/L) (39400)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	METHOXYCHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALATHION, TOTAL (UG/L) (39530)
JAN 1998										
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01

DATE	PARATHION, TOTAL (UG/L) (39540)	DIAZINON, TOTAL (UG/L) (39570)	METHYL PARATHION, TOTAL (UG/L) (39600)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRITHION (UG/L) (39786)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DYFONATE) WATER WHOLE TOT.REC (UG/L) (82614)
JAN 1998										
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212331157482501 HOOMALUHIA RES SEC 2-1 NR KANEOHE, OAHU (LAT 21°23′31″ LONG 157°48′25″)

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1146	1.0	23.0	194	7.0	7.6
28...	1147	3.0	22.5	196	7.0	7.6
28...	1148	5.0	22.5	194	7.0	7.6
28...	1149	7.0	22.5	196	6.4	7.5
28...	1150	8.0	22.5	196	6.2	7.4

212331157482502 - HOOMALUHIA RES SEC 2-2 NR KANEOHE, OAHU (LAT 21°23′31″ LONG 157°48′25″)

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
JAN 1998							
28...	1138	1.0	23.0	194	7.0	7.6	--
28...	1139	3.0	22.5	196	7.1	7.6	--
28...	1140	5.0	22.5	196	7.0	7.6	--
28...	1141	7.0	22.5	196	6.9	7.6	--
28...	1142	9.0	22.0	204	6.0	7.4	<65
28...	1143	11	22.0	204	5.6	7.3	--

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212331157482503 HOOMALUHIA RES SEC 2-3 NR KANEOHE, OAHU (LAT 21°23'31" LONG 157°48'25")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1129	1.0	23.0	196	7.0	7.6
28...	1131	5.0	22.5	196	6.8	7.6
28...	1132	7.0	22.5	196	6.9	7.5
28...	1133	9.0	22.0	204	5.8	7.3
28...	1130	3.0	23.0	196	7.0	7.6

212329157483101 HOOMALUHIA RES SEC 3-1 NR KANEOHE, OAHU (LAT 21°23'29" LONG 157°48'31")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1055	1.0	23.0	196	6.9	7.5
28...	1056	3.0	23.0	196	6.9	7.5
28...	1057	5.0	22.5	198	6.9	7.5
28...	1058	7.0	22.5	196	6.8	7.5
28...	1059	8.0	22.5	196	6.8	7.5

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212329157483102 - HOOMALUHIA RES SEC 3-2 NR KANEOHE, OAHU (LAT 21°23'29" LONG 157°48'31")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
JAN 1998									
28...	1046	1.0	23.0	1.0	196	6.9	7.5	2	K5
28...	1047	3.0	22.5	--	196	6.9	7.5	--	--
28...	1048	5.0	22.5	.9	196	6.8	7.5	<1	K11
28...	1049	7.0	22.5	--	196	6.9	7.5	--	--
28...	1050	9.0	22.5	--	194	6.7	7.5	--	--
28...	1051	10	22.5	1.2	194	6.8	7.5	<1	24

212329157483103 HOOMALUHIA RES SEC 3-3 NR KANEOHE, OAHU (LAT 21°23'29" LONG 157°48'31")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1034	1.0	23.0	194	6.9	7.5
28...	1035	3.0	22.5	196	7.0	7.5
28...	1037	5.0	22.5	198	6.7	7.5
28...	1038	7.0	22.5	194	6.9	7.5
28...	1039	9.0	22.5	194	6.8	7.5
28...	1040	11	22.5	196	5.7	7.3

< Actual value is known to be less than the value shown
K Results based on colony count outside the acceptance range (non-ideal colony count)

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157483001 HOOMALUHIA RES SEC 4-1 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'30")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1319	1.0	24.0	198	6.9	7.6
28...	1320	3.0	23.5	198	6.9	7.6
28...	1321	5.0	23.0	196	6.9	7.6
28...	1322	7.00	22.5	196	6.7	7.6
28...	1323	8.0	22.5	198	6.6	7.5

212335157483002 - HOOMALUHIA RES SEC 4-2 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'30")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1311	1.0	23.5	196	7.0	7.6
28...	1312	3.0	23.0	198	7.0	7.6
28...	1313	5.0	23.0	198	7.1	7.6
28...	1314	7.0	23.0	196	7.0	7.6
28...	1315	8.0	22.5	196	7.0	7.6

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157483003 HOOMALUHIA RES SEC 4-3 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'30")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1302	1.0	23.5	198	7.0	7.5
28...	1303	3.0	23.0	196	7.0	7.5
28...	1304	5.0	23.0	196	6.9	7.5
28...	1305	7.0	22.5	196	7.0	7.5
28...	1306	9.0	22.5	198	6.8	7.5
28...	1307	11	22.5	198	6.4	7.4

212336157482601 - HOOMALUHIA RESERVOIR AT OUTLET, NEAR KANEOHE (LAT 21°23'36" LONG 157°48'26")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)
FEB 1998				
03...	1200	21.5	188	7.8
03...	1300	21.5	188	7.7
03...	1400	21.5	190	7.8
03...	1500	22.0	190	7.9
03...	1600	22.0	191	7.9
03...	1700	22.0	193	8.0
03...	1800	22.0	192	8.0
03...	1900	22.0	194	8.1
03...	2000	22.0	196	8.0
03...	2100	22.0	196	7.9
03...	2200	22.0	196	7.8
03...	2300	22.0	196	7.8
03...	2400	21.5	199	7.9
04...	0100	21.5	198	7.9
04...	0200	21.5	198	7.9
04...	0300	21.5	197	7.9
04...	0400	21.5	200	7.9
04...	0500	21.5	197	7.9
04...	0600	21.5	199	7.8
04...	0700	21.5	196	7.8
04...	0800	21.5	198	7.8
04...	0900	21.5	198	7.8
04...	1000	21.5	196	7.8
04...	1100	21.5	198	7.7
04...	1200	21.5	202	7.7
04...	1300	21.5	196	7.8

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET (LAT 21°24'44" LONG 157°45'25")

WATER TEMPERATURE, DEGREES CELSIUS

DAY	OCTOBER MAX	OCTOBER MIN	OCTOBER MEAN	NOVEMBER MAX	NOVEMBER MIN	NOVEMBER MEAN	DECEMBER MAX	DECEMBER MIN	DECEMBER MEAN	JANUARY MAX	JANUARY MIN	JANUARY MEAN
1	---	---	---	27.1	23.3	25.7	24.6	22.4	24.0	23.9	21.2	22.8
2	---	---	---	25.3	22.0	23.7	23.4	21.6	22.2	23.1	21.0	22.0
3	---	---	---	25.9	22.7	24.7	22.4	21.0	21.6	23.0	20.9	21.9
4	---	---	---	26.2	23.2	24.9	22.0	20.7	21.4	23.6	21.3	22.7
5	---	---	---	26.8	23.6	25.0	21.6	20.4	21.2	24.0	21.4	23.0
6	---	---	---	26.8	23.5	25.8	22.5	21.0	21.8	23.9	20.6	22.6
7	---	---	---	26.5	25.5	26.1	23.7	21.7	22.6	23.5	20.0	21.8
8	---	---	---	28.8	25.4	26.7	23.8	22.0	23.1	23.8	20.4	22.3
9	---	---	---	26.9	23.1	25.3	25.4	21.8	23.7	24.1	19.9	22.8
10	---	---	---	26.7	22.5	25.0	24.9	21.6	24.2	24.4	19.9	23.1
11	---	---	---	26.7	22.9	25.1	24.9	21.5	23.8	24.3	19.4	22.7
12	---	---	---	26.7	22.9	24.7	24.3	21.1	22.4	24.3	19.5	22.5
13	---	---	---	26.9	22.9	25.3	23.6	19.8	22.0	24.5	19.2	22.9
14	---	---	---	27.1	24.0	25.7	24.0	21.2	22.8	---	---	---
15	---	---	---	27.4	23.2	25.9	25.2	21.7	23.6	25.6	19.8	24.1
16	---	---	---	27.6	23.6	26.3	25.0	22.6	24.0	25.9	23.1	25.1
17	---	---	---	27.2	23.4	26.4	24.4	21.8	23.5	25.5	20.5	23.1
18	---	---	---	27.3	25.2	26.6	---	---	---	23.6	20.4	22.0
19	---	---	---	26.9	25.7	26.6	25.1	21.8	23.7	25.0	20.8	23.8
20	---	---	---	27.0	26.0	26.5	25.2	21.6	23.6	24.5	22.9	24.0
21	---	---	---	27.0	25.7	26.4	25.9	22.5	24.4	24.6	23.9	24.3
22	---	---	---	26.6	24.3	25.6	25.3	22.6	24.1	25.0	24.0	24.5
23	---	---	---	25.0	22.7	23.7	25.1	22.2	24.2	25.1	23.2	24.6
24	---	---	---	24.3	21.9	22.8	25.0	22.5	23.9	26.1	22.8	24.7
25	---	---	---	---	---	---	24.9	21.5	23.4	25.3	22.0	24.4
26	---	---	---	24.2	20.9	22.6	25.0	21.6	23.8	26.0	20.6	24.5
27	---	---	---	24.7	22.1	23.6	24.9	22.4	23.7	26.7	21.8	24.9
28	---	---	---	24.2	22.0	23.1	24.6	22.0	23.7	26.2	19.6	24.1
29	---	---	---	24.3	22.0	22.6	25.3	22.5	24.1	25.6	20.2	23.7
30	---	---	---	24.6	22.0	23.6	24.5	21.1	22.4	25.8	21.4	23.9
31	27.1	25.2	26.6	---	---	---	23.9	21.0	22.7	25.7	22.8	24.6
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	FEBRUARY MAX	FEBRUARY MIN	FEBRUARY MEAN	MARCH MAX	MARCH MIN	MARCH MEAN	APRIL MAX	APRIL MIN	APRIL MEAN	MAY MAX	MAY MIN	MAY MEAN
1	25.0	20.4	23.5	28.4	24.9	26.9	26.3	23.5	24.9	---	---	---
2	24.4	19.4	21.8	28.7	26.0	27.5	24.7	23.2	23.9	---	---	---
3	24.9	22.7	24.2	29.8	26.0	28.1	---	---	---	---	---	---
4	24.7	22.7	24.1	30.0	27.1	28.8	24.9	22.0	23.4	---	---	---
5	24.7	20.2	22.7	29.6	27.7	29.0	25.1	22.1	23.5	---	---	---
6	25.5	21.7	23.9	29.9	28.4	29.2	25.3	22.3	23.8	---	---	---
7	26.3	23.3	24.7	29.2	27.8	28.6	26.0	22.5	24.6	---	---	---
8	26.3	23.0	24.8	28.6	27.3	28.2	25.8	23.3	24.7	---	---	---
9	26.4	21.8	25.1	29.8	26.2	28.6	25.0	22.9	24.1	---	---	---
10	26.2	23.5	25.5	29.8	26.2	28.8	24.9	22.5	23.8	---	---	---
11	---	---	---	29.8	27.0	28.8	25.3	22.3	23.7	---	---	---
12	26.2	24.8	25.8	29.9	25.2	28.4	23.5	21.9	22.8	---	---	---
13	27.7	24.4	26.1	---	---	---	23.9	21.2	22.4	---	---	---
14	28.0	24.7	26.8	30.6	27.1	29.8	24.9	21.4	23.1	---	---	---
15	27.7	24.5	26.7	30.5	28.0	29.9	25.6	22.0	24.0	---	---	---
16	26.4	22.6	24.0	31.0	27.6	30.0	26.4	22.5	24.6	---	---	---
17	26.8	21.3	24.2	30.7	24.2	28.8	26.9	23.3	25.2	---	---	---
18	26.6	22.3	25.4	30.2	24.3	28.5	26.8	23.5	25.2	---	---	---
19	26.5	23.0	25.1	30.7	27.5	29.8	27.0	23.8	25.6	---	---	---
20	26.2	23.0	25.0	30.5	28.5	30.0	27.8	24.7	26.6	---	---	---
21	26.2	22.2	23.8	30.3	24.6	27.9	28.3	24.8	27.1	---	---	---
22	24.7	21.3	22.2	29.1	22.7	25.5	28.0	23.9	25.2	---	---	---
23	23.5	20.3	21.8	27.4	20.8	23.6	27.9	22.5	25.6	---	---	---
24	24.9	20.9	23.3	24.5	22.2	23.4	27.9	23.4	26.1	---	---	---
25	24.7	21.7	23.7	24.4	21.6	23.3	28.4	24.0	27.0	---	---	---
26	26.0	23.4	24.7	25.7	21.8	24.1	28.9	24.7	27.9	---	---	---
27	27.0	23.4	25.4	25.1	22.5	24.0	29.1	25.3	28.0	---	---	---
28	27.2	22.7	25.8	25.7	22.2	24.3	26.9	21.7	25.2	---	---	---
29	---	---	---	26.2	23.3	24.8	26.4	20.3	23.4	---	---	---
30	---	---	---	26.2	23.5	24.8	---	---	---	---	---	---
31	---	---	---	26.5	23.4	24.9	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	50600	14600	35600	48000	6420	23100	47800	5710	26400
2	---	---	---	38500	5410	16800	22000	5240	8180	33300	2800	11500
3	---	---	---	44000	5440	16100	17100	5430	7730	33100	2960	12700
4	---	---	---	48800	4790	17000	11900	4880	7590	43400	4930	25800
5	---	---	---	48500	6580	25100	12600	5160	7940	46100	11200	32200
6	---	---	---	49700	8020	38000	24300	3970	6630	45900	2640	26100
7	---	---	---	50900	39000	48400	20500	3920	7410	42400	1850	15100
8	---	---	---	51100	13200	34600	31800	8020	13800	45700	2960	24600
9	---	---	---	47100	4500	16500	44900	5530	16000	46800	2650	29800
10	---	---	---	47700	3400	16800	46900	12800	36900	47900	6940	35300
11	---	---	---	47200	3770	20100	46800	396	34700	46600	3480	27500
12	---	---	---	47600	3600	13700	43600	189	24700	45400	4150	25200
13	---	---	---	46900	4690	18600	42000	202	22200	46600	4450	26500
14	---	---	---	48900	9540	27300	45800	310	22500	---	---	---
15	---	---	---	49200	8910	34700	48200	7150	23600	49600	6850	34800
16	---	---	---	49200	16100	36600	49300	7220	27900	50900	31900	45600
17	---	---	---	48100	16200	37200	47100	5970	17000	49300	6030	28600
18	---	---	---	48800	29700	44000	---	---	---	38700	4350	13500
19	---	---	---	48800	34100	43400	46300	4840	17900	47300	4190	26900
20	---	---	---	49300	19800	39700	43500	4890	21200	46800	31200	43000
21	---	---	---	49700	25000	39600	43100	11900	27700	49200	37500	47300
22	---	---	---	46300	23400	34700	39000	9860	21600	50400	34400	47700
23	---	---	---	33500	8920	17100	45400	10700	26300	49800	22900	44500
24	---	---	---	12500	6040	7990	45400	7820	20900	48500	8740	34100
25	---	---	---	---	---	---	46200	3920	13300	49300	8830	34500
26	---	---	---	16000	4690	8760	48400	4820	19000	48500	5860	34800
27	---	---	---	33400	8020	12700	48800	7060	24400	49400	9040	35200
28	---	---	---	18100	5930	8610	48100	8410	26900	48300	6960	34500
29	---	---	---	39500	7560	13100	48000	10600	33500	43700	7620	29600
30	---	---	---	44100	8340	20800	44600	298	17800	45600	18300	32700
31	50200	11600	30800	---	---	---	47300	4850	26300	44800	23100	37400
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

		FEBRUARY			MARCH			APRIL			MAY	
1	45200	17300	32700	49500	21700	43400	24000	17200	19500	---	---	---
2	39700	10300	20600	50500	38000	47000	22200	14500	16800	---	---	---
3	45100	33600	41200	50800	36700	46500	---	---	---	---	---	---
4	48300	24100	40200	51200	32800	45600	26800	15100	16700	---	---	---
5	44000	16400	28000	51200	36700	48500	30600	12700	16000	---	---	---
6	42200	16800	33400	51400	37100	47800	38500	11900	16800	---	---	---
7	45900	14200	36700	51600	37600	47600	44200	12700	20500	---	---	---
8	47500	15400	37400	51500	29700	47300	43700	14000	21700	---	---	---
9	47400	14600	37100	51400	15200	43500	26800	15600	18400	---	---	---
10	47400	34200	44100	50900	13600	41100	27500	16200	19500	---	---	---
11	---	---	---	50900	15000	38800	25000	18100	21200	---	---	---
12	49900	40100	47000	50000	12700	37200	24300	17700	20600	---	---	---
13	48700	23600	40700	---	---	---	27300	16600	19700	---	---	---
14	47500	26400	38700	50900	39100	45900	26800	16300	19800	---	---	---
15	48200	21300	38100	50900	40700	46800	40400	14700	21400	---	---	---
16	37000	11800	19800	50400	37000	45700	44500	14100	23000	---	---	---
17	43400	11400	22000	48000	20300	37500	47700	14200	24100	---	---	---
18	47200	18100	33200	49700	17400	36700	43800	16400	24000	---	---	---
19	48800	14900	33500	50700	33100	44500	46700	26400	32500	---	---	---
20	48800	16700	30500	51400	41100	47900	48700	26900	36000	---	---	---
21	47900	14500	20500	49900	26700	40400	49000	23000	33700	---	---	---
22	20500	9280	13300	49600	25100	36200	47200	19000	26900	---	---	---
23	31400	8580	12200	44800	23100	29900	47700	14600	26400	---	---	---
24	41100	10000	19500	37600	25900	30300	49300	15900	29600	---	---	---
25	46100	12900	26900	35200	19400	25300	48300	23000	35200	---	---	---
26	48100	20000	36800	39400	14700	23000	49000	26000	42600	---	---	---
27	48600	14500	35600	40300	13700	23200	49600	31800	44300	---	---	---
28	48900	15200	34600	42300	15800	24100	44500	24500	36700	---	---	---
29	---	---	---	36100	17400	22700	44900	19600	30300	---	---	---
30	---	---	---	35700	16700	21400	---	---	---	---	---	---
31	---	---	---	32900	16500	21000	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	8.3	7.8	8.1	7.7	6.8	7.2	8.0	6.9	7.4
2	---	---	---	8.2	7.8	7.9	7.2	6.9	7.1	7.4	6.8	7.0
3	---	---	---	8.2	7.5	7.8	7.3	7.0	7.2	7.4	6.8	7.0
4	---	---	---	8.1	7.3	7.7	7.3	7.1	7.2	7.8	6.8	7.3
5	---	---	---	8.2	7.3	7.7	7.3	6.9	7.1	8.1	7.0	7.6
6	---	---	---	8.2	7.3	7.8	7.1	6.8	7.0	8.1	6.8	7.5
7	---	---	---	8.2	7.8	8.1	7.0	6.8	6.9	7.8	6.8	7.1
8	---	---	---	8.2	7.5	7.9	7.1	6.8	6.9	7.9	6.9	7.4
9	---	---	---	8.1	7.3	7.6	7.6	6.6	6.9	8.1	6.8	7.6
10	---	---	---	8.0	7.4	7.6	7.7	6.7	7.3	8.1	6.9	7.7
11	---	---	---	8.0	7.3	7.6	7.7	7.1	7.4	8.1	6.8	7.5
12	---	---	---	8.0	7.3	7.6	7.6	6.9	7.2	8.1	6.8	7.4
13	---	---	---	8.0	7.3	7.6	7.6	6.8	7.1	8.1	6.8	7.4
14	---	---	---	8.0	7.4	7.7	7.6	6.8	7.1	---	---	---
15	---	---	---	8.1	7.4	7.8	7.7	6.7	7.1	8.1	6.2	7.6
16	---	---	---	8.1	7.4	7.8	7.7	6.7	7.2	8.1	7.3	7.9
17	---	---	---	8.1	7.4	7.8	7.6	6.6	7.0	8.2	4.5	7.6
18	---	---	---	8.1	7.5	7.9	---	---	---	7.9	7.2	7.4
19	---	---	---	8.1	7.7	7.9	7.9	6.9	7.3	8.1	7.1	7.6
20	---	---	---	8.0	7.5	7.8	7.8	7.0	7.3	8.2	7.7	8.0
21	---	---	---	8.0	7.5	7.8	7.8	7.1	7.4	8.3	8.0	8.2
22	---	---	---	8.0	7.4	7.7	7.7	7.1	7.3	8.3	7.8	8.2
23	---	---	---	7.6	7.2	7.4	7.9	7.0	7.4	8.2	7.5	8.0
24	---	---	---	7.7	7.2	7.5	7.9	7.0	7.3	8.2	7.1	7.8
25	---	---	---	---	---	---	7.9	6.8	7.1	8.1	7.2	7.7
26	---	---	---	7.2	6.7	7.0	8.0	6.8	7.2	8.0	7.2	7.7
27	---	---	---	7.3	6.8	7.1	8.0	7.0	7.3	8.1	7.6	7.9
28	---	---	---	7.3	6.9	7.1	8.0	7.0	7.4	8.2	7.8	8.0
29	---	---	---	7.4	6.9	7.2	8.1	7.1	7.6	8.1	7.8	8.0
30	---	---	---	7.6	6.8	7.1	8.0	7.1	7.4	8.3	7.7	8.0
31	8.1	7.1	7.6	---	---	---	8.0	7.0	7.4	8.1	7.7	8.0
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

	FEBRUARY			MARCH			APRIL			MAY		
1	8.1	7.8	7.9	---	---	---	7.9	7.7	7.8	---	---	---
2	7.9	7.6	7.7	---	---	---	8.0	7.7	7.8	---	---	---
3	8.1	7.8	7.9	---	---	---	---	---	---	---	---	---
4	8.2	7.9	8.1	---	---	---	7.9	7.7	7.8	---	---	---
5	8.2	7.6	7.9	---	---	---	7.9	7.5	7.7	---	---	---
6	7.9	7.5	7.7	---	---	---	7.8	7.4	7.7	---	---	---
7	7.9	7.4	7.7	---	---	---	7.9	7.3	7.6	---	---	---
8	7.9	7.4	7.7	---	---	---	8.0	7.2	7.6	---	---	---
9	7.9	7.3	7.6	---	---	---	7.8	7.4	7.7	---	---	---
10	7.9	7.7	7.8	---	---	---	7.8	7.5	7.7	---	---	---
11	---	---	---	---	---	---	7.8	7.6	7.7	---	---	---
12	---	---	---	---	---	---	7.9	7.6	7.7	---	---	---
13	---	---	---	---	---	---	7.8	7.6	7.7	---	---	---
14	---	---	---	8.2	7.7	8.0	7.8	7.5	7.7	---	---	---
15	---	---	---	8.2	7.8	8.0	7.9	7.4	7.7	---	---	---
16	---	---	---	8.1	7.5	7.9	8.0	7.4	7.7	---	---	---
17	---	---	---	8.1	7.2	7.8	8.1	7.3	7.7	---	---	---
18	---	---	---	8.1	7.0	7.8	8.1	7.3	7.7	---	---	---
19	---	---	---	8.1	7.4	7.9	8.2	7.3	7.7	---	---	---
20	---	---	---	8.1	7.8	8.0	8.2	7.4	7.8	---	---	---
21	---	---	---	8.2	7.8	8.0	8.1	7.3	7.7	---	---	---
22	---	---	---	8.2	7.7	7.9	8.1	7.3	7.7	---	---	---
23	---	---	---	8.1	7.6	7.8	8.1	7.2	7.6	---	---	---
24	---	---	---	8.0	7.8	7.8	8.1	7.1	7.6	---	---	---
25	---	---	---	8.0	7.6	7.8	8.0	7.1	7.6	---	---	---
26	---	---	---	8.1	7.4	7.8	8.0	7.1	7.8	---	---	---
27	---	---	---	8.0	7.4	7.7	7.9	7.2	7.7	---	---	---
28	---	---	---	8.0	7.4	7.7	7.9	7.3	7.6	---	---	---
29	---	---	---	8.0	7.5	7.7	7.8	7.2	7.6	---	---	---
30	---	---	---	8.0	7.6	7.8	---	---	---	---	---	---
31	---	---	---	8.0	7.5	7.7	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET--Continued

OXYGEN DISSOLVED (MG/L)

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	6.9	3.2	5.2	---	---	---	---	---	---
2	---	---	---	6.8	3.0	5.9	---	---	---	---	---	---
3	---	---	---	6.4	1.3	4.7	---	---	---	---	---	---
4	---	---	---	5.6	.7	3.3	---	---	---	---	---	---
5	---	---	---	5.1	1.5	2.8	---	---	---	---	---	---
6	---	---	---	4.2	1.4	2.8	---	---	---	---	---	---
7	---	---	---	4.7	2.2	3.8	---	---	---	---	---	---
8	---	---	---	4.7	2.1	3.8	---	---	---	---	---	---
9	---	---	---	3.8	.5	2.3	---	---	---	---	---	---
10	---	---	---	3.5	.2	1.6	---	---	---	---	---	---
11	---	---	---	3.9	.2	1.8	---	---	---	---	---	---
12	---	---	---	4.5	.6	2.5	---	---	---	---	---	---
13	---	---	---	3.4	.2	1.5	---	---	---	---	---	---
14	---	---	---	3.7	.3	1.8	---	---	---	---	---	---
15	---	---	---	4.3	.2	2.5	---	---	---	---	---	---
16	---	---	---	5.1	.9	3.2	---	---	---	---	---	---
17	---	---	---	5.3	.9	3.7	---	---	---	---	---	---
18	---	---	---	5.1	2.0	3.6	---	---	---	---	---	---
19	---	---	---	4.0	2.2	3.0	---	---	---	---	---	---
20	---	---	---	4.4	1.7	3.1	---	---	---	---	---	---
21	---	---	---	5.3	2.5	3.9	---	---	---	---	---	---
22	---	---	---	5.6	3.1	4.5	---	---	---	---	---	---
23	---	---	---	6.2	1.8	4.1	---	---	---	---	---	---
24	---	---	---	7.1	2.0	5.8	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	5.3	1.5	3.8	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	5.3	1.9	4.2	8.9	7.4	8.1	---	---	---
2	---	---	---	6.1	3.0	4.8	9.2	6.2	8.0	---	---	---
3	---	---	---	6.7	3.2	5.2	---	---	---	---	---	---
4	---	---	---	6.8	3.6	5.6	---	---	---	---	---	---
5	---	---	---	6.7	3.5	5.4	---	---	---	---	---	---
6	---	---	---	6.8	3.7	5.2	---	---	---	---	---	---
7	---	---	---	6.5	4.1	5.0	---	---	---	---	---	---
8	---	---	---	5.9	3.7	4.6	---	---	---	---	---	---
9	---	---	---	6.6	3.6	4.8	---	---	---	---	---	---
10	---	---	---	6.5	3.7	4.9	---	---	---	---	---	---
11	---	---	---	6.1	2.6	4.6	---	---	---	---	---	---
12	6.8	4.7	5.9	5.7	1.4	3.6	---	---	---	---	---	---
13	6.4	3.7	5.4	---	---	---	---	---	---	---	---	---
14	6.0	3.7	4.9	6.6	4.0	5.6	---	---	---	---	---	---
15	5.9	3.3	4.9	6.4	4.0	5.6	---	---	---	---	---	---
16	6.6	3.0	5.0	7.0	3.9	5.7	---	---	---	---	---	---
17	5.8	2.1	4.0	7.0	3.0	5.8	---	---	---	---	---	---
18	6.3	2.2	4.3	7.1	3.0	5.6	---	---	---	---	---	---
19	4.9	2.3	3.8	7.1	4.1	5.8	---	---	---	---	---	---
20	5.4	1.5	3.8	7.0	4.9	6.3	---	---	---	---	---	---
21	6.7	1.9	5.1	8.1	3.8	6.2	---	---	---	---	---	---
22	7.3	3.6	6.4	7.8	5.0	6.5	---	---	---	---	---	---
23	7.4	2.6	6.4	7.1	4.9	6.3	---	---	---	---	---	---
24	6.6	2.3	4.9	7.6	5.6	6.6	---	---	---	---	---	---
25	5.5	2.4	4.2	8.2	5.6	7.0	---	---	---	---	---	---
26	6.0	2.8	4.3	8.4	5.4	7.2	---	---	---	---	---	---
27	5.8	2.7	4.4	7.9	5.2	6.8	---	---	---	---	---	---
28	5.8	1.8	4.3	8.1	5.2	6.8	---	---	---	---	---	---
29	---	---	---	8.8	5.8	7.2	---	---	---	---	---	---
30	---	---	---	8.8	6.6	7.8	---	---	---	---	---	---
31	---	---	---	9.0	6.1	7.6	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI

205110156162401 - KAUPAKULUA 13, MAUI (LAT 20°51'10" LONG 156°16'24")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	1445	18.5	47	7.00

205133156164801 - KAUPAKULUA 12, MAUI (LAT 20°51'33" LONG 156°16'48")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	1445	18.5	54	7.00

205156156170601 - KAUPAKULUA 11, MAUI (LAT 20°51'56" LONG 156°17'06")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	0935	17.5	54	7.00

205156156170602 - KAUPAKULUA 11.1, MAUI (LAT 20°51'56" LONG 156°17'06")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
NOV 1997			
18...	1050	19.0	68

205225156181001 - KUIAHA 27, MAUI (LAT 20°52'25" LONG 156°18'10")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	0935	19.5	81	11.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI--CONTINUED

205248156170201 - KAUPAKULUA 14, MAUI (LAT 20°52'48" LONG 156°17'02")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	1455	19.0	60	11.0

205252156182101 - KUIAHA 25, MAUI (LAT 20°52'52" LONG 156°18'10")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1055	20.5	89	12.0

205315156145301 - HOOLAWA 8, MAUI (LAT 20°53'15" LONG 156°14'53")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1215	16.0	54	9.00

205318156143601 - HOOLAWA 12, MAUI (LAT 20°53'18" LONG 156°14'36")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1015	15.0	55	10.0

205338156182001 - KUIAHA 24, MAUI (LAT 20°53'38" LONG 156°18'20")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1343	23.5	87	12.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI--CONTINUED

205343156185801 - KUIAHA 11, MAUI (LAT 20°53'43" LONG 156°18'58")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	0855	20.5	140	20.0

205346156174701 - KAUPAKULUA 7, MAUI (LAT 20°53'46" LONG 156°17'47")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
NOV 1997			
17...	1650	21.0	81

205424156144001 - HOOLAWA 10, MAUI (LAT 20°54'24" LONG 156°14'40")

DATE	TIME	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998		
05...	1518	15.0

205427156144901 - HOOLAWA 6, MAUI (LAT 20°54'27" LONG 156°14'49")

DATE	TIME	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998		
05...	1410	16.0

205443156184501 - KUIAHA 22, MAUI (LAT 20°54'43" LONG 156°18'45")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1030	22.0	135	22.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF MAUI--CONTINUED

205446156175401 - KAUPAKULUA 5, MAUI (LAT 20°54'46" LONG 156°17'54")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
17...	1400	21.0	63	10.0

205452156185701 - KUIAHA 16.1, MAUI (LAT 20°54'52" LONG 156°18'57")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1245	22.0	135	23.0

205456156193001 - KUIAHA 9, MAUI (LAT 20°54'56" LONG 156°19'30")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	1050	21.0	84	11.0

205458156143801 - HOOLAWA 3, MAUI (LAT 20°54'58" LONG 156°14'38")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1350	19.5	97	19.0

205501156144001 - HOOLAWA 2, MAUI (LAT 20°55'01" LONG 156°14'40")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1205	21.0	126	25.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI--CONTINUED

205503156191001 - KUIAHA 15, MAUI (LAT 20°55'03" LONG 156°19'10")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1700	22.0	159	23.0

205523156193001 - KUIAHA 7.2, MAUI (LAT 20°55'23" LONG 156°19'30")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	1215	24.0	147	20.0

205528156191901 - KUIAHA 7.1, MAUI (LAT 20°55'28" LONG 156°19'19")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	1256	25.0	172	22.0

205529156190601 - KUIAHA 14, MAUI (LAT 20°55'29" LONG 156°19'06")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1455	23.0	167	24.0

205540156190301 - KUIAHA 13.2, MAUI (LAT 20°55'40" LONG 156°19'03")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
OCT 1997			
28...	1430	23.0	175

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF MAUI--CONTINUED

205544156190001 - KUIAHA 13.1, MAUI (LAT 20°55'44" LONG 156°19'00")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
OCT 1997			
28...	1600	22.5	188

205545156191601 - KUIAHA 6, MAUI (LAT 20°55'45" LONG 156°19'16")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	0840	22.0	189	23.0

205546156180801 - KAUPAKULUA 3, MAUI (LAT 20°55'46" LONG 156°18'08")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
17...	1215	22.0	129	21.0

205559156142901 - HOOLAWA 1, MAUI (LAT 20°55'59" LONG 156°14'29")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1030	18.5	161	34.0

205636156180501 - KAUPAKULUA 1, MAUI (LAT 20°56'36" LONG 156°18'05")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
17...	1035	21.5	53	8.00

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
HAWAII, ISLAND OF MAUI

204823156140201 - WAIKAMOI 65, MAUI (LAT 20°48'23" LONG 156°14'02")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 09...	0950	16.0	17	4.00

204919156100001 - KANO STREAM AT 1040 FT (LAT 20°49'19" LONG 156°10'00")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 11...	1530	22.5	38	7.00

204948156094401 - PALAUHULU STR AT 880 FT (LAT 20°49'48" LONG 156°09'44")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 11...	1245	22.0	85	7.00

204950156133101 - WAIKAMOI 56, MAUI (LAT 20°49'50" LONG 156°13'31")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 09...	1410	19.0	44	5.00

205051156085501 - PALAUHULU STR AT 390 FT (LAT 20°50'51" LONG 156°08'55")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 11...	1630	27.0	95	7.00

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
HAWAII, ISLAND OF MAUI--CONTINUED

205133156085801 - PALAUHULU STR AT 100 FT (LAT 20°51'33" LONG 156°08'58")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
11...	1655	21.0	121	7.00

205143156115801 - WAIKAMOI 33, MAUI (LAT 20°51'43" LONG 156°11'58")

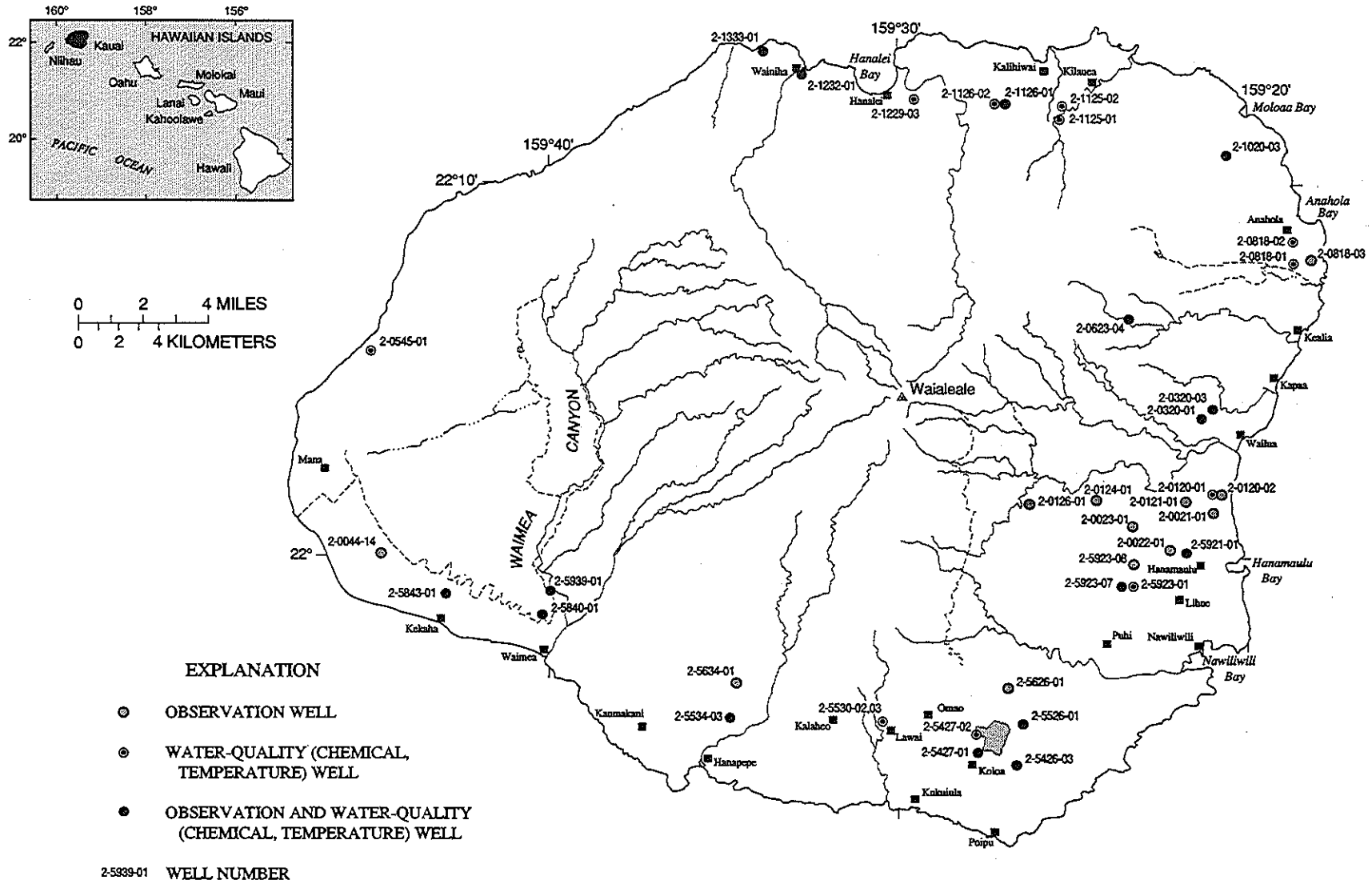
DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
10...	0900	21.0	41	7.00

205224156113101 - WAIKAMOI 14, MAUI (LAT 20°52'24" LONG 156°11'31")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
10...	1210	26.0	65	11.0

205230156112501 - WAIKAMOI 10, MAUI (LAT 20°52'30" LONG 156°11'25")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
10...	1305	23.5	103	14.0



EXPLANATION

- OBSERVATION WELL
- WATER-QUALITY (CHEMICAL, TEMPERATURE) WELL
- OBSERVATION AND WATER-QUALITY (CHEMICAL, TEMPERATURE) WELL

2-5939-01 WELL NUMBER

Figure 16. Locations of observation wells and ground-water quality sampling wells on Kauai.

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

220057159210301. Local number 2-0021-01.

LOCATION.--Lat 22°00′57″, long 159°21′03″, Hydrologic Unit 20070000, 1.0 mi southwest of Wailua County Golf Course, and 1.3 mi north of Hanamaulu Park. Owner: State of Hawaii, DOWALD.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 277 ft, casing diameter 8-in., cased to 196 ft.

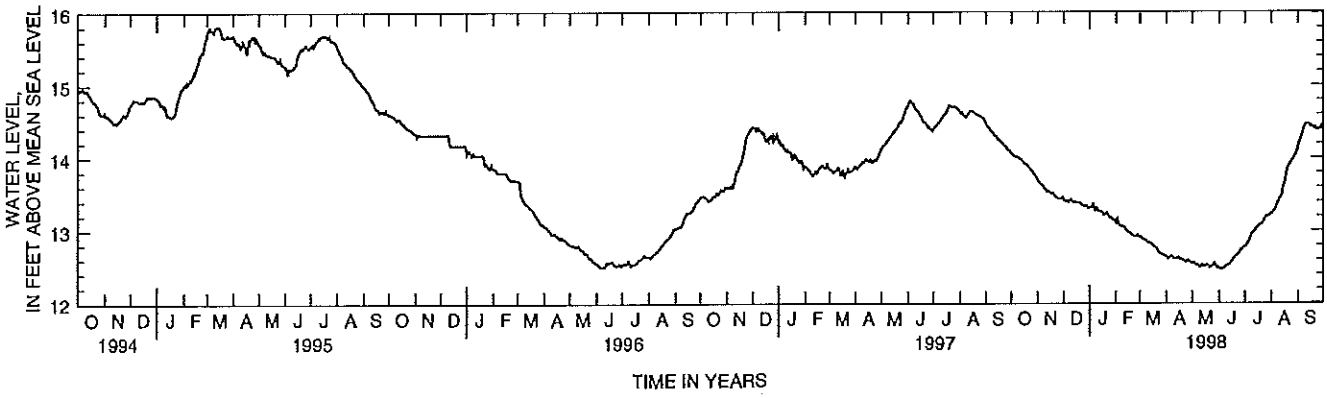
DATUM.--Elevation of land-surface datum is 166 ft. Measuring point is the top of 4-in. galvanized coupling, 166.70 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, June 1980 to June 1993. Water-level recorder, June 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.86 ft above mean sea level, March 3, 1995; lowest water level measured, 12.47 ft above mean sea level, June 2-5, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.05	13.69	13.44	13.31	13.10	12.91	12.64	12.54	12.48	12.77	13.23	14.14
2	14.04	13.67	13.41	13.32	13.11	12.91	12.62	12.55	12.47	12.78	13.23	14.19
3	14.03	13.66	13.40	13.33	13.14	12.89	12.61	12.55	12.47	12.80	13.25	14.22
4	14.03	13.64	13.40	13.32	13.09	12.88	12.62	12.53	12.47	12.81	13.26	14.25
5	14.01	13.63	13.41	13.37	13.07	12.88	12.63	12.52	12.47	12.84	13.27	14.29
6	14.01	13.63	13.41	13.32	13.06	12.87	12.64	12.52	12.48	12.86	13.30	14.32
7	14.01	13.62	13.39	13.28	13.06	12.86	12.64	12.53	12.48	12.89	13.33	14.37
8	14.01	13.59	13.40	13.30	13.05	12.86	12.63	12.52	12.49	12.92	13.36	14.41
9	14.00	13.57	13.41	13.31	13.05	12.84	12.62	12.50	12.51	12.95	13.38	14.44
10	13.99	13.56	13.42	13.28	13.05	12.83	12.61	12.49	12.51	12.96	13.41	14.45
11	13.98	13.55	13.40	13.26	13.04	12.83	12.61	12.50	12.52	12.97	13.44	14.46
12	13.97	13.53	13.39	13.26	13.02	12.83	12.61	12.52	12.52	12.98	13.45	14.46
13	13.97	13.54	13.38	13.26	13.00	12.82	12.61	12.51	12.53	13.00	13.47	14.46
14	13.95	13.54	13.38	13.26	12.99	12.81	12.61	12.50	12.54	13.02	13.52	14.46
15	13.93	13.52	13.39	13.25	12.97	12.80	12.62	12.50	12.56	13.03	13.59	14.44
16	13.92	13.51	13.38	13.24	12.97	12.80	12.61	12.51	12.57	13.05	13.63	14.43
17	13.92	13.50	13.38	13.21	12.97	12.78	12.60	12.52	12.59	13.06	13.67	14.44
18	13.91	13.51	13.38	13.21	12.96	12.77	12.60	12.52	12.61	13.07	13.73	14.43
19	13.90	13.51	13.38	13.22	12.94	12.76	12.60	12.52	12.63	13.08	13.80	14.41
20	13.89	13.48	13.38	13.24	12.93	12.76	12.59	12.51	12.64	13.08	13.85	14.41
21	13.87	13.46	13.37	13.24	12.93	12.74	12.58	12.49	12.65	13.08	13.87	14.40
22	13.86	13.46	13.36	13.21	12.92	12.72	12.58	12.50	12.66	13.10	13.90	14.41
23	13.84	13.45	13.35	13.20	12.92	12.69	12.57	12.50	12.67	13.13	13.91	14.39
24	13.83	13.44	13.34	13.18	12.92	12.68	12.56	12.51	12.68	13.15	13.94	14.39
25	13.82	13.44	13.34	13.17	12.92	12.68	12.57	12.52	12.70	13.17	13.96	14.39
26	13.80	13.44	13.33	13.18	12.93	12.67	12.58	12.54	12.72	13.19	13.97	14.39
27	13.78	13.44	13.33	13.16	12.92	12.67	12.57	12.54	12.74	13.19	13.99	14.40
28	13.76	13.44	13.34	13.15	12.91	12.66	12.56	12.50	12.74	13.20	14.02	14.42
29	13.75	13.44	13.33	13.14	---	12.65	12.56	12.49	12.76	13.20	14.04	14.44
30	13.73	13.45	13.31	13.13	---	12.65	12.55	12.48	12.77	13.21	14.06	14.43
31	13.72	---	13.31	13.14	---	12.64	---	12.49	---	13.22	14.09	---
MEAN	13.91	13.53	13.38	13.24	13.00	12.78	12.60	12.51	12.59	13.02	13.64	14.38
MAX	14.05	13.69	13.44	13.37	13.14	12.91	12.64	12.55	12.77	13.22	14.09	14.46
MIN	13.72	13.44	13.31	13.13	12.91	12.64	12.55	12.48	12.47	12.77	13.23	14.14



220013159224001. Local number 2-0022-01.

LOCATION.--Lat 22°00′13″, long 159°22′40″, Hydrologic Unit 20070000, 3.2 mi north of Lihue, and 1.4 mi west of the nearest shoreline. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 700 ft; 20-in. solid casing: 0–58 ft; grouted: 0–58 ft; open hole: 58 ft to bottom.

DATUM.--Elevation of land-surface datum is 273 ft. Measuring point is the top of 4-in. stem welded to 20-in. casing, 277.67 ft above mean sea level.

PERIOD OF RECORD.--Water-level: occasional measurements, February 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 250.50 ft above mean sea level, May 16, 1997; lowest water level measured, 243.65 ft above mean sea level, July 1, 1998.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai, Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	248.27	DEC 1	246.40	JAN 26	249.90	APR 8	245.76	JUL 1	243.65
OCT 30	247.10	DEC 29	248.51	FEB 9	248.61	APR 30	244.88	JUL 31	245.36
NOV 17	246.64	JAN 15	249.86	MAR 6	248.48	MAY 27	243.82	SEP 8	247.19

220051159231801. Local number 2-0023-01.

LOCATION.--Lat 22°00′51″, long 159°23′18″, Hydrologic Unit 20070000, 2.5 mi northwest of Lihue, and 2.8 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics and Waimea Canyon Basalt, Miocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,147 ft; 10-in. solid steel outer casing: 0–156 ft, 4-in. solid pvc casing: 0–20 ft, annular space grouted: 0–156 ft, open hole: 156 ft to bottom.

DATUM.--Elevation of land-surface datum is 319 ft. Measuring point is the top of 4-in. well casing, 319.88 ft above mean sea level.

PERIOD OF RECORD.--Water-level: occasional measurements, November 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 173.67 ft above mean sea level, September 08, 1998; lowest water level measured, 163.85 ft above mean sea level, November 14, 1996.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai, Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	169.74	DEC 29	170.05	JAN 26	170.26	MAR 6	170.57	APR 30	170.68	JUL 31	163.90
NOV 17	169.70	JAN 15	170.19	FEB 9	170.40	APR 7	170.78	MAY 27	170.59	SEP 8	173.67
DEC 1	169.64										

220019159444801. Local number 2-0044-14.

LOCATION.--Lat 22°00'19", long 159°44'48", Hydrologic Unit 20070000, 1.8 mi northeast of Kokole Point, and 2.8 mi northwest of Kekaha School. Owner: Kekaha Sugar Co.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 245 ft, casing diameter 13-in., cased to 164 ft.

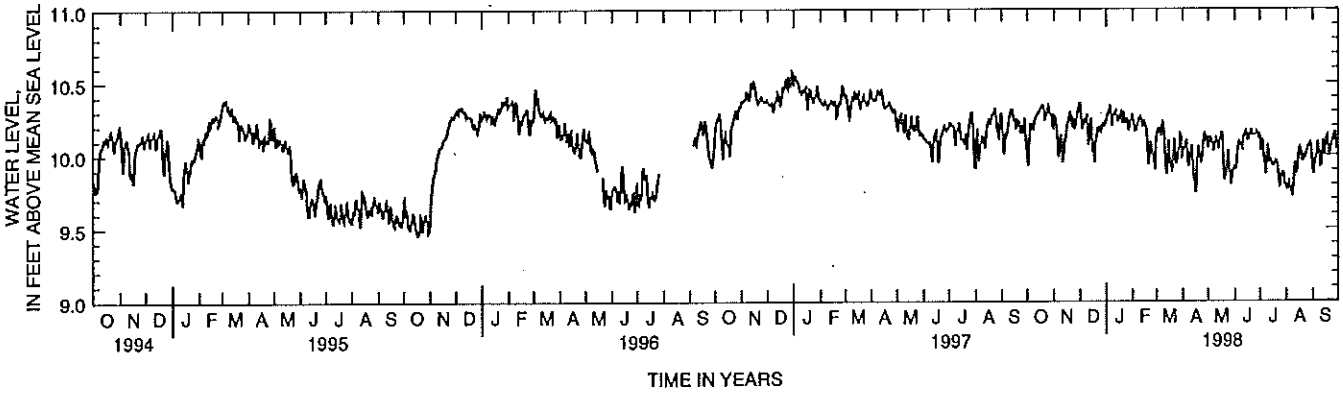
DATUM.--Elevation of land-surface datum is 8 ft. Measuring point is the top of standpipe, 11.49 ft until February 9, 1997; changed measuring point to top of recorder shelf on February 10, 1997, 11.57 ft above mean sea level. Prior to June 1979, nonrecording gage at datum 0.25 ft lower.

PERIOD OF RECORD.--Occasional measurements 1937 to 1962 (measured by Kekaha Sugar Company). Water-level recorder, June 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.07 ft above mean sea level, December 20, 1937; lowest water level measured, 7.52 ft above mean sea level, August 15, 1947.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.00	10.27	10.36	10.24	10.25	10.14	10.00	10.05	9.92	10.12	9.78	9.91
2	9.93	10.26	10.30	10.27	10.22	10.17	10.05	10.12	9.90	10.03	9.77	9.87
3	10.06	10.25	10.21	10.29	10.16	10.16	10.05	10.12	9.94	10.05	9.78	9.93
4	10.20	10.18	10.18	10.29	10.19	10.18	10.08	10.08	10.03	10.11	9.83	9.97
5	10.22	10.11	10.20	10.34	10.17	10.18	10.10	10.11	10.07	10.02	9.78	9.98
6	10.18	10.00	10.24	10.30	10.20	10.13	10.07	10.07	10.09	9.96	9.76	10.05
7	10.20	9.99	10.23	10.23	10.22	10.20	9.95	10.03	10.08	9.93	9.77	10.09
8	10.17	10.11	10.25	10.20	10.25	10.22	9.92	10.05	10.07	9.87	9.72	10.06
9	10.23	10.14	10.28	10.27	10.25	10.20	9.96	10.09	10.06	9.99	9.77	9.99
10	10.25	10.10	10.20	10.29	10.26	10.13	10.02	10.11	10.05	10.07	9.87	9.92
11	10.26	9.95	10.07	10.29	10.24	9.97	10.06	10.09	10.12	10.03	9.95	9.94
12	10.27	9.99	10.13	10.30	10.19	9.89	10.06	10.09	10.13	9.96	9.89	10.05
13	10.29	10.02	10.20	10.27	10.21	9.87	9.96	10.04	10.15	9.97	9.88	10.10
14	10.29	10.12	10.25	10.25	10.24	9.95	9.83	10.10	10.16	9.96	9.90	10.06
15	10.30	10.12	10.17	10.23	10.22	10.10	9.84	10.13	10.14	9.94	10.00	10.00
16	10.32	10.20	10.02	10.27	10.20	10.07	9.75	10.15	10.10	9.93	10.04	10.08
17	10.33	10.22	10.07	10.28	10.18	9.95	9.75	10.15	10.13	9.93	10.05	10.12
18	10.34	10.24	9.95	10.29	10.10	9.92	9.95	10.06	10.12	9.95	10.03	10.13
19	10.34	10.29	10.08	10.24	9.94	9.90	10.04	9.87	10.15	9.96	9.96	10.08
20	10.31	10.29	10.11	10.22	9.94	9.92	10.06	9.83	10.17	9.96	10.02	10.01
21	10.24	10.23	10.16	10.30	10.01	10.09	9.98	9.86	10.17	9.94	9.96	10.02
22	10.29	10.19	10.19	10.24	10.08	10.11	10.00	9.87	10.14	9.90	10.00	10.03
23	10.27	10.25	10.17	10.22	10.07	10.02	9.96	9.99	10.14	9.85	9.98	10.09
24	10.32	10.24	10.18	10.25	10.02	9.94	9.97	10.03	10.14	9.79	10.02	10.11
25	10.34	10.18	10.19	10.25	9.98	9.96	10.07	9.96	10.14	9.80	10.00	10.12
26	10.33	10.21	10.17	10.24	9.96	9.97	10.13	9.87	10.15	9.87	10.06	10.14
27	10.28	10.25	10.19	10.17	9.90	10.03	10.14	9.80	10.16	9.88	10.06	10.15
28	10.28	10.29	10.22	10.19	10.09	10.11	10.11	9.82	10.15	9.88	10.07	10.10
29	10.28	10.32	10.20	10.24	---	10.14	10.12	9.87	10.13	9.87	10.08	10.04
30	10.20	10.34	10.20	10.25	---	10.13	10.09	9.90	10.15	9.80	10.07	10.08
31	10.19	---	10.23	10.28	---	9.99	---	9.92	---	9.80	9.99	---
MEAN	10.24	10.18	10.18	10.26	10.13	10.06	10.00	10.01	10.10	9.94	9.93	10.04
MAX	10.34	10.34	10.36	10.34	10.26	10.22	10.14	10.15	10.17	10.12	10.08	10.15
MIN	9.93	9.95	9.95	10.17	9.90	9.87	9.75	9.80	9.90	9.79	9.72	9.87



220134159205401. Local number 2-0120-02.

LOCATION.--Lat 22°01′34″, long 159°20′54″, Hydrologic unit 20070000, 0.3 mi southwest of Wailua County Golf Course, and 1.6 mi south southwest of Wailua River Mouth. Owner: State of Hawaii, DOWALD.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well; depth 312 ft, casing diameter 6-in., cased to 60 ft.

DATUM.--Elevation of land-surface datum is 11 ft. Measuring point is the top of 10-in. plastic pipe, 11.36 ft above mean sea level. Prior to June 24, 1980 measuring point was the top of 6-in. steel casing, 11.93 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1973 to 1980, 1987 to current year.
Water quality: occasional measurements, 1982 to 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.79 ft above mean sea level, February 21, 1974; lowest water level measured, 8.08 ft above mean sea level, October 12, 1978.

REMARKS.--Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	10.76	DEC 1	10.53	FEB 3	10.24	APR 1	9.58	JUN 5	9.51	AUG 3	10.15

220131159214701. Local number, 2-0121-01.

LOCATION.--Lat 22°01′31″, long 159°21′47″, Hydrologic unit 20070000, 3.2 mi north of Lihue, and 1.4 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,143 ft, 10-in. solid steel outer casing: 0–160 ft, 4-in. solid steel casing: 0–80 ft, 4-in. alternating perforated/solid steel casing: 80 ft to bottom, annular space grouted: 0–160 ft, annular space open: 160 ft to bottom.

DATUM.--Elevation of land-surface datum is 289 ft. Measuring point is the top of 4-in. well casing, 290.16 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, January 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.15 ft above mean sea level, September 08, 1998; lowest water level measured, 31.11 ft above mean sea level, January 26, 1997.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai, Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	32.66	DEC 1	33.62	JAN 26	34.05	APR 7	34.37	MAY 27	34.84	AUG 11	36.28
OCT 30	32.64	DEC 29	33.60	FEB 9	33.86	APR 30	34.95	JUL 1	35.14	SEP 8	37.15
NOV 17	33.26	JAN 15	34.01	MAR 6	34.35						

220133159242001. Local number, 2-0124-01.

LOCATION.--Lat 22°01′33″, long 159°24′20″, Hydrologic unit 20070000, 3.7 mi northwest of Lihue, and 3.8 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,047 ft, 10-in. solid steel outer casing: 0–161 ft; 4-in. solid steel casing: 0–80 ft; 4-in. alternating perforated/solid steel casing: 80-1,032 ft; annular space grouted: 0–160 ft; annular space open: 160-726 ft.

DATUM.--Elevation of land-surface datum is 466 ft. Measuring point is the top of 4-in. well casing, 467.12 ft above mean sea level.

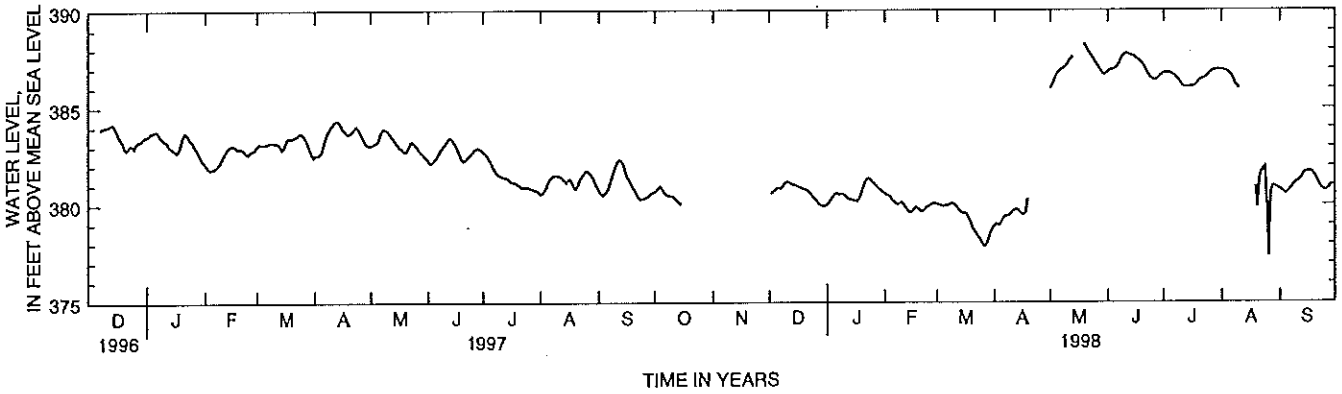
PERIOD OF RECORD.--Water level: occasional measurements, November 1996. Continuous water level recorder, December 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 388.31 ft above mean sea level, May 19, 1998; lowest water level measured, 371.33 ft above mean sea level, August 26, 1998.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380.68	---	---	380.00	380.57	380.02	378.94	386.00	386.87	386.76	386.93	380.77
2	380.75	---	380.60	380.14	380.50	380.00	379.00	386.16	386.91	386.79	386.91	380.70
3	380.89	---	380.69	380.29	380.48	379.97	378.94	386.41	386.95	386.79	386.88	380.63
4	380.94	---	380.76	380.39	380.38	379.93	378.99	386.63	386.99	386.78	386.85	380.59
5	380.80	---	380.84	380.56	380.21	379.95	379.16	386.80	387.04	386.75	386.77	380.64
6	380.62	---	380.86	380.59	380.12	379.96	379.36	386.90	387.14	386.69	386.65	380.74
7	380.54	---	380.85	380.53	380.06	379.98	379.41	386.99	387.30	386.63	386.49	380.87
8	380.49	---	380.94	380.54	380.04	380.04	379.41	387.01	387.51	386.51	386.21	381.01
9	380.46	---	381.08	380.56	380.09	380.07	379.44	387.08	387.67	386.40	386.11	381.11
10	380.45	---	381.16	380.49	380.10	380.02	379.55	387.21	387.76	386.28	385.98	381.16
11	380.40	---	381.17	380.39	380.01	379.93	379.65	387.39	387.78	386.14	---	381.22
12	380.30	---	381.12	380.31	379.86	379.82	379.70	387.52	387.73	386.06	---	381.32
13	380.17	---	381.06	380.28	379.71	379.68	379.74	387.61	387.70	386.05	---	381.47
14	380.08	---	381.03	380.26	379.63	379.59	379.71	---	387.69	386.05	---	381.61
15	380.06	---	381.01	380.23	379.63	379.56	379.62	---	387.65	386.07	---	381.66
16	---	---	380.96	380.21	379.72	379.57	379.53	---	387.55	386.08	---	381.68
17	---	---	380.91	380.20	379.85	379.50	379.49	---	387.49	386.09	---	381.70
18	---	---	380.88	380.33	379.84	379.30	379.58	---	387.41	386.14	---	381.67
19	---	---	380.83	380.59	379.76	379.05	380.29	388.28	387.31	386.22	380.95	381.55
20	---	---	380.80	380.90	379.68	378.80	---	388.15	387.20	386.36	379.88	381.39
21	---	---	380.76	381.17	379.67	378.64	---	387.96	387.05	386.43	381.39	381.21
22	---	---	380.68	381.31	379.72	378.50	---	387.82	386.85	386.47	381.67	381.01
23	---	---	380.58	381.34	379.86	378.37	---	387.68	386.66	386.52	381.85	380.85
24	---	---	380.45	381.29	379.92	378.21	---	387.53	386.53	386.57	381.93	380.79
25	---	---	380.34	381.17	379.96	378.06	---	387.37	386.46	386.66	380.05	380.74
26	---	---	380.22	381.08	380.03	377.90	---	387.22	386.43	386.80	377.36	380.79
27	---	---	380.10	381.00	380.07	377.88	---	387.09	386.45	386.89	380.61	380.86
28	---	---	380.01	380.90	380.06	378.07	---	386.92	386.51	386.92	380.93	380.96
29	---	---	379.97	380.80	---	378.37	---	386.76	386.62	386.94	380.93	381.00
30	---	---	379.93	380.72	---	378.65	---	386.70	386.72	386.95	380.88	381.01
31	---	---	379.94	380.65	---	378.81	---	386.77	---	386.95	380.83	---
MEAN	---	---	---	380.62	379.98	379.23	---	---	387.13	386.51	---	381.09
MAX	---	---	---	381.34	380.57	380.07	---	---	387.78	386.95	---	381.70
MIN	---	---	---	380.00	379.63	377.88	---	---	386.43	386.05	---	380.59



220126159261501. Local number, 2-0126-01.

LOCATION.--Lat 22°01'26", long 159°26'15", Hydrologic unit 20070000, 5.3 northwest of Lihue, and 6.2 mi west of the nearest shoreline. Owner: U. S. Geological Survey.

AQUIFER.--Koloa Volcanics and Waimea Canyon Basalt, Miocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,004 ft, 10-in. solid steel outer casing: 0-198 ft; 4-in. solid pvc casing: 0-126 ft; 4.5-in. perforated pvc casing: 126 ft to bottom; annular space grouted: 0-198 ft; annular space open: 198 ft to bottom.

DATUM.--Elevation of land-surface datum is 678 ft. Measuring point is the top of 4-in. well casing, 679.06 ft above mean sea level.

PERIOD OF RECORD.--

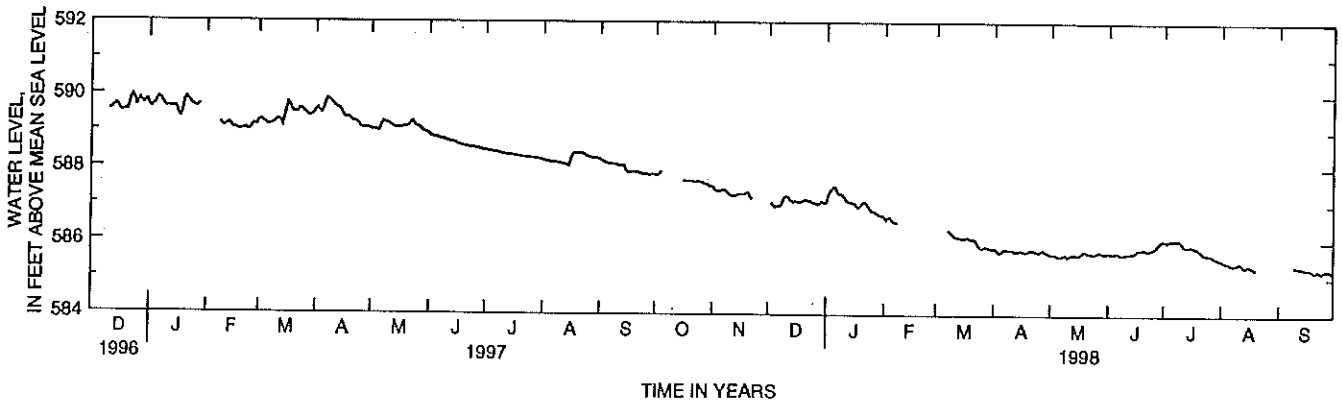
Water level: occasional measurements started in November 1996.
Continuous water-level recorder, December 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 589.96 ft above mean sea level, December 23, 1996; lowest water level measured, 585.18 ft above mean sea level, September 30, 1998.

REMARKS.--Well part of network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	587.81	587.48	---	587.09	586.67	---	585.82	585.67	585.70	586.04	585.52	---
2	587.81	587.42	587.05	587.28	586.61	---	585.80	585.66	585.69	586.03	585.48	---
3	587.84	587.38	586.99	587.39	586.65	---	585.74	585.67	585.68	586.01	585.46	---
4	587.90	587.38	586.95	587.42	586.66	---	585.71	585.64	585.69	586.04	585.45	---
5	---	587.38	586.96	587.49	586.58	---	585.74	585.62	585.70	586.05	585.44	---
6	---	587.39	586.97	587.47	586.55	---	585.79	585.61	585.70	586.04	585.40	---
7	---	587.41	586.97	587.34	586.53	586.29	585.80	585.62	585.67	586.05	585.39	---
8	---	587.38	587.05	587.30	586.51	586.29	585.79	585.63	585.66	586.06	585.39	---
9	---	587.32	587.16	587.30	---	586.24	585.77	585.64	585.66	586.06	585.40	585.34
10	---	587.28	587.22	587.26	---	586.18	585.78	585.61	585.67	586.03	585.41	585.34
11	---	587.25	587.22	587.16	---	586.13	585.77	585.62	585.68	585.96	585.44	585.33
12	---	587.24	587.17	587.11	---	586.13	585.74	585.65	585.68	585.90	585.42	585.33
13	---	587.23	587.12	587.09	---	586.12	585.74	585.66	585.69	585.88	585.35	585.32
14	---	587.26	587.09	587.07	---	586.10	585.75	585.66	585.69	585.88	585.33	585.31
15	---	587.28	587.10	587.06	---	586.09	585.76	585.65	585.71	585.89	585.35	585.29
16	587.65	587.28	587.09	587.05	---	586.09	585.75	585.65	585.74	585.89	585.37	585.27
17	587.64	587.28	587.07	586.99	---	586.11	585.74	585.67	585.79	585.87	585.34	585.27
18	587.64	587.29	587.09	586.94	---	586.11	585.73	585.70	585.79	585.85	585.32	585.27
19	587.64	587.32	587.10	586.97	---	586.08	585.74	585.74	585.80	585.84	585.29	585.24
20	587.64	587.31	587.12	587.02	---	586.07	585.77	585.74	585.81	585.80	585.28	585.21
21	587.63	587.22	587.13	587.08	---	586.08	585.77	585.70	585.80	585.75	---	585.21
22	587.62	587.16	587.11	587.06	---	586.04	585.77	585.69	585.77	585.70	---	585.23
23	587.62	---	587.11	586.99	---	585.94	585.75	585.69	585.77	585.68	---	585.22
24	587.63	---	587.07	586.92	---	585.87	585.74	585.68	585.80	585.67	---	585.20
25	587.62	---	587.06	586.84	---	585.84	585.72	585.68	585.81	585.66	---	585.22
26	587.61	---	587.05	586.83	---	585.84	585.75	585.71	585.84	585.66	---	585.24
27	587.58	---	587.02	586.80	---	585.86	585.77	585.73	585.87	585.63	---	585.23
28	587.55	---	587.03	586.76	---	585.85	585.74	585.71	585.94	585.60	---	585.25
29	587.55	---	587.08	586.73	---	585.83	585.72	585.69	586.00	585.57	---	585.23
30	587.51	---	587.07	586.71	---	585.82	585.69	585.68	586.04	585.55	---	585.18
31	587.50	---	587.06	586.71	---	585.81	---	585.69	---	585.53	---	---
MEAN	---	---	---	587.07	---	---	585.76	585.67	585.76	585.84	---	---
MAX	---	---	---	587.49	---	---	585.82	585.74	586.04	586.06	---	---
MIN	---	---	---	586.71	---	---	585.69	585.61	585.66	585.53	---	---



220354159205601. Local number, 2-0320-01.

LOCATION.--Lat 22°03′54″, long 159°20′56″, Hydrologic unit 20070000, 0.6 mi east of Sleeping Giant Mountain, and 1.3 mi northwest of Wailua River bridge. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 240 ft, 8-in. casing diameter, cased to 193 ft.

DATUM.--Elevation of land-surface datum is 155 ft. Measuring point is the top of 1-in. hole on pump base on southeast side after removing elbow and nipple, 155.98 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, February 1960, June 1973 to current year.
Water quality: occasional measurements, 1960, 1966, 1972-80, 1985-89, 1991-94, 1997 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.04 ft above mean sea level, February 17, 1960; lowest water level measured, 0.85 ft below mean sea level, August 5, 1998.

REMARKS.--Water is used for public supply. Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	4.25	DEC 5	5.93	FEB 6	4.14	APR 8	2.08	JUN 3	-0.29	AUG 5	-0.85

220354159205602. Local number, 2-0320-03.

LOCATION.--Lat 22°03′54″, long 159°20′56″, Hydrologic unit 20070000, 0.6 mi east of Sleeping Giant Mountain, and 1.3 mi northwest of Wailua River bridge. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 302 ft; 14-in. casing diameter, cased to 168 ft.

DATUM.--Elevation of land-surface datum is 156 ft. Measuring point is the top of 1-in. hole on pump base on southeast side after removing elbow and nipple, 156.94 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, August 1976 to current year.
Water quality: occasional measurements, 1972, 1976 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.91 ft above mean sea level, November 19, 1982; lowest water level measured, 0.75 ft below mean sea level, August 5, 1998.

REMARKS.--Water is used for public supply. Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	4.49	DEC 5	6.14	FEB 6	4.50	APR 8	2.37	JUN 3	0.05	AUG 5	-0.75

220621159232101. Local number 2-0623-04.

LOCATION.--Lat 22°06′21″, long 159°23′21″, Hydrologic Unit 20070000, 1.3 mi northeast of Kapahi Reservoir, and at the end of Kahuna Road. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,023 ft, 12-in. casing diameter, cased to 169 ft below mean sea level.

DATUM.--Elevation of land-surface datum is 518 ft. Measuring point is the top of 3/4-in. pipe on concrete pump base, 516.35 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, April 1993 to current year.
Water quality: occasional measurements, April 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 482.42 ft above mean sea level, August 6, 1997; lowest water level measured, 392.80 ft above mean sea level, November 14, 1996.

REMARKS.--Water is used for public supply.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	475.54	DEC 4	468.45	FEB 6	459.00	APR 8	464.70	JUN 3	447.03	AUG 5	439.32

220825159185301. Local number 2-0818-03.

LOCATION.--Lat 22°08′25″, long 159°18′50″, Hydrologic Unit 20070000, 1.3 mi southwest of Kahala Point, and 0.2 mi south of Anahola School. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 466 ft, 12-in. casing diameter, cased to 290 ft above mean sea level.

DATUM.--Elevation of land-surface datum is 267 ft. Measuring point is the top of west side of 4 1/2-in. pipe at 268.99 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, October 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.64 ft above mean sea level, October 8, 1997; lowest water level measured, 7.34 ft above mean sea level, April 8, 1998.

REMARKS.--Water for future public supply. Water level affected by pumping of nearby wells.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	12.64	DEC 4	12.58	FEB 6	11.24	APR 8	7.34	JUN 3	9.99	AUG 5	11.43

221038159203801. Local number, 2-1020-03.

LOCATION.--Lat 22°10′38″, long 159°20′38″, Hydrologic Unit 20070000, 2.6 mi south of Kulikoa Point, and 2.6 mi northwest of Kuaehu Point. Owner: Amfac Properties Development Corp.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 700 ft.

DATUM.--Elevation of land-surface datum is 358 ft. Measuring point is the top of temporary metal girder over well opening, elevation 358.52 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to 1991, 1997.

REVISED RECORDS.--WRD HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 144.56 ft above mean sea level, March 30, 1990; lowest water level measured, 66.17 ft above mean sea level, November 6, 1973, lowest water level measured with pump on, 42.69 ft above mean sea level, October 4, 1973.

REMARKS.--Pump is in the process of being replaced. Well unused at this time.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 9	142.52	DEC 1	142.97	FEB 3	142.69	APR 2	139.97	JUN 3	137.17	AUG 3	133.11

221150159264501. Local number, 2-1126-01.

LOCATION.--Lat 22°11′50″, long 159°26′45″, Hydrologic Unit 20070000, 1.2 mi south of Princeville Airport terminal, and 4.0 mi east southeast of Puupoa Point. Owner: Princeville Hanalei.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 763 ft; 14-in. casing diameter, cased to 435 ft.

DATUM.--Elevation of land-surface datum is 349 ft. Measuring point is the top of 3/4-in. pipe, in 1-in. hole on southside of pump base, after removing airline connection, 349.88 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1977 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.36 ft above mean sea level, June 3, 1974; lowest water level measured, 4.12 ft below mean sea level, November 17, 1992, lowest water level measured with pump on, 10.30 ft below mean sea level, June 2, 1983.

REMARKS.--Water used for public supply and irrigation of golf course. Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 9	8.39	DEC 10	8.78	FEB 3	8.60	APR 3	7.64	JUN 4	8.35	AUG 12	7.41

221247159324801. Local number, 2-1232-01.

LOCATION.--Lat 22°12′47″, long 159°32′48″, Hydrologic Unit 20070000, 0.9 mi southwest of Kolokoko Point, and 1.5 mi southeast of Haena Point. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 188 ft, 6-in. casing diameter, cased to 140 ft.

DATUM.--Elevation of land-surface datum is 67 ft. Measuring point is the top of 1-in. pipe 0.06 ft above flange, 66.56 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1975 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.48 ft above mean sea level, June 3, 1974; lowest water level measured, 4.69 ft above mean sea level, August 6, 1993, lowest water level measured with pump on, 10.04 ft below mean sea level, June 9, 1975.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	8.68	DEC 4	7.30	FEB 6	8.43	APR 8	6.72	JUN 3	8.05	AUG 5	6.76

221318159335901. Local number, 2-1333-01.

LOCATION.--Lat 22°13′18″, long 159°33′59″, Hydrologic Unit 20070000, 0.6 mi south southwest of Haena Point, and 1.2 mi east southeast of Kailiu Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 159 ft; 8-in. casing diameter, cased to 104 ft.

DATUM.--Elevation of land-surface datum is 82 ft. Measuring point is the top of airline hole after removing plug, elevation 82.05 ft above mean sea level from levels of December 12, 1995.

PERIOD OF RECORD.--

Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WRD HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.35 ft above mean sea level, December 8, 1989; lowest water level measured, 1.45 ft above mean sea level, August 26, 1986, lowest water level measured with pump on, 3.58 ft below mean sea level, November 30, 1977.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	5.10	DEC 4	9.68	FEB 6	6.60	APR 8	7.49	JUN 3	2.33	AUG 5	2.77

215434159263301. Local number, 2-5426-03.

LOCATION.--Lat 21°54′34″, long 159°26′33″, Hydrologic Unit 20070000, 0.6 mi northeast of Koloa Mill, and 2.6 mi north of Makahuena Point. Owner: Grove Farm Co. Inc.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 318 ft, 12-in. casing diameter, cased to 176 ft.

DATUM.--Elevation of land-surface datum is 222 ft. Measuring point is the top of 1-in. hole on southwest side of flange, 222.30 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1997.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.83 ft above mean sea level, January 10, 1974; lowest water level measured, 15.48 ft above mean sea level, June 16, 1982, lowest water level measured with pump on, 5.05 ft above mean sea level, March 10, 1975.

REMARKS.--Water used for irrigation. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	25.77	DEC 3	25.57	MAR 9	25.47	APR 3	25.08	JUN 1	25.05	AUG 7	24.96

215454159274201. Local number, 2-5427-01.

LOCATION.--Lat 21°54′54″, long 159°27′42″, Hydrologic Unit 20070000, 0.1 mi west of the southwest corner of Waita Reservoir, and 2.7 mi northeast of Kaulala Point. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 455 ft; 12-in. casing diameter, cased to 263 ft.

DATUM.--Elevation of land-surface datum is 247 ft. Measuring point is the bottom edge of the east side opening on pump base 246.77 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-94 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 40.04 ft above mean sea level, July 15, 1974; lowest water level measured, 27.97 ft above mean sea level, October 6, 1988, lowest water level measured with pump on, 22.77 ft above mean sea level, March 3, 1983.

REMARKS.--Water used for public supply. Water level affected by pumping and by nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	34.47	DEC 5	34.57	FEB 5	34.68	APR 7	34.35	JUN 2	34.37	AUG 6	32.64

215536159263501. Local number, 2-5526-01.

LOCATION.--Lat 21°55'36", long 159°26'35", Hydrologic Unit 20070000, 3.7 mi north of Makahuena Point and 2.5 mi southeast of Knudsen Gap. Owner: McBryde Sugar Co.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,010 ft, 20 in. casing diameter, cased to 400 ft.

DATUM.--Elevation of land-surface is 355 ft. Measuring point is the top of 1-in. hole on top of pipe flange, southeast side, 355.28 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1977 to current year.
Water quality: occasional measurements, 1977 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 115.84 ft above mean sea level, April 7, 1998; lowest water level measured, 25.28 ft above mean sea level on April 5, 1984, lowest water level measured with pump on, 22.67 ft below mean sea level, July 27, 1978.

REMARKS.--Well was formerly used for irrigation of sugercane.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	113.85	DEC 1	114.41	FEB 9	115.31	APR 7	115.84	MAY 27	115.34	JUL 31	115.71

215522159342601. Local number, 2-5534-03.

LOCATION.--Lat 21°55'22", long 159°34'26", Hydrologic Unit 20070000, 1.9 mi north from Weli Point, and 2.9 mi northeast from Puolo Point. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 109 ft; 9-in. casing diameter, cased to 109 ft.

DATUM.--Elevation of land-surface datum is 79 ft. Measuring point is the top of 3/4-in. galvanized pipe on northwest side of pump base 78.78 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.91 ft above mean sea level, February 1, 1990; lowest water level measured, 12.62 ft above mean sea level, May 20, 1986, lowest water level measured with pump on, 9.19 ft above mean sea level, October 13, 1978.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	17.31	DEC 5	17.28	FEB 5	16.76	APR 7	16.56	JUN 2	17.39	AUG 6	16.32

215630159265101. Local number, 2-5626-01.

LOCATION.--Lat 21°56′30″, long 159°26′51″, Hydrologic Unit 20070000, 5.7 mi south of Lihue, and 3.8 mi northwest of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 802 ft; 12.25-in. solid steel outer casing: 0–156 ft; 4-in. solid pvc casing: 0–20 ft; annular space grouted: 0–256 ft; open hole: 256 ft to bottom.

DATUM.--Elevation of land-surface is 485 ft. Measuring point is the top of 4-in. well casing, 485.40 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 179.99 ft above mean sea level, September 8, 1998; lowest water level measured, 173.49 ft above mean sea level, November 8, 1996.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	177.48	DEC 1	178.09	JAN 26	178.60	APR 7	179.25	MAY 27	179.60	JUL 31	179.88
OCT 30	177.85	DEC 29	178.46	FEB 9	178.76	APR 30	179.36	JUL 1	179.69	SEP 8	179.99
NOV 17	178.18	JAN 15	178.54	MAR 6	179.06						

215607159344301. Local number 2-5634-01.

LOCATION.--Lat 21°56'07", long 159°34'43", Hydrologic Unit 20070000, 2.7 mi north of Weli Point, and 3.3 mi northeast of Puolo Point. Owner: State of Hawaii.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 508 ft, 8-in. casing diameter, cased to 507 ft.

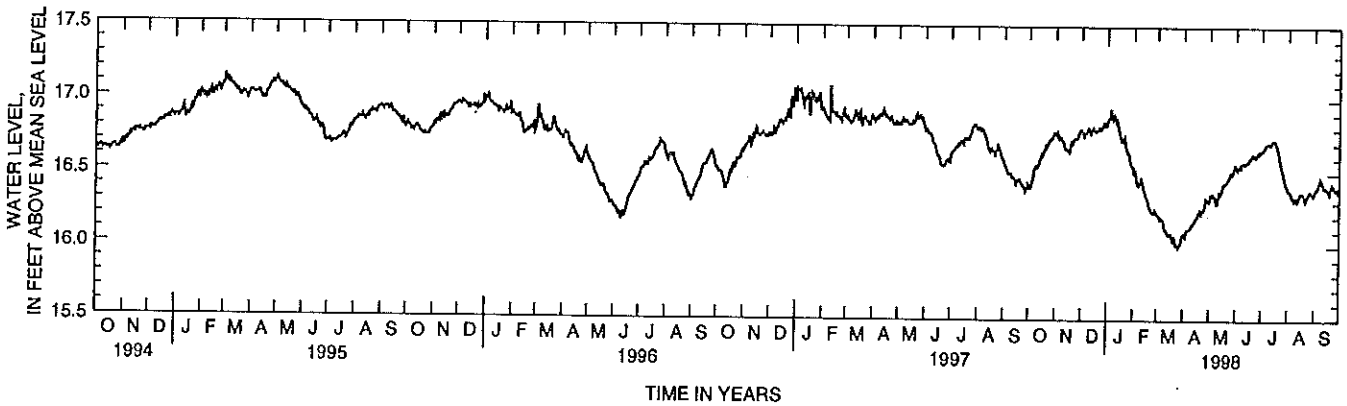
DATUM.--Elevation of land-surface datum is 439 ft. Measuring point is the top of recorder shelf 440.68 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, February 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.83 ft above mean sea level, January 15, 16, 1992; lowest water level measured, 15.87 ft above mean sea level, November 1, 1989.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.40	16.77	16.80	16.85	16.50	16.22	16.09	16.32	16.56	16.66	16.39	16.37
2	16.40	16.76	16.79	16.87	16.50	16.22	16.08	16.36	16.54	16.66	16.39	16.39
3	16.42	16.78	16.77	16.88	16.51	16.21	16.07	16.36	16.53	16.67	16.38	16.40
4	16.45	16.76	16.76	16.88	16.47	16.19	16.10	16.35	16.54	16.68	16.38	16.40
5	16.46	16.74	16.78	16.94	16.43	16.20	16.12	16.36	16.55	16.69	16.35	16.41
6	16.51	16.75	16.78	16.89	16.42	16.19	16.12	16.35	16.56	16.70	16.34	16.43
7	16.54	16.75	16.78	16.87	16.42	16.19	16.12	16.35	16.55	16.70	16.34	16.45
8	16.55	16.73	16.79	16.89	16.43	16.18	16.12	16.32	16.57	16.71	16.32	16.47
9	16.54	16.72	16.81	16.90	16.47	16.14	16.13	16.30	16.57	16.71	16.32	16.46
10	16.54	16.72	16.81	16.88	16.47	16.12	16.14	16.30	16.58	16.71	16.34	16.45
11	16.55	16.69	16.80	16.86	16.44	16.12	16.16	16.34	16.58	16.70	16.34	16.43
12	16.57	16.67	16.78	16.88	16.42	16.11	16.16	16.37	16.57	16.70	16.32	16.41
13	16.59	16.67	16.79	16.84	16.39	16.09	16.17	16.36	16.58	16.72	16.33	16.41
14	16.61	16.67	16.80	16.81	16.38	16.08	16.18	16.37	16.58	16.73	16.35	16.41
15	16.63	16.66	16.81	16.78	16.35	16.08	16.19	16.38	16.59	16.73	16.37	16.40
16	16.62	16.66	16.80	16.76	16.34	16.09	16.20	16.41	16.59	16.73	16.37	16.40
17	16.63	16.65	16.79	16.73	16.33	16.09	16.21	16.43	16.61	16.72	16.37	16.40
18	16.65	16.67	16.79	16.72	16.31	16.07	16.23	16.43	16.61	16.70	16.36	16.38
19	16.67	16.72	16.79	16.72	16.28	16.05	16.24	16.44	16.62	16.69	16.36	16.37
20	16.69	16.72	16.80	16.74	16.26	16.07	16.25	16.44	16.63	16.67	16.34	16.39
21	16.68	16.71	16.80	16.75	16.26	16.07	16.23	16.44	16.62	16.64	16.32	16.41
22	16.69	16.73	16.81	16.71	16.24	16.05	16.25	16.46	16.62	16.60	16.33	16.43
23	16.70	16.74	16.80	16.67	16.24	16.01	16.25	16.47	16.63	16.58	16.34	16.42
24	16.72	16.74	16.80	16.66	16.23	16.01	16.25	16.47	16.62	16.55	16.36	16.42
25	16.73	16.74	16.81	16.64	16.23	16.01	16.27	16.49	16.62	16.53	16.37	16.40
26	16.73	16.74	16.82	16.64	16.25	16.00	16.30	16.51	16.64	16.51	16.37	16.39
27	16.74	16.75	16.83	16.61	16.24	16.01	16.33	16.51	16.65	16.48	16.38	16.39
28	16.74	16.77	16.85	16.58	16.23	16.02	16.32	16.50	16.64	16.46	16.37	16.40
29	16.76	16.79	16.85	16.56	---	16.03	16.32	16.51	16.65	16.43	16.37	16.39
30	16.78	16.80	16.83	16.55	---	16.07	16.31	16.53	16.66	16.42	16.37	16.37
31	16.78	---	16.83	16.55	---	16.08	---	16.56	---	16.41	16.36	---
MEAN	16.62	16.73	16.80	16.76	16.36	16.10	16.20	16.41	16.60	16.63	16.35	16.41
MAX	16.78	16.80	16.85	16.94	16.51	16.22	16.33	16.56	16.66	16.73	16.39	16.47
MIN	16.40	16.65	16.76	16.55	16.23	16.00	16.07	16.30	16.53	16.41	16.32	16.37



215803159401201. Local number, 2-5840-01.

LOCATION.--Lat 21°58′03″, long 159°40′12″, Hydrologic Unit 20070000, 0.7 mi north of Waimea Recreational Pier State Park, and 2.4 mi east northeast of Oomano Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 190 ft, 8-in. casing diameter, cased to 190 ft.

DATUM.--Elevation of land-surface datum is 168 ft. Measuring point is the top of 1-in. hole on pump base, 168.08 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1973 to current year.
Water quality: occasional measurements, 1973 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.10 ft above mean sea level, January 26, 1989; lowest water level measured, 6.58 ft above mean sea level, July 19, 1990, lowest water level measured with pump on, 4.76 ft above mean sea level, December 8, 1980.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	8.38	DEC 5	8.35	FEB 5	8.26	APR 7	8.33	JUN 2	7.71	AUG 6	8.63

215857159430101. Local number, 2-5843-01.

LOCATION.--Lat 21°58′57″, long 159°43′01″, Hydrologic Unit 20070000, 2.7 mi east northeast from Kokole Point, and 1.4 mi north northwest of Oomano Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 55 ft, 15-ft casing diameter, cased to 10 ft.

DATUM.--Elevation of land surface is 57 ft. Measuring point is the top of 1/4-in. steel plate 57.80 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972, 1985 to current year.
Water quality: occasional measurements, 1972, 1997 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.52 ft above mean sea level, February 5, 1990; lowest water level measured, 7.82 ft above mean sea level, April 25, 1988.

REMARKS.--Well used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	9.03	DEC 5	9.08	FEB 5	9.16	APR 7	8.99	JUN 2	8.87	AUG 6	8.79

215958159214301. Local number 2-5921-01.

LOCATION.--Lat 21°59′58″, long 159°21′43″, Hydrologic Unit 20070000, 1.0 mi west of Hanamaulu Beach Park, and 3.3 mi south southwest of Lydgate State Park. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 540 ft, 14-in. casing diameter, cased to 315 ft.

DATUM.--Elevation of land-surface datum is 302 ft. Measuring point is the top of 1-in. pipe, northeast side of flange after removing the plug, elevation 302.66 above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, July 1980 to September 1985. Water-level recorder, October 1985 to July 1992. occasional measurements, October 1992 to current year.

Water quality: occasional measurements, 1997 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.69 ft above mean sea level, November 26, 1985; lowest water level measured, 9.41 ft above mean sea level, June 5, 1997.

REMARKS.--Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	14.60	DEC 4	13.47	FEB 6	13.34	APR 8	13.17	JUN 3	12.65	AUG 5	13.01

215901159235201. Local number 2-5923-07.

LOCATION.--Lat 21°59′01″, long 159°23′52″, Hydrologic Unit 20070000, 4.2 mi northwest of Ninini Point and 3.4 mi west from Lihue Airport terminal. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 200 ft, 12-in. casing diameter, cased to 200 ft.

DATUM.--Elevation of land-surface datum is 364 ft. Measuring point is the top of 1-in. pump base opening, after removing copper fittings, 365.48 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1985 to current year.
Water quality: occasional measurements, 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 226.86 ft above mean sea level, December 8, 1989; lowest water level measured, 212.38 ft above mean sea level, August 5, 1998.

REMARKS.--Water used for public supply. Water level affected by pumping and by nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	215.82	DEC 4	217.22	FEB 6	214.79	APR 8	215.18	JUN 3	214.32	AUG 5	212.38

215950159231601. Local number 2-5923-08.

LOCATION.--Lat 21°59′50″, long 159°23′16″, Hydrologic Unit 20070000, 1.5 mi northwest of Lihue, and 2.8 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.---Drilled well, depth 1,002 ft, 12.75-in. solid steel outer casing: 0-124 ft; 4-in. solid pvc casing: 0-87 ft; 4-in. perforated pvc casing: 87 ft to bottom; annular space grouted: 0-124 ft; annular space gravel packed: 124 ft to bottom.

DATUM.--Elevation of land-surface datum is 272 ft. Measuring point is the top of 4-in. well casing, 273.49 ft above mean sea level.

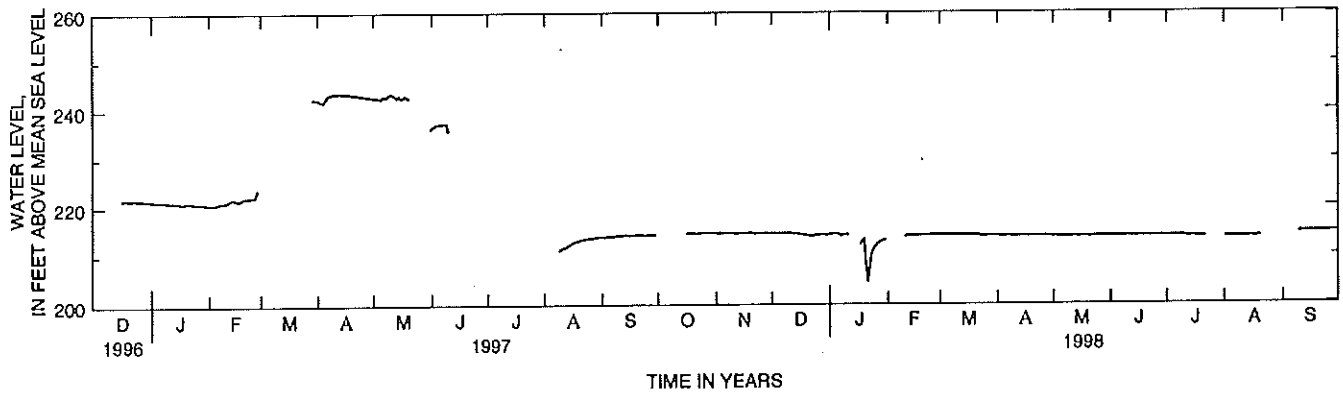
PERIOD OF RECORD.--Water level: continuous water-level recorder, February 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 244.14 ft above mean sea level, April 10, 1997; lowest water level measured, 204.37 ft above mean sea level, January 20, 21, 1998.

REMARKS.--Well part of network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	214.51	214.46	214.19	---	214.08	213.81	213.69	213.75	213.76	213.49	---
2	---	214.50	214.43	214.25	---	214.09	213.79	213.70	213.74	213.75	213.50	---
3	---	214.51	214.41	214.28	---	214.09	213.76	213.71	213.74	213.75	213.50	---
4	---	214.50	214.39	214.27	---	214.07	213.75	213.66	213.75	213.76	213.51	---
5	---	214.50	214.39	214.23	---	214.08	213.78	213.65	213.75	213.77	213.50	---
6	---	214.51	214.41	214.11	---	214.06	213.81	213.64	213.76	213.76	213.50	---
7	---	214.52	214.39	213.92	---	214.06	213.81	213.66	213.74	213.77	213.51	---
8	---	214.49	214.41	214.04	---	214.08	213.79	213.67	213.73	213.77	213.51	---
9	---	214.47	214.45	214.17	---	214.08	213.78	213.66	213.75	213.77	213.53	214.51
10	---	214.45	214.48	214.16	213.82	214.05	213.78	213.64	213.75	213.76	213.54	214.50
11	---	214.45	214.45	214.07	213.85	214.03	213.79	213.65	213.76	213.70	213.55	214.51
12	---	214.42	214.34	---	213.87	214.04	213.77	213.68	213.76	213.66	213.55	214.52
13	---	214.44	214.34	---	213.87	214.03	213.78	213.68	213.77	213.65	213.54	214.53
14	---	214.47	214.37	---	213.87	214.02	213.79	213.67	213.77	213.67	213.55	214.53
15	---	214.48	214.33	---	213.86	214.00	213.81	213.65	213.78	213.68	213.57	214.51
16	214.47	214.47	214.28	---	213.89	214.01	213.80	213.67	213.77	213.67	213.59	214.51
17	214.47	214.47	214.11	212.08	213.94	214.02	213.79	213.69	213.77	213.65	213.58	214.54
18	214.48	214.49	214.15	212.75	213.96	214.01	213.78	213.71	213.76	213.64	213.59	214.54
19	214.49	214.54	214.03	213.04	213.95	213.98	213.79	213.70	213.76	213.64	213.60	214.52
20	214.50	214.52	213.94	207.84	213.95	213.98	213.81	213.69	213.76	213.63	213.60	214.51
21	214.50	214.46	213.94	204.45	213.96	213.98	213.79	213.66	213.75	213.60	---	214.52
22	214.50	214.41	213.88	207.74	213.98	213.93	213.78	213.68	213.75	213.59	---	214.54
23	214.50	214.40	213.88	210.09	214.01	213.86	213.76	213.69	213.74	---	---	214.54
24	214.51	214.38	213.99	211.15	214.04	213.82	213.75	213.69	213.74	---	---	214.55
25	214.52	214.38	214.06	211.70	214.07	213.81	213.74	213.71	213.75	---	---	214.56
26	214.52	214.41	214.09	212.17	214.09	213.81	213.76	213.74	213.76	---	---	214.57
27	214.51	214.43	214.07	212.47	214.09	213.83	213.78	213.75	213.78	---	---	214.59
28	214.51	214.45	214.10	212.70	214.08	213.83	213.76	213.74	213.78	---	---	214.62
29	214.51	214.48	214.13	212.88	---	213.81	213.75	213.72	213.79	---	---	214.62
30	214.51	214.49	214.06	212.95	---	213.79	213.72	213.72	213.78	---	---	214.60
31	214.51	---	214.07	213.05	---	213.79	---	213.75	---	---	---	---
MEAN	---	214.47	214.22	---	---	213.97	213.78	213.69	213.76	---	---	---
MAX	---	214.54	214.48	---	---	214.09	213.81	213.75	213.79	---	---	---
MIN	---	214.38	213.88	---	---	213.79	213.72	213.64	213.73	---	---	---



215906159395601. Local number, 2-5939-01.

LOCATION.--Lat 21°59′06″, long 159°39′56″, Hydrologic Unit 20070000, 2.3 mi north northeast of Waimea Recreational Pier State Park, and 3.2 mi northeast from Oomano Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 43 ft, 6.5-ft diameter, uncased.

DATUM.--Elevation of land surface is 42 ft. Measuring point is the top west side of concrete base 41.61 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.43 ft above mean sea level, January 14, 1988; lowest water level measured, 8.71 ft above mean sea level, March 9, 1981, lowest water level measured with pump on, 5.86 ft above mean sea level, May 7, 1975.

REMARKS.--Water is presently unused.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	9.86	DEC 5	9.61	FEB 5	9.46	APR 7	9.21	JUN 2	9.32	AUG 6	9.62

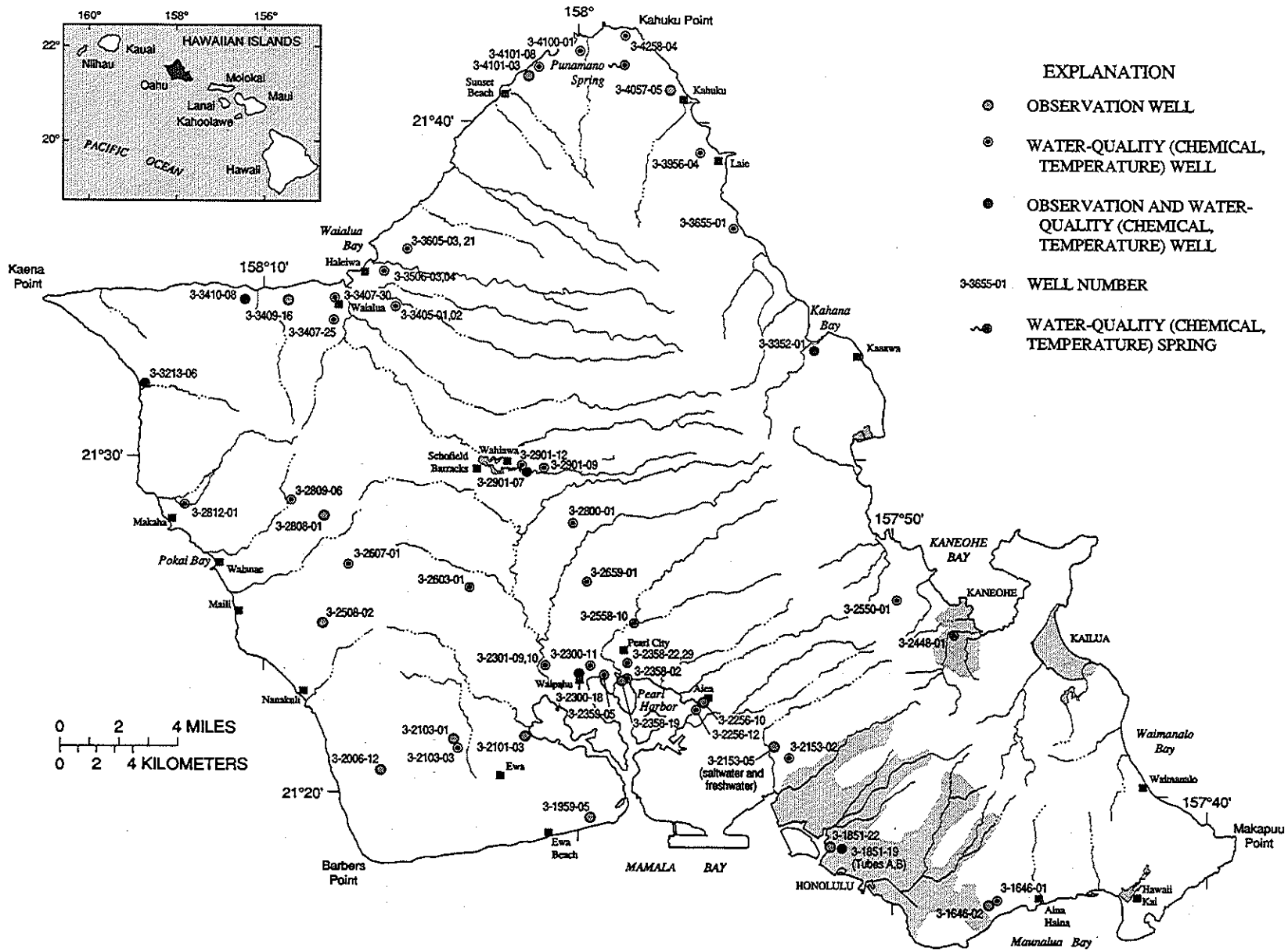


Figure 17. Locations of observation wells and ground-water quality sampling wells on Oahu.

211646157465202. Local number, 3-1646-02.

LOCATION.--Lat 21°16′46″, long 157°46′52″, Hydrologic Unit 20060000, at Waialae Golf Course. Owner: Bishop Estate.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 131 ft, 4-in. casing diameter, cased to 100 ft.

DATUM.--Elevation of land-surface datum is 16 ft. Measuring point is top of casing, 13.84 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--Occasional measurements, September 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.63 ft above mean sea level, January 27, 1983; lowest, 7.00 ft above mean sea level, June 10, 1986, July 23, 1986.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	7.96	MAR 19	7.75	MAY 13	7.76	AUG 11	7.68	SEP 21	7.76

211832157515501. Local number, 3-1851-19 Tube A.

LOCATION.--Lat 21°18′32″, long 157°51′55″, Hydrologic Unit 20060000, corner of Richards and Halekauwila Streets, adjacent to Ala Moana Boulevard. Owner: Hawaiian Electric Company.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 1/2-in. galvanized pipe at 1,043 ft depth. Tube A is the pipe closer to Richards Street.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is chiseled square inside of wooden cover of well, elevation 5.80 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, April 1969, March 1973 to current year.
Water quality: occasional measurements, 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.16 ft above mean sea level, August 13, 1974; lowest, 5.53 ft above mean sea level, September 25, 1990.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	6.46	MAR 11	6.52	MAY 13	6.53	AUG 11	6.00	SEP 23	a--

a No flow, unable to read water level

211832157515502. Local number, 3-1851-19 Tube B.

LOCATION.--Lat 21°18′32″, long 157°51′55″, Hydrologic Unit 20060000, corner of Richards and Halekauwila Streets, adjacent to Ala Moana Boulevard. Owner: Hawaiian Electric Company.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 1/2-in. galvanized pipe at 988 ft depth. Tube B is the pipe furthest from Richards Street.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is chiseled square inside of wooden cover of well, elevation 5.80 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, April 1969, March 1973 to current year.
Water quality: occasional measurements, 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.16 ft above mean sea level, February 3, 1983; lowest, 13.54 ft above mean sea level, October 20, 1993.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	16.95	MAR 11	16.63	MAY 13	16.20	AUG 11	14.67	SEP 23	13.75

211828157515801. Local number, 3-1851-22.

LOCATION.--Lat 21°18′28″, long 157°51′58″, Hydrologic Unit 20060000, northeast corner of the mini-park at the intersection of Richards Street and Ala Moana Boulevard. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 3-in. PVC pipe, depth 1,142 ft, bottom 60 ft slotted.

DATUM.--Elevation of land-surface datum is 7 ft. Measuring point is edge of manhole cover, 7.30 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: water-level recorder, June 1983 to November 1986, occasional measurements, December 1982 to current year.

Water quality: occasional measurements, 1982, 1987, 1998.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.74 ft above mean sea level, April 12, 1991; lowest, 15.60 ft, above mean sea level, September 23, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	18.33	MAR 11	18.06	MAY 13	18.61	AUG 11	17.46	SEP 23	15.60

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

211907157594701. Local number, 3-1959-05.

LOCATION.--Lat 21°19'06", long 157°59'46", Hydrologic Unit 20060000, 600 ft northwest of Ewa Beach Park, and 1.2 mi southeast of Campbell High School. Owner: NOAA.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,110 ft, 5-in. PVC casing, bottom 12 ft perforated.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is top of 5-in. PVC casing, 6.40 ft above mean sea level.

REMARKS.--Geophysical log and water-quality records are available in files of district office.

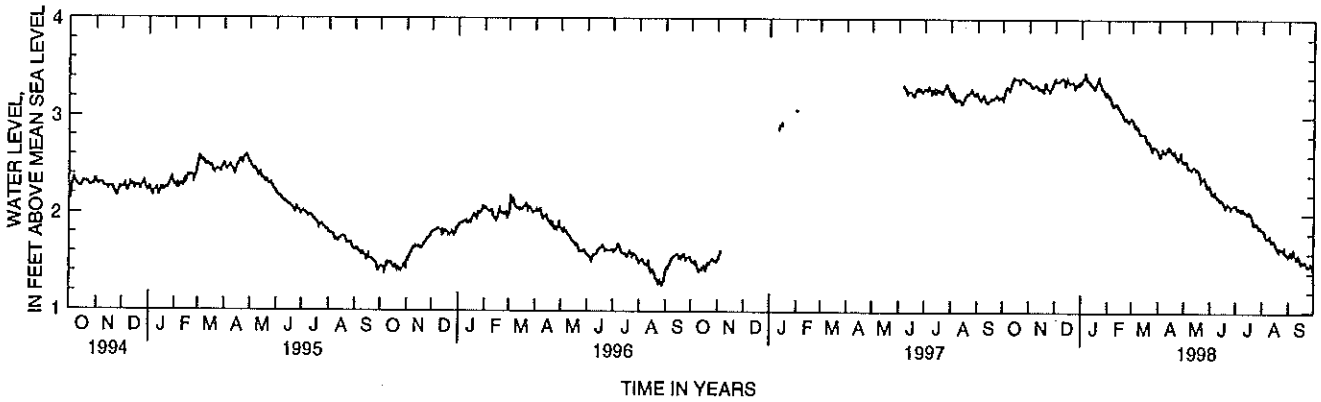
PERIOD OF RECORD.--Water-level recorder, December 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.38 ft above mean sea level, January 17, 1969; lowest, 2.81 ft below mean sea level, August 25, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.18	3.36	3.39	3.36	3.22	2.98	2.65	2.54	2.28	2.10	1.85	1.58
2	3.21	3.35	3.37	3.38	3.21	2.97	2.61	2.56	2.24	2.07	1.85	1.61
3	3.25	3.33	3.37	3.40	3.22	2.93	2.60	2.56	2.22	2.06	1.83	1.62
4	3.29	3.31	3.37	3.40	3.20	2.91	2.62	2.54	2.21	2.07	1.81	1.59
5	3.30	3.31	3.37	3.46	3.15	2.92	2.65	2.50	2.21	2.07	1.78	1.58
6	3.31	3.32	3.37	3.43	3.13	2.90	2.67	2.48	2.23	2.06	1.77	1.61
7	3.30	3.32	3.39	3.38	3.12	2.89	2.66	2.48	2.21	2.04	1.76	1.63
8	3.28	3.33	3.39	3.38	3.13	2.90	2.64	2.48	2.19	2.05	1.76	1.61
9	3.28	3.33	3.40	3.38	3.14	2.87	2.64	2.48	2.18	2.06	1.77	1.58
10	3.31	3.32	3.40	3.37	3.13	2.84	2.65	2.47	2.18	2.05	1.78	1.56
11	3.34	3.31	3.40	3.35	3.14	2.83	2.68	2.48	2.16	2.03	1.76	1.55
12	3.37	3.29	3.36	3.35	3.13	2.83	2.67	2.49	2.15	2.03	1.72	1.56
13	3.39	3.30	3.34	3.33	3.10	2.83	2.69	2.49	2.16	2.03	1.72	1.58
14	3.40	3.30	3.36	3.33	3.09	2.83	2.67	2.48	2.16	2.02	1.73	1.56
15	3.39	3.28	3.39	3.32	3.07	2.83	2.68	2.46	2.15	2.01	1.74	1.53
16	3.39	3.29	3.37	3.30	3.06	2.83	2.65	2.46	2.13	2.03	1.72	1.51
17	3.39	3.27	3.36	3.30	3.05	2.81	2.64	2.47	2.10	2.03	1.70	1.52
18	3.39	3.27	3.35	3.33	3.03	2.77	2.63	2.46	2.10	2.01	1.67	1.52
19	3.39	3.35	3.36	3.36	3.01	2.75	2.64	2.43	2.08	2.01	1.66	1.51
20	3.39	3.35	3.36	3.38	2.98	2.75	2.65	2.40	2.09	1.98	1.64	1.52
21	3.36	3.31	3.36	3.40	2.98	2.76	2.62	2.35	2.11	1.95	1.63	1.52
22	3.37	3.29	3.36	3.37	2.98	2.73	2.59	2.36	2.10	1.91	1.66	1.51
23	3.39	3.29	3.33	3.34	2.99	2.71	2.59	2.37	2.10	1.92	1.66	1.48
24	3.40	3.27	3.31	3.33	2.97	2.67	2.57	2.37	2.09	1.91	1.65	1.47
25	3.40	3.27	3.33	3.29	2.96	2.66	2.58	2.38	2.07	1.90	1.64	1.47
26	3.39	3.30	3.34	3.29	2.97	2.68	2.62	2.36	2.08	1.91	1.63	1.48
27	3.38	3.31	3.33	3.28	2.98	2.70	2.63	2.33	2.09	1.90	1.65	1.50
28	3.37	3.33	3.35	3.25	2.99	2.69	2.58	2.29	2.09	1.86	1.61	1.49
29	3.37	3.36	3.36	3.23	---	2.69	2.55	2.28	2.10	1.86	1.61	1.46
30	3.36	3.38	3.34	3.23	---	2.68	2.54	2.28	2.10	1.87	1.60	1.44
31	3.36	---	3.35	3.25	---	2.66	---	2.30	---	1.85	1.59	---
MEAN	3.35	3.31	3.36	3.34	3.08	2.80	2.63	2.43	2.15	1.99	1.71	1.54
MAX	3.40	3.38	3.40	3.46	3.22	2.98	2.69	2.56	2.28	2.10	1.85	1.63
MIN	3.18	3.27	3.31	3.23	2.96	2.66	2.54	2.28	2.07	1.85	1.59	1.44

WTR YR 1998 MEAN 2.64 MAX 3.46 MIN 1.44



212038158061501. Local number, 3-2006-12.

LOCATION.--Lat 21°20′38″, long 158°06′15″, Hydrologic Unit 20060000, 1.8 mi northwest of Barbers Point School, 0.4 mi east of Honokai Hale, and 2.1 mi southeast of the Kahe Power Plant. Owner: Honolulu Board of Water Supply.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 150 ft, 6-in. casing, cased to 108 ft.

DATUM.--Elevation of land-surface datum is 139 ft. Measuring point is top of casing, 139.13 ft above mean sea level.

REMARKS.--Prior to October 1995, unpublished records are available in files of district office.

PERIOD OF RECORD.--
Water level: occasional measurements, January 1953 to August 1973, July 1994 to current year.
Water quality: occasional measurements, January 1953 to August 1973.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.02 ft above mean sea level, January 25, 1957; lowest measured, 12.02 ft above mean sea level, June 5, 1973.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
APR 5	14.08	MAY 20	13.91	AUG 14	13.93

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 3	14.23	JUN 19	14.11	SEP 12	14.27

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	14.16	MAR 13	13.93	MAY 28	13.85	AUG 6	13.74	SEP 23	13.89

212154158015201. Local number, 3-2101-03.

LOCATION.--Lat 21°21′54″, long 158°01′52″, Hydrologic Unit 20060000, 0.4 mi southeast of Honouliuli, and 0.5 mi north of Ewa Hospital. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 355 ft, 6-in. PVC casing, cased to 165 ft. Well was modified in January 1958 and May 1982.

DATUM.--Elevation of land-surface datum is 15 ft. Measuring point is top of horizontal flange below petcock, 13.31 ft above mean sea level.

REMARKS.--Water-quality records for 1910-16, 1920-21, 1923-75, 1978-81, are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, April 1910 to June 1921, September 1923 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.16 ft above mean sea level, April 1918; lowest observed, less than 11.2 ft above mean sea level (below petcock then in use), September 2, and October 19, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	19.59	MAR 11	18.83	MAY 14	18.39	AUG 4	17.35	SEP 23	16.88

212132158035701. Local number, 3-2103-01.

LOCATION.--Lat 21°21′32″, long 158°03′57″, Hydrologic Unit 20060000, 1 mi east of Makakilo, and 2 mi north of Barbers Point Naval Air Station. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 206 ft, casing diameter 6-in., cased to 17 ft.

DATUM.--Elevation of land-surface datum is 210 ft. Measuring point is top of 6-in. pipe. Elevation: 211.70 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: water-level recorder, September 1966 to December 1971. Occasional measurements, August 1942 to December 1942, January 1953 to September 1967, September 1972 to current year.
Water quality: occasional measurements, 1942, 1953-68.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.81 ft above mean sea level, February 20, 1957; lowest, 14.25 ft above mean sea level, July 5, 1978, September 20, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	15.06	MAR 13	14.80	MAY 28	14.65	AUG 6	14.42	SEP 25	14.41

212133158035501. Local number, 3-2103-03.

LOCATION.--Lat 21°21′33″, long 158°03′55″, Hydrologic Unit 20060000, 1 mi east of Makakilo, and 2 mi north of Barbers Point Naval Air Station. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 204 ft, 12 ft diameter.

DATUM.--Elevation of land-surface datum is 160 ft. Measuring point is top of concrete ledge under manhole. Elevation: 155.5 ft above mean sea level.

REMARKS.--Prior to October 1997, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: occasional measurements, March 1973 to current year.
Water quality: occasional measurements, 1952 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.50 ft above mean sea level, December 8, 1982, January 28, 1983; lowest, 13.52 ft above mean sea level, June 16, 1976, July 26, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	15.10	MAR 13	14.80	MAY 28	14.65	AUG 6	14.44	SEP 25	13.91

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

212123157535501. Local number, 3-2153-05 Freshwater well.

LOCATION.--Lat 21°21′23″, long 157°53′55″, Hydrologic Unit 20060000, 0.4 mi northwest of Moanalua Elementary School, and 0.5 mi southwest of Tripler Hospital, in Moanalua. Owner: Honolulu Board of Water Supply.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,246 ft, 6-in. PVC casing, cased to 24 ft, perforated from 24 to 1,246 ft. Well was modified and deepened August 1980. The well is a combination of a 3-in. PVC (saltwater) and a 6-in. PVC (freshwater) encased in a 12-in. steel casing.

DATUM.--Elevation of land-surface datum is 35 ft. Measuring point is top of 3-in. PVC casing, 37.90 ft above mean sea level.

REMARKS.--Geophysical logs are available in files of district office. Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

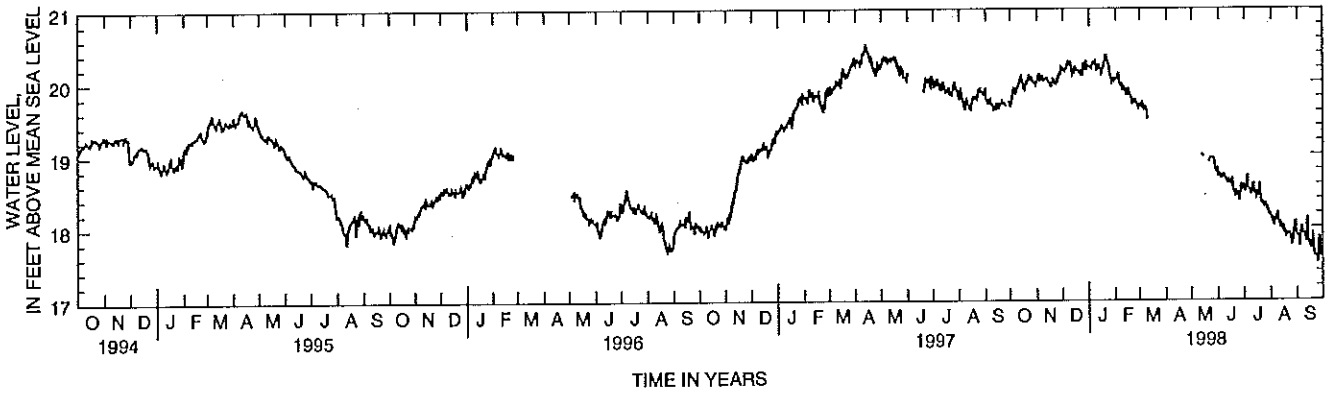
PERIOD OF RECORD.--Water-level recorder, March 1981 to current year (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.53 ft above mean sea level, January 9, 1983; lowest 16.56 ft above mean sea level, July 24, 1987.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e19.66	20.05	20.19	e20.21	20.05	e19.69	---	---	18.70	18.55	18.15	17.88
2	19.71	20.08	20.16	e20.20	e20.04	19.66	---	---	18.71	18.50	18.12	17.88
3	19.77	20.11	20.15	e20.22	e20.09	e19.65	---	---	18.72	18.50	18.08	17.86
4	19.88	20.02	20.18	20.20	20.12	19.70	---	---	18.68	18.66	18.13	17.73
5	19.91	20.04	20.18	e20.26	20.00	19.68	---	---	18.68	18.71	18.02	17.99
6	e19.90	20.04	20.25	20.25	19.96	e19.63	---	---	18.72	18.54	18.06	18.00
7	19.85	20.09	20.27	20.24	e19.95	19.66	---	---	18.72	18.52	18.12	18.00
8	19.88	e20.02	e20.24	e20.27	19.96	e19.65	---	---	18.71	18.48	18.09	17.91
9	e19.93	e20.02	20.23	20.21	e19.87	19.62	---	---	18.67	18.46	18.20	17.91
10	19.95	20.03	20.28	20.15	e19.94	19.50	---	---	18.66	18.49	18.10	17.90
11	19.99	20.05	20.18	20.24	e19.89	19.51	---	---	18.62	18.59	18.05	17.80
12	20.04	20.05	20.10	20.18	e19.89	---	---	a--	18.61	18.59	18.01	18.05
13	20.07	e20.04	e20.12	20.21	e19.81	---	---	e19.00	18.64	18.45	18.04	18.13
14	20.04	e20.00	e20.12	20.16	19.87	---	---	18.98	18.61	18.50	17.99	17.77
15	19.97	19.99	20.22	20.12	19.84	---	---	18.98	18.63	18.41	17.97	17.81
16	19.92	e19.97	20.18	20.16	19.88	---	---	---	18.60	18.43	18.02	17.73
17	19.90	19.94	20.16	e20.20	19.84	---	---	---	18.67	18.44	17.93	17.71
18	19.95	19.95	20.16	e20.27	e19.81	---	---	---	18.56	18.55	17.94	17.71
19	20.02	20.04	20.15	e20.29	e19.78	---	---	---	18.48	18.60	17.86	17.92
20	19.99	20.04	20.13	20.37	19.72	---	---	b--	18.46	18.40	17.91	17.73
21	20.01	20.02	20.14	e20.32	19.74	---	---	18.90	18.42	18.33	17.91	17.63
22	20.09	19.97	20.11	20.27	19.72	---	---	18.93	18.51	18.34	17.90	17.60
23	e20.06	19.97	20.14	20.24	19.75	---	---	18.95	18.47	18.32	17.91	17.60
24	20.03	20.02	20.12	20.21	19.75	---	---	18.95	18.46	18.29	17.89	17.60
25	20.06	19.99	20.26	20.10	19.70	---	---	18.95	18.36	18.32	17.81	17.51
26	e20.05	20.10	20.21	20.07	19.69	---	---	18.95	18.45	18.32	17.78	17.80
27	20.00	20.10	e20.16	e20.00	e19.65	---	---	18.92	18.59	18.24	17.81	17.87
28	e19.99	20.10	e20.29	e20.02	e19.68	---	---	18.84	18.51	18.28	17.96	17.66
29	19.99	20.20	e20.19	20.04	---	---	---	18.76	18.52	18.19	18.02	17.60
30	19.96	20.19	e20.21	e20.01	---	---	---	18.76	18.59	18.17	18.08	17.59
31	20.00	---	20.22	20.03	---	---	---	18.79	---	18.18	17.95	---
MEAN	19.95	20.04	20.18	20.18	19.86	---	---	---	18.59	18.43	17.99	17.80
MAX	20.09	20.20	20.29	20.37	20.12	---	---	---	18.72	18.71	18.20	18.13
MIN	19.66	19.94	20.10	20.00	19.65	---	---	---	18.36	18.17	17.78	17.51

e Estimated
a No record March 12 (1100) to May 13, 1998 (1500), logger malfunctioned
b No record May 16 (1100) to May 20, 1998 (1100), logger malfunctioned



GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

212123157535503. Local number, 3-2153-05 Saltwater well.

LOCATION.--Lat 21°21′23″, long 157°53′55″, Hydrologic Unit 20060000, 0.4 mi northwest of Moanalua Elementary School, and 0.5 mi southwest of Tripler Hospital, in Moanalua. Owner: Honolulu Board of Water Supply.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,246 ft, 3-in. PVC casing, cased to 46 ft, where it becomes 3/4-in. PVC pipe; two 5/8-in. holes at depth of 1,190 ft. Well was modified and deepened in August 1980 and used to monitor water level (saltwater). The well is a combination of a 3-in. PVC (saltwater) and a 6-in. PVC (freshwater) encased in a 12-in. steel casing.

DATUM.--Elevation of land-surface datum is 35 ft. Measuring point is top of 6-in. PVC casing, 37.90 ft above mean sea level.

REMARKS.--Geophysical logs are available in files of district office. Prior to October 1993, unpublished records in files of the U.S. Geological Survey. No record March 5, 1991 to April 8, 1991.

PERIOD OF RECORD.--Water-level recorder, March 1981 to current year (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.45 ft above mean sea level, January 9, 1983; lowest, 1.45 ft below mean sea level, October 24, 1981.

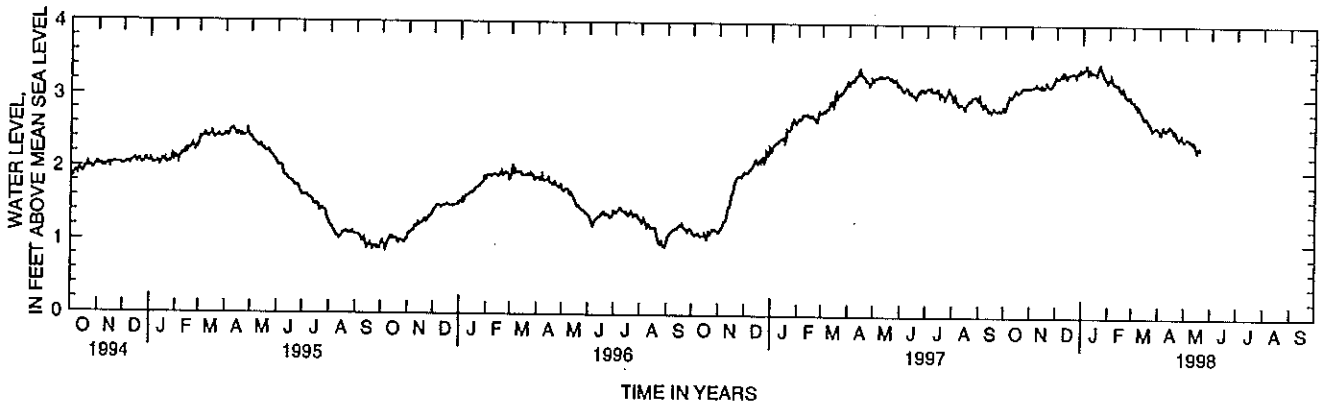
WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.84	3.15	3.30	e3.40	3.25	e2.97	2.58	2.43	---	---	---	---
2	2.87	3.16	3.28	e3.39	3.26	2.97	2.54	2.45	---	---	---	---
3	2.90	3.16	3.28	e3.41	e3.31	e2.93	2.53	2.46	---	---	---	---
4	2.96	3.16	3.28	3.41	3.28	2.91	2.57	2.46	---	---	---	---
5	2.98	3.16	3.31	e3.47	3.23	2.92	2.61	2.45	---	---	---	---
6	3.03	3.17	3.32	3.42	3.22	e2.88	2.62	2.43	---	---	---	---
7	3.02	3.19	3.34	e3.37	e3.21	2.91	2.60	2.44	---	---	---	---
8	3.01	3.17	3.29	e3.41	3.21	e2.90	2.57	2.43	---	---	---	---
9	3.02	3.16	3.36	3.41	e3.20	2.85	2.57	2.42	---	---	---	---
10	3.04	3.16	3.36	3.36	e3.19	2.82	2.60	2.40	---	---	---	---
11	3.06	3.17	3.34	3.36	e3.20	2.81	2.61	2.42	---	---	---	---
12	3.08	3.16	3.29	3.37	e3.19	2.79	2.60	2.41	---	---	---	---
13	3.11	3.15	3.29	3.36	e3.14	2.75	2.63	2.36	---	---	---	---
14	3.11	3.18	e3.33	3.36	3.14	2.73	2.62	2.32	---	---	---	---
15	3.09	3.17	3.34	e3.36	3.11	2.74	2.61	2.29	---	---	---	---
16	3.08	3.15	3.34	3.36	3.13	2.74	2.59	2.32	---	---	---	---
17	3.09	3.16	3.34	e3.34	3.15	2.74	2.55	2.34	---	---	---	---
18	3.10	3.16	3.34	e3.37	3.11	2.72	2.54	2.34	---	---	---	---
19	3.10	3.21	3.35	e3.42	e3.08	2.68	2.57	2.30	---	---	---	---
20	3.13	3.20	3.35	3.46	3.04	2.67	2.56	a--	---	---	---	---
21	3.13	3.18	3.35	e3.47	3.04	2.67	2.51	---	---	---	---	---
22	3.14	3.17	3.35	3.42	e3.02	2.63	2.48	---	---	---	---	---
23	3.15	3.16	3.33	3.39	3.03	2.61	2.47	---	---	---	---	---
24	3.15	3.16	3.31	e3.37	3.03	2.58	2.45	---	---	---	---	---
25	3.15	3.17	3.35	3.33	3.01	2.59	2.47	---	---	---	---	---
26	3.15	3.20	e3.37	3.31	3.02	2.59	2.49	---	---	---	---	---
27	3.14	3.21	3.36	e3.29	e2.98	2.61	2.50	---	---	---	---	---
28	3.14	3.23	e3.39	e3.27	2.97	2.61	2.46	---	---	---	---	---
29	3.15	3.26	e3.40	3.26	---	2.61	2.44	---	---	---	---	---
30	3.14	3.30	e3.37	e3.24	---	2.61	2.43	---	---	---	---	---
31	3.15	---	3.38	3.27	---	2.59	---	---	---	---	---	---
MEAN	3.07	3.18	3.34	3.37	3.13	2.75	2.55	---	---	---	---	---
MAX	3.15	3.30	3.40	3.47	3.31	2.97	2.63	---	---	---	---	---
MIN	2.84	3.15	3.28	3.24	2.97	2.58	2.43	---	---	---	---	---

CAL YR 1997 MEAN 3.02 MAX 3.40 MIN 2.23

e Estimated

a No record May 20, 1998 (1200) to the end of the year; internal battery problem



212117157534601. Local number, 3-2153-08.

LOCATION.--Lat 21°21'17", long 157°53'46", Hydrologic Unit 20060000, 1,300 ft northwest of junction of H-1 freeway and Puuloa Road, and 0.5 mi south of Tripler Army Hospital. Owner: U.S. Army.

AQUIFER.--Koolau Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 306 ft, 16-in. casing diameter, cased to 57 ft.

DATUM.--Elevation of land-surface datum is 28 ft. Measuring point is top of 3/4-in. copper overflow pipe at base of pump, 33.16 ft above mean sea level.

REMARKS.--Prior to May 1998, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--Occasional measurements, April 1945 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.79 ft above mean sea level, April 21, 1969; lowest, 17.78 ft above mean sea level, September 1, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 20	18.75	JUN 2	18.53	JUL 1	18.48	AUG 3	18.08	SEP 1	17.78

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

212238157561101. Local number, 3-2256-10.

LOCATION.--Lat 21°22′38″, long 157°56′11″, Hydrologic Unit 20060000, 0.4 mi southwest of Aiea School, and 0.5 mi east of McGrew Point. Owner: U.S. Navy.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 173 ft, casing diameter 12 in., cased to 143 ft.

DATUM.--Elevation of land-surface datum is 10 ft. Measuring point is top of 10-in. stilling pipe for water-level recorder, 26.15 ft above mean sea level.

REMARKS.--Water-quality records for 1923, 1928-30, 1934-68, 1972, 1974-75 are available in files of district office.

PERIOD OF RECORD.--

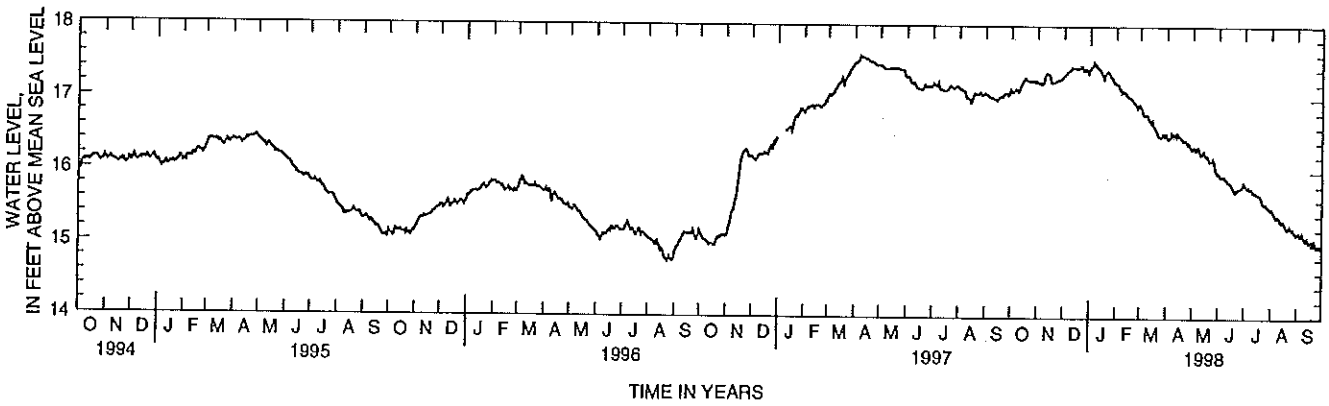
Water level: occasional measurements, January 1928 to February 1931, September 1934 to August 1966. Water-level recorder, September 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.90 ft above mean sea level, January 16, 1928; lowest, 12.97 ft above mean sea level, October 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.12	17.25	17.33	17.42	17.22	16.91	16.50	16.33	15.99	15.83	15.47	15.16
2	17.10	17.24	17.35	17.45	17.21	16.90	16.47	16.35	15.96	15.81	15.48	15.17
3	17.11	17.25	17.36	17.45	17.21	16.87	16.47	16.33	15.95	15.79	15.46	15.18
4	17.11	17.24	17.36	17.47	17.18	16.81	16.48	16.34	15.94	15.78	15.44	15.14
5	17.13	17.24	17.38	17.51	17.14	16.80	16.49	16.31	15.94	15.78	15.41	15.13
6	17.14	17.23	17.39	17.49	17.15	16.79	16.54	16.32	15.95	15.79	15.38	15.14
7	17.14	17.24	17.40	17.47	17.10	16.80	16.52	16.35	15.95	15.76	15.36	15.17
8	17.12	17.26	17.40	17.48	17.11	16.80	16.53	16.35	15.93	15.77	15.37	15.14
9	17.12	17.33	17.42	17.45	17.12	16.80	16.51	16.29	15.91	15.77	15.38	15.11
10	17.14	17.37	17.44	17.44	17.11	16.77	16.53	16.26	15.90	15.75	15.37	15.08
11	17.18	17.38	17.44	17.42	17.09	16.73	16.54	16.25	15.88	15.72	15.36	15.07
12	17.20	17.37	17.44	17.42	17.10	16.72	16.50	16.26	15.87	15.72	15.32	15.08
13	17.23	17.36	17.44	17.40	17.06	16.69	16.53	16.28	15.87	15.72	15.32	15.10
14	17.26	17.37	17.44	17.39	17.05	16.68	16.51	16.29	15.86	15.71	15.32	15.06
15	17.27	17.33	17.43	17.35	17.04	16.71	16.51	16.25	15.85	15.70	15.34	15.04
16	17.30	17.25	17.44	17.33	17.04	16.65	16.49	16.24	15.82	15.70	15.33	15.05
17	17.30	17.25	17.43	17.30	17.04	16.64	16.48	16.23	15.80	15.69	15.30	15.06
18	17.28	17.25	17.43	17.33	17.03	16.61	16.46	16.24	15.77	15.68	15.27	15.06
19	17.27	17.25	17.44	17.37	17.02	16.59	16.44	16.23	15.75	15.68	15.25	15.03
20	17.27	17.25	17.44	17.37	16.99	16.57	16.45	16.19	15.74	15.66	15.23	15.04
21	17.27	17.26	17.46	17.39	16.98	16.54	16.45	16.16	15.77	15.63	15.23	15.07
22	17.27	17.26	17.46	17.39	16.97	16.51	16.44	16.16	15.76	15.58	15.24	15.07
23	17.27	17.27	17.43	17.37	16.96	16.50	16.43	16.16	15.78	15.57	15.26	15.00
24	17.27	17.27	17.40	17.35	16.93	16.50	16.40	16.17	15.78	15.56	15.24	14.98
25	17.27	17.28	17.41	17.32	16.91	16.49	16.39	16.19	15.78	15.55	15.23	14.98
26	17.27	17.28	17.42	17.32	16.89	16.51	16.41	16.16	15.78	15.56	15.22	14.98
27	17.27	17.28	17.40	17.30	16.92	16.53	16.40	16.11	15.79	15.53	15.23	14.99
28	17.27	17.28	17.42	17.26	16.93	16.52	16.36	16.04	15.79	15.51	15.20	14.99
29	17.26	17.30	17.41	17.24	---	16.50	16.34	16.01	15.82	15.50	15.18	14.97
30	17.27	17.31	17.38	17.24	---	16.53	16.32	15.99	15.85	15.50	15.18	14.97
31	17.26	---	17.42	17.23	---	16.53	---	16.00	---	15.48	15.15	---
MEAN	17.22	17.28	17.41	17.38	17.05	16.66	16.46	16.22	15.85	15.67	15.31	15.07
MAX	17.30	17.38	17.46	17.51	17.22	16.91	16.54	16.35	15.99	15.83	15.48	15.18
MIN	17.10	17.23	17.33	17.23	16.89	16.49	16.32	15.99	15.74	15.48	15.15	14.97

WTR YR 1998 MEAN 16.46 MAX 17.51 MIN 14.97



212238157561102. Local number, 3-2256-12.

LOCATION.--Lat 21°22′39″, long 157°56′09″, Hydrologic Unit 20060000, 0.4 mi southwest of Aiea School, and 0.5 mi east of McGrew Point. Owner: U.S. Navy.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 182 ft, casing diameter 12-in., cased to 139 ft.

DATUM.--Elevation of land-surface datum is 9 ft. Measuring point is corner of concrete base next to faucet, 13.18 ft above mean sea level.

REMARKS.--Prior to October 1996, unpublished water-level records are available in files of district office.

PERIOD OF RECORD.--
Water level: occasional measurements, December 1966, November 1973 to current year.
Water quality: occasional measurements, December 1966, September 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.73 ft above mean sea level, January 31, 1983; lowest measured, 13.15 ft above mean sea level, September 18, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL
JUN 17	17.16	SEP 17	16.98

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	16.85	DEC 15	17.46	MAR 11	16.64	MAY 14	16.17	AUG 12	15.26	SEP 23	14.91

212340158001901. Local number, 3-2300-18.

LOCATION.--Lat 21°23′40″, long 158°00′19″, Hydrologic Unit 20060000, 700 ft south of August Ahrens School, and 1,400 ft northeast of L'Orange Park, Waipahu. Owner: Honolulu Board of Water Supply.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,090 ft, casing diameter 12-in., cased to 38 ft. Well was deepened May 1980 and modified February 1984. Prior to May 1980, well depth 205 ft.

DATUM.--Elevation of land-surface datum is 26 ft. Measuring point is top of casing, 27.73 ft above mean sea level.

PERIOD OF RECORD.--
Water level: water-level recorder, August 1970 to January 1973. Occasional measurements, October 1987 to current year.
Water quality: occasional measurements, 1930, 1942-45, 1947-49, 1951-54, 1968, 1983, 1985-86, 1991, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 22.40 ft above mean sea level, January 4, 1983; lowest 14.01 ft above mean sea level, September 14, 1985.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	19.61	MAR 10	19.03	MAY 14	18.52	AUG 11	17.44	SEP 23	17.13

212318157583401. Local number, 3-2358-19.

LOCATION.--Lat 21°23′18″, long 157°58′34″, Hydrologic Unit 20060000, 0.3 mi southwest of Lehua Elementary School, and 0.7 mi south of Pearl City Elementary School. Owner: U.S. Navy.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 172 ft, casing diameter 17-in., cased to 112 ft.

DATUM.--Elevation of land-surface datum is 13.30 ft. Measuring point is 1-in. square chiseled on concrete base wall, northeast corner, elevation is 13.30 ft above mean sea level.

REMARKS.--Prior to October 1995, unpublished records are available in files of district office.

PERIOD OF RECORD.--

Water level: occasional measurements, September 1972, November 1973 to December 1988, and March 3, 1993 to current year.
Water quality: occasional measurements, 1944, 1946, 1954, 1956-58, 1972-80.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.68 ft above mean sea level, December 7, 1982; lowest, 12.30 ft above mean sea level, September 18, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
APR 4	15.03	MAY 20	14.64	AUG 1	14.28

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 14	16.12	JUN 19	16.36	SEP 12	16.51

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	16.47	MAR 10	15.92	MAY 14	15.42	AUG 12	14.46	SEP 23	14.14

212501158080701. Local number, 3-2508-02.

LOCATION.--Lat 21°25′01″, long 158°08′07″, Hydrologic Unit 20060000, 2.2 mi northeast from the intersection of Farrington Highway and Lualualei Naval Ammunition Depot, 0.4 mi southeast of entrance to Lualualei Naval Ammunition Depot, located inside the Depot. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Located at the bottom of a 30-degree incline 6.8 ft by 7.8 ft shaft, 340 ft long.

DATUM.--Elevation of land-surface datum is 180 ft. Measuring point is top of concrete above well, elevation is 13.16 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, October 1972 to September 1997 (station discontinued; unable to enter shaft).
Water quality: occasional measurements, 1971-84.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.40 ft above mean sea level, October 3, 1972; lowest, 10.15 ft above mean sea level, March 8, 1994.

212614157594301. Local number, 3-2659-01.

LOCATION.--Lat 21°26′14″, long 157°59′43″, Hydrologic Unit 20060000, 2.3 mi southeast of Kipapa School and 0.5 mi southwest of entrance to Mililani Memorial Park Cemetary. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,790 ft, 9-in. casing, cased to 424 ft.

DATUM.--Elevation of land-surface datum is 412 ft. Measuring point is top of casing, elevation is 412.98 ft above mean sea level.

REMARKS.--Prior to October 1995, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--Water level: occasional measurements, October 1986 to April 1987, March 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.74 ft above mean sea level, March 5, 1990; lowest, 17.23 ft above mean sea level, October 3, 1986.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 13	19.71	MAY 17	19.08	JUL 22	19.03

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 14	21.20	JUN 20	22.02	SEP 17	21.84

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	21.74	MAR 10	21.08	MAY 18	20.47	AUG 4	19.35	SEP 23	18.97

212813158080201. Local number, 3-2808-01.

LOCATION.--Lat 21°28′13″, long 158°08′04″, Hydrologic Unit 20060000, inside Lualualei Naval Ammunition Depot, 1,000 ft west from the intersection of Kolekole Road and Radford Street, at Building 492, 3.3 mi north from the entrance of the depot. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Depth 535 ft, cased to 179 ft, diameter is 12-in. steel casing to 179 ft, then 3-in. to 535 ft.

DATUM.--Elevation of land-surface datum is 435 ft. Measuring point is on pump 2 ft above base. Remove 1/2-in. nipple, elevation 437.45 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: occasional measurements, June 1973 to current year.
Water quality: occasional measurements, 1972-88.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 441.81 ft above mean sea level, February 28, 1983; lowest, 420.78 ft above mean sea level, October 24, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	433.65	MAR 13	432.69	MAY 28	431.82	AUG 6	430.79	SEP 25	a--

a Unable to make water-level measurement, gate locked

212927158014801. Local number, 3-2901-07.

LOCATION.--Lat 21°29′27″, long 158°01′48″, Hydrologic Unit 20060000, across the main gate of Wheeler Air Force Base, and 1,200 ft south of Wahiawa bridge on Kaukonohua Stream. Owner: U.S. Army.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Dug high-level water-table well, size 8 ft x 8 ft, length of 30-degree inclined shaft 1,148 ft.

DATUM.--Elevation of land-surface datum is 850 ft (revised). Measuring point is top of pump chamber floor at recorder, 287.00 ft above mean sea level (revised).

PERIOD OF RECORD.--

Water level: water-level recorder, November 1938 to current year.
Water quality: occasional measurements, 1966-72, 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 284.40 ft above mean sea level, May 12, 1969; lowest, 269.52 ft above mean sea level, December 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	279.97	279.67	279.58	279.82	279.27	278.15	277.48	--	--	--	275.87	275.17
10	280.01	279.78	279.61	279.47	279.11	278.61	277.90	--	--	a--	275.51	274.47
15	280.14	279.80	279.53	279.37	278.93	278.31	277.25	--	--	276.12	275.50	274.27
20	280.00	279.86	279.45	279.42	278.87	278.44	277.17	--	--	275.83	274.74	274.31
25	280.04	279.80	279.44	279.26	278.87	278.22	277.01	--	--	275.73	275.31	274.94
EOM	279.98	279.69	279.44	279.25	278.84	277.56	277.51	--	--	275.10	275.22	274.09

a No record May 1 to July 13, 1998, recorder stopped

NON-PUMPING VALUES

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	280.26	NOV 3	280.08	JAN 5	279.82	FEB 3	279.38	MAR 2	279.96
APR 1	278.27	JUN 2	277.06	JUL 1	276.58	AUG 3	275.91	SEP 2	275.53

Note: Water levels are measured after all pumps in the pump chamber are turned off for 2 hours

213224158135901. Local number, 3-3213-06.

LOCATION.--Lat 21°32′24″, long 158°13′59″, Hydrologic Unit 20060000, along Farrington Highway, 1.2 mi north of Makua Cave, and 1 mi southeast of Yokohama Bay. Owner: U.S. Air Force.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 50 ft, cased to 21 ft with 6-in. black steel pipe.

DATUM.--Elevation of land-surface datum is 26 ft. Measuring point is top of 6-in. casing, elevation is 26.47 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: occasional measurements, October 1972 to current year.
Water quality: occasional measurements, 1967, 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.92 ft above mean sea level, January 2, 1975; lowest, 6.49 ft above mean sea level, July 15, 1976.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	7.18	MAR 13	7.08	MAY 28	6.91	AUG 6	6.85	SEP 25	6.85

213327157524401. Local number, 3-3352-01.

LOCATION.--Lat 21°33′27″, long 157°52′43″, Hydrologic Unit 20060000, at mouth of Kahana Valley, and 700 ft southwest of Kamehameha Highway, Kahana. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 441 ft, casing diameter 10-in., cased to 177 ft.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is top of "T", 7.31 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, April 1935 to 1990, 1992 to current year.
Water quality: occasional measurements, 1935 to 1991, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.3 ft above mean sea level, March 29, 1966; lowest measured, 12.61 ft above mean sea level, July 5, 1984.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 23	14.18	MAR 10	13.13	JUN 17	13.02	AUG 20	12.95	SEP 30	12.72

213438158091101. Local number, 3-3409-16.

LOCATION.--Lat 21°34′36″, long 158°09′12″, Hydrologic Unit 20060000, 1.6 mi west of Waialua High School, 2.6 mi east of Mokuleia Beach Park along Farrington Highway. Owner: J. Mendonca.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 518 ft, cased to 440 ft, diameter 10-in. to 396 ft, 8-in. to 440 ft.

DATUM.--Elevation of land-surface datum is 8 ft. Measuring point is chiseled 1-1/2-in. square on concrete, 3.7 ft in front of door of well shelter, elevation is 8.48 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, December 1924 to current year.
Water quality: occasional measurements, 1924-84.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.3 ft above mean sea level, January 16, 1969; lowest, 16.75 ft above mean sea level, August 6, 1929.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	18.50	MAR 10	17.91	JUN 3	18.01	AUG 4	17.92	SEP 24	17.98

213446158104901. Local number, 3-3410-08.

LOCATION.--Lat 21°34′46″, long 158°10′49″, Hydrologic Unit 20060000, 0.5 mi east of Dillingham Airfield, and 1.1 mi southeast of Mokuleia Beach Park. Owner: Waialua Sugar Company, Inc.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 447 ft, casing diameter 1 in., cased to 410 ft, perforated from 410 to 447 ft.

DATUM.--Elevation of land-surface datum is 12 ft. Measuring point is top of recorder shelf over 12-in. stilling well, 20.53 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: water-level recorder, January 1963 to February 1972. Occasional measurements, January 1929 to December 1962, March 1972 to current year.
Water quality: occasional measurements, 1929 to 1985, 1989 to 1991, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 19.98 ft above mean sea level, January 5, 1969; lowest 16.08 ft above mean sea level, August 6, 1929.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	18.96	MAR 10	18.47	JUN 3	18.62	AUG 4	18.31	SEP 24	18.40

214053157570401. Local number, 3-4057-05.

LOCATION.--Lat 21°40′53″, long 157°57′04″, Hydrologic Unit 20060000, 0.4 mi northeast of Kahuku Hospital, and 500 ft north of Kahuku High School.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 397 ft, 12-in. metal casing, cased to 172 ft.

DATUM.--Elevation of land-surface datum is 9 ft. Measuring point is top of 10-in. standpipe, elevation; 16.01 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: water-level recorder, August 1958 to December 1990. Occasional measurements, March 1911 to May 1918, March 1921, January 1926 to August 1958, December 1990 to current year.
Water quality: occasional measurements, 1908, 1911-16, 1924-78.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.12 ft above mean sea level, January 1916; lowest, 8.00 ft above mean sea level, October 5, 1962.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 23	13.04	MAR 10	12.59	JUN 17	12.33	AUG 18	12.52	SEP 30	12.43

214125158013401. Local number, 3-4101-03.

LOCATION.--Lat 21°41′25″, long 158°01′34″, Hydrologic Unit 20060000, 1,500 ft northeast of University of Hawaii agriculture experiment station in Waialee, and 1.9 mi northeast of Sunset Beach. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 61 ft, casing diameter 8 in., cased to 36 ft.

DATUM.--Elevation of land-surface datum is 22 ft. Measuring point is top of 4-in. pipe, 21.89 ft above mean sea level.

REMARKS.--Water-quality records for 1929-74 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, February 1929 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.60 ft above mean sea level, November 14, 1932; lowest measured, 10.97 ft above mean sea level, July 1, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 23	14.29	MAR 10	14.04	JUN 17	13.59	AUG 18	13.39	SEP 30	13.46

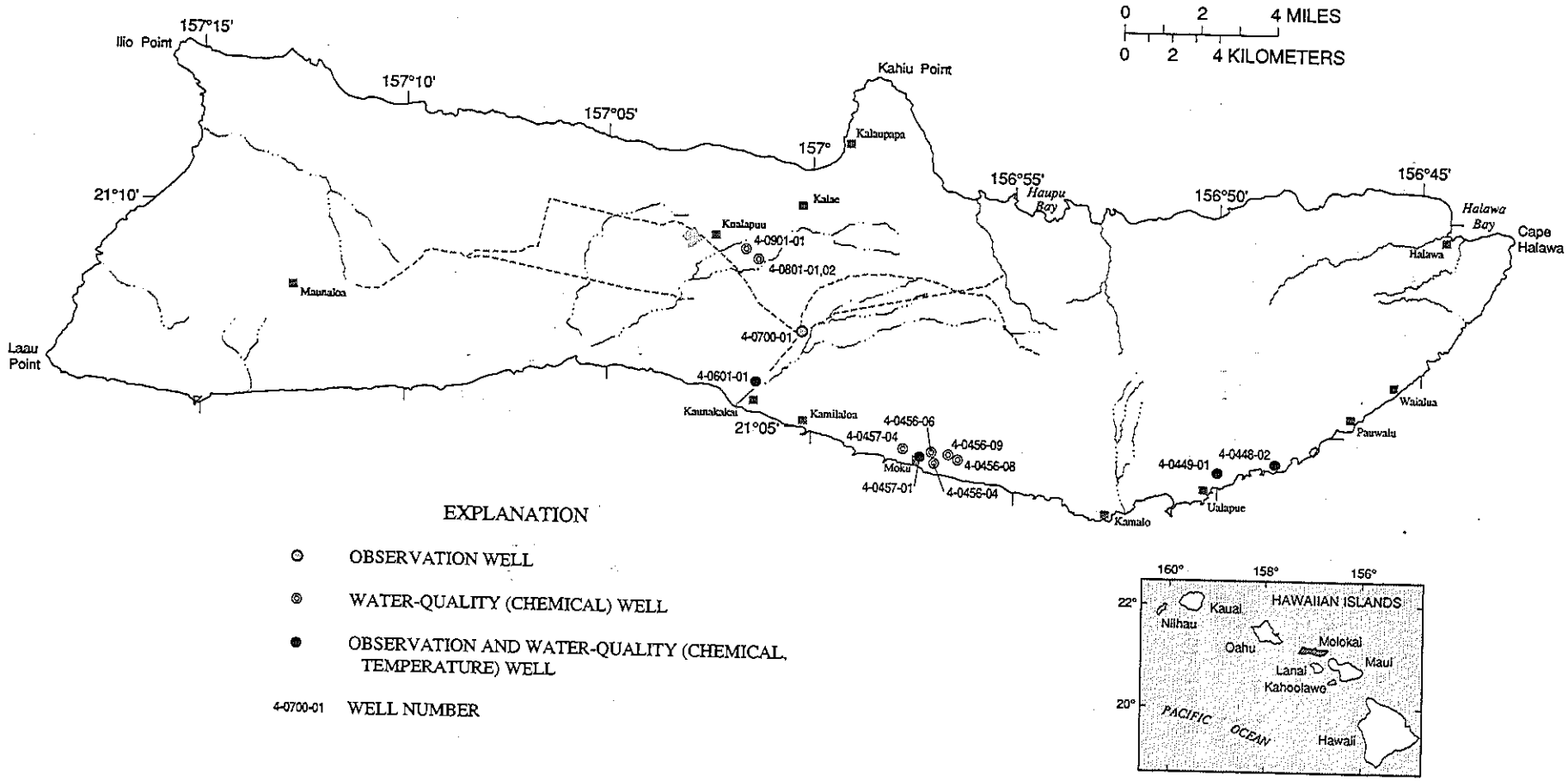


Figure 18. Locations of observation wells and ground-water quality sampling wells on Molokai.

210425156483001. Local number, 4-0448-02.

LOCATION.--Lat 21°04′25″, long 156°48′30″, Hydrologic Unit 20050000, 100 ft north of Highway 45, and 0.8 mi west of Pukoo. Owner: P. Friel.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, size 4 ft x 6 ft, depth 21 ft.

DATUM.--Elevation of land-surface datum is 19 ft. Measuring point is top of 2 in. x 2 in. steel plate bolted to top of concrete wall of well, 21.23 ft above mean sea level.

PERIOD OF RECORD.--
Water level: water-level recorder, August 1970 to January 1973. Occasional measurements, February 1973 to current year.
Water quality: occasional measurements, 1970-73, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.11 ft above mean sea level, November 26, 1970; lowest measured, 3.67 ft above mean sea level, February 8, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	4.36	DEC 11	4.61	FEB 5	4.12	APR 22	4.08	JUN 15	3.91	AUG 10	4.05

210402156495801. Local number, 4-0449-01.

LOCATION.--Lat 21°04′02″, long 156°49′58″, Hydrologic Unit 20050000, 1,800 ft north of Ualapue Fishpond, and 0.5 mi northeast of Kilohana School. Owner: County of Maui.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, size 4 ft x 6 ft, depth 42 ft, lined with concrete to 42 ft; two infiltration tunnels, total length 214 ft.

DATUM.--Elevation of land-surface datum is 42 ft. Measuring point is top of steel plate, 42.42 ft above mean sea level.

REMARKS.--Water from this well is used for public supply; water level affected by pumping.

PERIOD OF RECORD.--
Water level: occasional measurements, 1938-39, 1941-63, November 1972 to current year.
Water quality: occasional measurements, 1948, 1952-56, 1970-91, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.05 ft above mean sea level, January 19, 1950; lowest measured, 2.09 ft above mean sea level, September 16, 1975.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	3.30	DEC 11	3.52	FEB 5	3.19	APR 22	3.19	JUN 15	2.87	AUG 10	3.12

210419156570501. Local number, 4-0457-01.

LOCATION.--Lat 21°04′19″, long 156°57′05″, Hydrologic Unit 20050000, 0.5 mi northwest of Kakahaia Fishpond, and 0.5 mi northeast of Moku. Owner: County of Maui.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, size 4 ft x 4 ft, depth 38 ft, lined with concrete to 38 ft; two infiltration tunnels, total length 229 ft.

DATUM.--Elevation of land-surface datum is 38 ft. Measuring point is top of steel plate, 37.36 ft, above mean sea level.

REMARKS.--Water from this well is used for public supply. Water level measured after pump has been turned off for 30 minutes.

PERIOD OF RECORD.--
Water level: occasional measurements, June 1947 to November 1960, January 1962 to February 1963, November 1972 to current year.
Water quality: occasional measurements, 1948, 1954-56, 1960, 1962, 1971, 1973-91, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.78 ft above mean sea level, February 5, 1991; lowest measured, 1.47 ft above mean sea level, June 24, 1955.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	2.01	DEC 11	2.00	FEB 5	2.08	APR 22	1.86	JUN 15	1.73	AUG 10	1.95

210605157012001. Local number, 4-0601-01.

LOCATION.--Lat 21°06′01″, long 157°01′11″, Hydrologic Unit 20050000, 0.6 mi north of Kaunakakai School, and 0.9 mi east of Kalanianaole Colony. Owner: Molokai Ranch.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 59 ft, 12-in. casing diameter, cased to 20 ft.

DATUM.--Elevation of land-surface datum is 51 ft. Measuring point is top of 15-in. surface casing, 51.95 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, May 1954 to current year.
Water quality: occasional measurements, 1954 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.30 ft above mean sea level, January 20, 1969; lowest measured, 1.60 ft above mean sea level, December 5, 1964.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 9	2.77	DEC 11	2.75	FEB 5	2.57	APR 22	2.59	JUN 15	2.45	AUG 10	2.60

210711157000501. Local number, 4-0700-01.

LOCATION.--Lat 21°07′11″, long 157°00′05″, Hydrologic Unit 20050000, 2.3 mi northeast of Kakahaia Fishpond, and 0.5 mi northeast of Kaunakakai, and 2.4 mi north of Kamiloloa. Owner: Kaluakoi Corporation.

AQUIFER.--East Molokai Volcanics.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,080 ft, 20-in. casing diameter, cased to 956 ft, perforated from 956 to 1,056 ft.

DATUM.--Measuring point is top of casing, 982.94 ft above mean sea level (levels of May 19, 1997).

REMARKS.--Water-quality records for 1973-75 and water-level records for 1976-82 are available in files of the U.S. Geological Survey district office. Prior to October 1995, water-level data was published as "water level, in feet below land surface datum." New measuring point added in May 1997.

PERIOD OF RECORD.--Occasional measurements, July 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.70 ft above mean sea level, April 27, 1988; lowest measured, 5.72 ft above mean sea level, September 10, 1986.

REVISION.--The datum of the measuring point was revised to 981.95 ft above mean sea level, superseding figures published in the reports for 1984 to 1996. The extremes for the period of record also was revised to reference feet above mean sea level.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	a--	DEC 9	a--	FEB 5	a--	APR 23	a--	JUN 18	5.78	AUG 12	5.80

a Well locked, unable to access

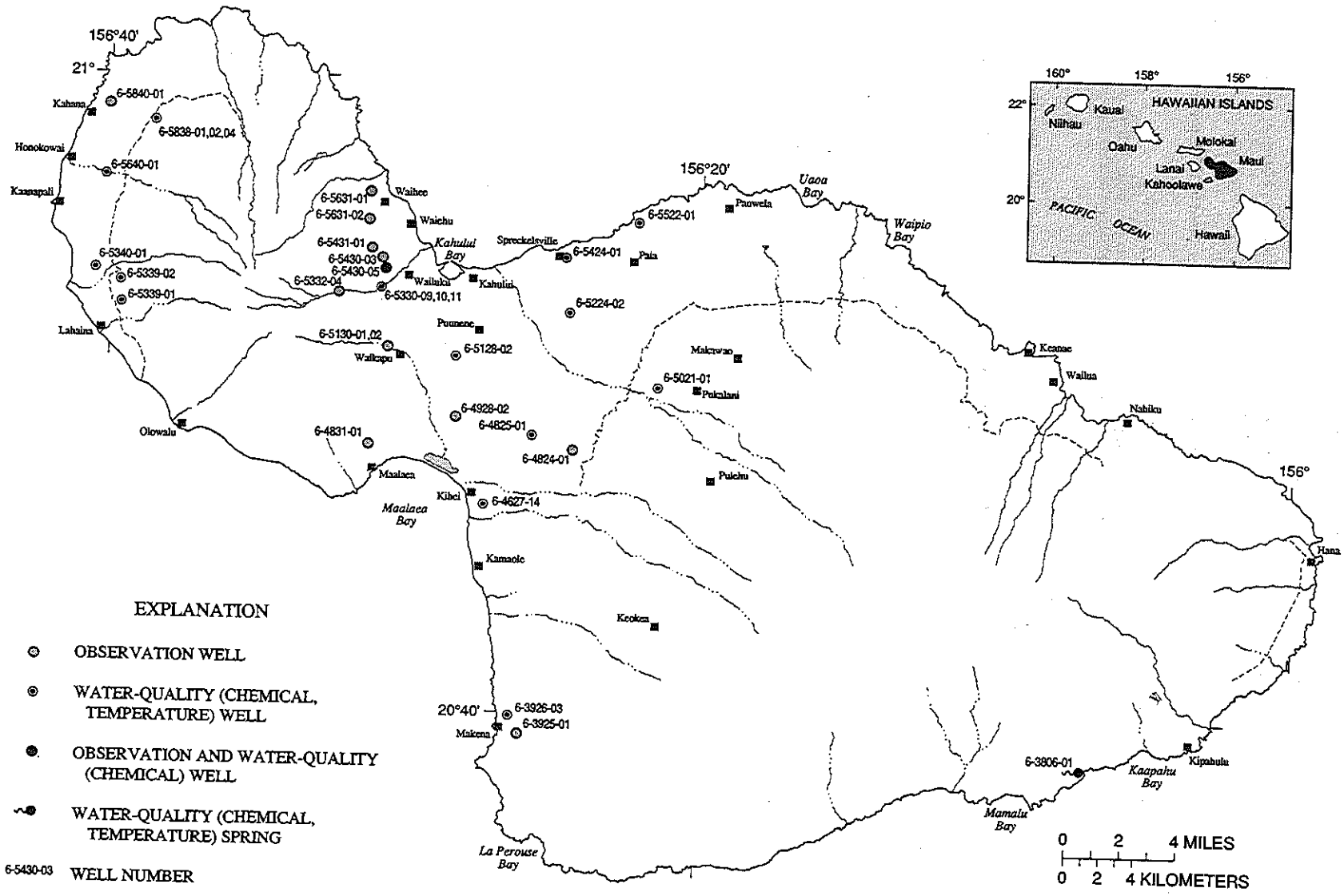


Figure 19. Locations of observation wells and ground-water quality sampling wells on Maui.

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI

203912156255901. Local number, 6-3925-01.

LOCATION.--Lat 20°39′12″, long 156°25′59″, Hydrologic Unit 20020000, 0.8 mi east of Keawalai Church, and 0.9 mi southeast of intersection of Kihei and Makena roads. Owner: State of Hawaii.

AQUIFER.--Hana Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 382 ft, 8-in. casing diameter, cased to 343 ft, perforated from 343 to 363 ft.

DATUM.--Elevation of land-surface datum is 351 ft. Measuring point is top of 2-in. pipe attached to the casing cover, 352.29 ft above mean sea level.

REMARKS.--Water-quality records for 1964 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, August 1964, June 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.47 ft above mean sea level, August 24, 1964; lowest measured, 0.41 ft below mean sea level, May 4, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	0.15	FEB 13	-0.08	APR 28	-0.35	AUG 17	-0.09

204827156242201. Local number, 6-4824-01.

LOCATION.--Lat 20°48′27″, long 156°24′22″, Hydrologic Unit 20020000, on Waiakoa Road 1,000 ft south of intersection with Kalaloa Gulch, and 4 mi east of Kihei. Owner: State of Hawaii.

AQUIFER.--Kula Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 646 ft, 12-in. casing diameter, cased to 598 ft, screened from 598 to 638 ft.

DATUM.--Elevation of land-surface datum is 593 ft. Measuring point is top of 3-in. pipe attached to the steel casing cover, 594.74 ft above mean sea level.

REMARKS.--Water-quality records for 1971, 1973 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, March 1971, May 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.20 ft above mean sea level, January 17, 1974; lowest measured, 3.65 ft above mean sea level, January 27, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	4.19	JAN 16	4.29	FEB 24	4.30	MAY 8	4.09	JUN 24	4.10	SEP 4	4.30

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 north of Maalaea, and 0.9 mi southwest of intersection of Honoapiilani Highway and Kihei Road. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 219 ft, 8-in. casing diameter, cased to 187 ft.

DATUM.--Elevation of land-surface datum is 166 ft. Measuring point is top of 8-in. casing, 166.60 ft above mean sea level.

REMARKS.--Water-quality records for 1965-67 are available in files of district office.

PERIOD OF RECORD.--Water-level recorder, January to July 1974. Occasional measurements, September 1972 to December 1973, August 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.76 ft above mean sea level, November 30, 1983; lowest measured, 4.74 ft above mean sea level, March 16, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	5.13	DEC 17	5.19	FEB 12	5.03	APR 28	4.95	JUN 9	4.88	AUG 18	5.02

204909156281401. Local number, 6-4928-02.

LOCATION.--Lat 20°49′09″, long 156°28′14″, Hydrologic Unit 20020000, at Puunene Airport on Mokulele Highway 2.3 mi north of intersection with Kihei Road, Kihei. Owner: Hawaiian Commercial and Sugar Co.

AQUIFER.--Honomanu Basalt, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, 6 ft x 9 ft vertical shaft, depth 52 ft.

DATUM.--Elevation of land-surface datum is 50 ft. Measuring point is top of angle iron at well, 50.08 ft above mean sea level.

REMARKS.--Water-quality records for 1973 are available in files of district office.

PERIOD OF RECORD.--Water-level recorder, March 1972 to September 1984. Occasional measurements, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.09 ft above mean sea level, January 12, 1980; lowest measured, 3.05 ft above mean sea level, March 5, 6, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	3.79	DEC 17	3.93	FEB 12	3.59	APR 28	3.71	JUN 9	3.65	AUG 17	3.65

205140156304501. Local number, 6-5130-01.

LOCATION.--Lat 20°51′40″, long 156°30′45″, Hydrologic Unit 20020000, 0.5 mi northwest of Waikapu, and 1.0 mi southeast of Wailuku Heights. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water table well, depth 757 ft, 8-in. casing diameter, cased to 569 ft, perforated from 569 to 609 ft.

DATUM.--Elevation of land-surface datum is 551 ft. Measuring point is top of 6-in. pipe coupling, 551.33 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, June 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.90 ft above mean sea level, October 13, 1982; lowest measured, 11.36 ft above mean sea level, January 27, 1976.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	13.20	JAN 5	13.05	APR 1	11.86	JUL 2	11.54	SEP 29	12.23
NOV 25	11.90	FEB 23	12.49	MAY 26	12.13	AUG 24	12.00		

205154156303801. Local number, 6-5130-02.

LOCATION.--Lat 20°51′54″, long 156°30′38″, Hydrologic Unit 20020000, 0.6 mi northwest of Waikapu, and 1.0 mi southeast of Wailuku Heights. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,020 ft, 20-in. casing diameter, cased to 520 ft, perforated from 520 to 570 ft.

DATUM.--Elevation of land-surface datum is 518 ft. Measuring point is top of casing, 519.33 ft above mean sea level.

REMARKS.--Water-quality records for 1974 are available in files of district office.

PERIOD OF RECORD.--Water-level recorder, August 1983 to September 1984. Occasional measurements, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.03 ft above mean sea level, July 15, 1987; lowest measured, 11.88 ft above mean sea level, October 1, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	12.52	JAN 5	12.51	APR 1	12.18	JUL 2	12.12	SEP 29	12.11
NOV 25	12.30	FEB 23	12.36	MAY 26	12.20	AUG 24	12.11		

205312156321402. Local number, 6-5332-04.

LOCATION.--Lat 20°53′12″, long 156°32′14″, Hydrologic Unit 20020000, 1.9 mi southwest of Puuohala Village, 1.9 mi west of Wailuku Elementary School, and 10 ft from well 6-5332-04. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 254 ft.

DATUM.--Elevation of land-surface datum is 713 ft. Measuring point is top of 2-in. PVC pipe.

PERIOD OF RECORD.--Occasional measurements, October 1991 to current year. Prior to October 1995, unpublished records are in the files of the U.S. Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.41 ft below land-surface datum, July 1, 1996; lowest measured, 80.60 ft below land-surface datum, February 12, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	79.77	JAN 5	46.05	APR 1	75.92	JUL 2	69.08	SEP 29	69.25
NOV 25	47.18	FEB 23	67.47	MAY 26	51.99	AUG 24	77.90		

205419156304401. Local number, 6-5430-03.

LOCATION.--Lat 20°54′19″, long 156°30′44″, Hydrologic Unit 20020000, 2,000 ft north of Puuohala Village, and 0.5 mi northwest of Wailuku Sugar Mill reservoir. Owner: Wailuku Sugar Co.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 580 ft, 1.5-in. PVC casing, cased to 400 ft, perforated from 400 to 580 ft.

DATUM.--Elevation of land-surface datum is 415 ft. Measuring point is top of 1-in. galvanized pipe, 416.75 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, August 1982 to February 1984. Occasional measurements, March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.09 ft above mean sea level, December 31, 1982; lowest measured, 9.65 ft above mean sea level, October 1, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	11.34	JAN 5	13.05	APR 1	12.40	JUL 2	12.14	SEP 29	11.79
NOV 25	12.53	FEB 24	12.64	MAY 26	11.99	AUG 24	11.64		

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI--Continued

205405156305401. Local number, 6-5430-05.

LOCATION.--Lat 20°54′59″, long 156°30′54″, Hydrologic Unit 20020000, 1.0 mi southwest of intersection of Malaihi Road and Highway 33, and 1.2 mi south of Waihee. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,400 ft, 10-in. casing diameter, cased to 400 ft.

DATUM.--Elevation of land-surface datum is 380 ft. Measuring point is top of 10-in. casing, 380.84 ft above mean sea level.

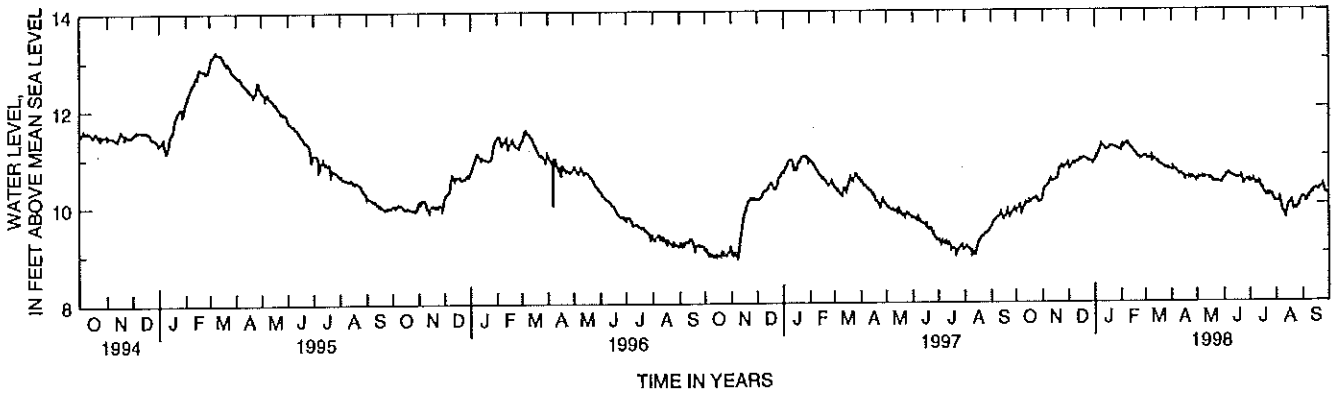
PERIOD OF RECORD.--
Water level: occasional measurements, August 1983 to May 1986. Water-level recorder, June 1986 to current year.
Water quality: 1982, 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.20 ft above mean sea level, December 14, 1989; lowest measured, e8.77 ft above mean sea level, November 5, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.86	10.21	e10.79	e10.93	11.20	10.98	10.71	10.52	10.53	10.50	10.05	10.13
2	9.89	10.31	e10.76	11.00	11.23	10.99	10.75	10.51	10.54	10.46	10.04	10.12
3	9.93	10.35	10.79	10.98	11.18	10.95	10.71	10.55	10.60	10.45	10.06	10.10
4	9.97	10.36	10.80	11.04	11.19	10.96	10.73	10.53	10.60	10.46	10.05	10.05
5	9.99	10.36	10.85	11.06	11.24	10.94	10.71	10.54	10.62	10.50	10.11	10.05
6	9.91	10.39	10.86	11.12	11.25	10.94	10.71	10.56	10.63	10.46	10.06	10.13
7	9.84	10.40	10.87	11.17	11.26	10.94	10.68	10.57	10.61	10.46	9.94	10.16
8	9.88	10.44	10.84	11.23	11.23	10.98	10.66	10.54	10.60	10.41	9.87	10.14
9	9.94	10.51	e10.86	11.21	11.25	10.90	10.64	10.56	10.58	10.41	9.84	10.20
10	9.97	10.53	e10.87	11.20	11.21	10.92	10.61	10.54	10.58	10.43	9.81	10.20
11	10.01	10.51	10.89	11.19	11.19	10.94	10.63	10.56	10.57	10.41	9.76	10.23
12	10.05	10.49	10.88	11.17	11.18	10.92	10.63	10.56	10.55	10.46	9.74	10.22
13	10.03	10.50	10.89	11.12	11.17	10.89	10.62	10.56	10.55	10.45	9.83	10.28
14	10.03	10.50	10.94	11.14	11.13	10.87	10.59	10.55	10.55	10.36	9.92	10.29
15	10.03	10.51	10.93	11.14	11.11	10.87	10.59	10.52	10.54	10.32	9.99	10.30
16	10.09	10.53	10.92	11.16	11.08	10.88	10.56	10.53	10.53	10.33	10.00	10.31
17	10.05	10.52	10.95	11.15	11.05	10.83	10.52	10.54	10.54	10.26	10.02	10.30
18	10.06	10.54	10.96	11.20	11.05	10.83	10.55	10.51	10.53	10.23	10.04	10.28
19	10.10	10.65	10.95	11.20	11.01	10.82	10.56	10.47	10.54	10.21	10.06	10.29
20	10.12	10.75	10.95	11.19	10.99	10.80	10.56	10.49	10.54	10.18	10.00	10.32
21	10.12	10.76	10.93	11.20	10.97	10.80	10.53	10.46	10.58	10.20	9.89	10.33
22	10.11	10.76	10.93	11.19	10.98	10.78	10.57	10.47	10.55	10.21	9.91	10.34
23	10.12	10.80	10.92	11.18	10.95	10.77	10.55	10.46	10.42	10.16	9.89	10.36
24	10.14	10.78	10.90	11.17	10.96	10.74	10.53	10.47	10.41	10.16	9.92	10.39
25	10.10	10.76	10.91	11.17	10.95	10.76	10.57	10.45	10.45	10.21	9.90	10.34
26	10.11	10.80	10.90	11.16	10.97	10.76	10.56	10.46	10.46	10.20	9.94	10.23
27	10.06	10.79	10.90	11.15	10.98	10.74	10.54	10.46	10.50	10.19	9.94	10.24
28	10.06	10.80	10.87	11.16	10.99	10.72	10.52	10.44	10.50	10.15	10.01	10.21
29	10.07	e10.84	10.85	11.14	---	10.74	10.52	10.44	10.50	10.08	10.06	10.20
30	10.08	e10.86	10.86	11.13	---	10.71	10.49	10.47	10.46	10.06	10.10	10.22
31	10.13	---	e10.90	11.12	---	10.71	---	10.51	---	10.07	10.11	---
MEAN	10.03	10.58	10.88	11.14	11.11	10.85	10.60	10.51	10.54	10.30	9.96	10.23
MAX	10.14	10.86	10.96	11.23	11.26	10.99	10.75	10.57	10.63	10.50	10.11	10.39
MIN	9.84	10.21	10.76	10.93	10.95	10.71	10.49	10.44	10.41	10.06	9.74	10.05

e Estimated



GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI--Continued

205437156310501. Local number, 6-5431-01.

LOCATION.--Lat 20°54'37", long 156°31'05", Hydrologic Unit 20020000, 0.5 mi southwest of Waiehu Village, and 1.4 mi southwest of intersection of Malaihi Road and Kahekili Highway. Owner: Wailuku Sugar Co.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 555 ft, 1.5-in. PVC casing, cased to 515 ft, perforated from 515 to 555 ft.

DATUM.--Elevation of land-surface datum is 493 ft. Measuring point is top of 1.5-in. PVC casing, 492.51 ft above mean sea level.

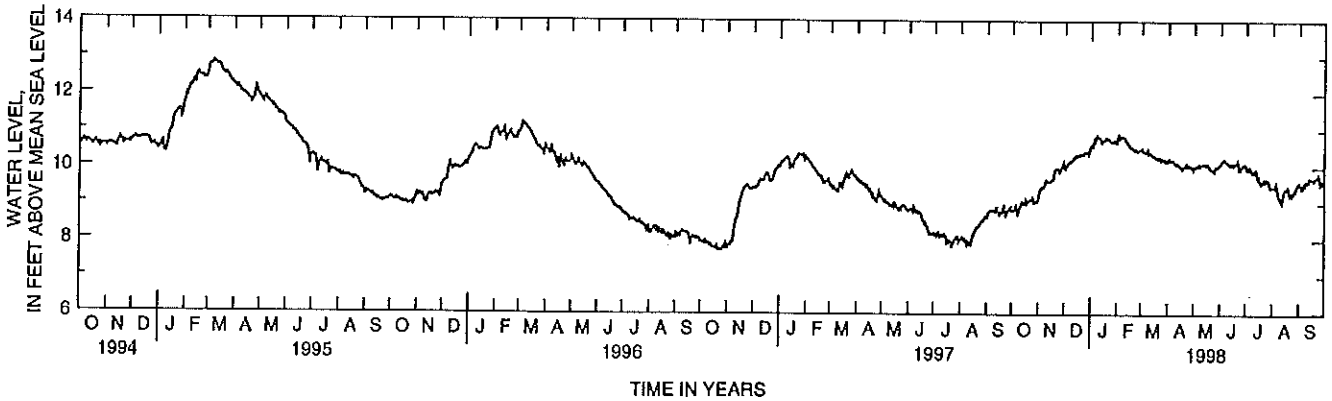
PERIOD OF RECORD.--Water-level recorder, August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.52 ft above mean sea level, January 2, 1983; lowest measured, 7.58 ft above mean sea level, October 25, 31, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.83	9.27	10.01	10.61	10.84	10.49	10.21	10.02	10.12	10.06	9.47	9.58
2	8.83	9.41	9.99	10.62	10.88	10.52	10.24	10.02	10.13	9.97	9.47	9.56
3	8.84	9.42	10.06	10.58	10.80	10.47	10.20	10.05	10.20	9.95	9.49	9.50
4	8.90	9.46	10.06	10.65	10.80	10.47	10.21	10.03	10.20	9.98	9.47	9.45
5	8.94	9.45	10.13	10.79	10.86	10.44	10.21	10.04	10.23	10.02	9.56	9.46
6	8.81	9.46	10.14	10.74	10.86	10.44	10.22	10.07	10.22	9.95	9.47	9.55
7	8.70	9.47	10.17	10.80	10.86	10.43	10.19	10.09	10.18	9.96	9.30	9.58
8	8.81	9.56	10.15	10.87	10.83	10.48	10.16	10.06	10.16	9.88	9.23	9.54
9	8.90	9.66	10.18	10.84	10.83	10.39	10.13	10.09	10.15	9.89	9.19	9.63
10	8.95	9.66	10.21	10.82	10.76	10.41	10.10	10.09	10.13	9.92	9.15	9.61
11	9.01	9.65	10.26	10.82	10.75	10.42	10.12	10.10	10.12	9.89	9.10	9.63
12	9.06	9.61	10.25	10.76	10.70	10.39	10.12	10.10	10.09	9.95	9.06	9.62
13	9.01	9.61	10.28	10.69	10.68	10.35	10.08	10.11	10.11	9.94	9.19	9.71
14	9.02	9.62	10.33	10.73	10.64	10.33	10.05	10.10	10.12	9.78	9.31	9.70
15	9.01	9.63	10.31	10.74	10.60	10.34	10.04	10.08	10.10	9.72	9.39	9.71
16	9.10	9.66	10.32	10.78	10.58	10.34	10.02	10.09	10.08	9.75	9.41	9.71
17	9.03	9.67	10.35	10.76	10.56	10.28	9.99	10.10	10.12	9.64	9.43	9.70
18	9.06	9.69	10.36	10.81	10.56	10.29	10.01	10.06	10.11	9.61	9.43	9.67
19	9.09	9.87	10.34	10.82	10.52	10.28	10.04	10.02	10.12	9.58	9.46	9.69
20	9.11	9.95	10.38	10.78	10.51	10.26	10.05	10.02	10.12	9.60	9.36	9.72
21	9.10	9.97	10.38	10.79	10.49	10.27	10.04	9.97	10.18	9.66	9.26	9.73
22	9.12	9.96	10.39	10.78	10.51	10.25	10.10	9.97	10.11	9.68	9.28	9.74
23	9.12	9.98	10.37	10.75	e10.48	10.27	10.06	9.95	9.96	9.60	9.25	9.74
24	9.16	9.96	10.38	10.73	e10.48	10.22	10.04	9.97	9.96	9.61	9.31	9.79
25	9.08	9.90	10.42	10.73	10.47	10.25	10.07	9.93	10.02	9.68	9.29	9.72
26	9.12	9.96	10.41	10.71	10.49	10.23	10.06	e10.03	10.03	9.66	9.35	9.57
27	9.05	9.96	10.41	10.71	10.50	10.23	10.04	e10.03	10.08	9.65	9.35	9.61
28	9.07	10.01	10.43	10.75	10.51	10.19	10.01	e10.02	10.08	9.56	9.44	9.58
29	9.08	10.08	10.38	10.71	---	10.23	10.02	e10.05	10.09	9.48	9.49	9.57
30	9.08	10.14	10.45	10.71	---	10.18	9.97	10.05	10.03	9.47	9.55	9.68
31	9.16	---	10.58	10.70	---	10.17	---	10.10	---	9.48	9.54	---
MEAN	9.00	9.72	10.29	10.74	10.66	10.33	10.09	10.05	10.11	9.76	9.36	9.63
MAX	9.16	10.14	10.58	10.87	10.88	10.52	10.24	10.11	10.23	10.06	9.56	9.79
MIN	8.70	9.27	9.99	10.58	10.47	10.17	9.97	9.93	9.96	9.47	9.06	9.45

e Estimated



205617156311101. Local number, 6-5631-01.

LOCATION.--Lat 20°56′17″, long 156°31′11″, Hydrologic Unit 20020000, 2,000 ft southwest of Waihee Farm, and 1.3 mi northwest of Waiehu Golf Course. Owner: Wailuku Sugar Co.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 300 ft, 1.5-in. PVC casing, cased to 260 ft, perforated from 260 to 300 ft.

DATUM.--Elevation of land-surface datum is 248 ft. Measuring point is top of 1.5-in. PVC pipe, 248.05 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, August 1982 to September 1984. Occasional measurements, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.83 ft above mean sea level, December 6, 1982; lowest measured, 12.24 ft above mean sea level, August 6, 1997.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	12.55	JAN 5	12.98	APR 1	12.72	JUL 2	12.60	SEP 29	12.65
NOV 25	12.85	FEB 23	12.88	MAY 26	12.53	AUG 24	12.49		

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI--Continued

205651156313201. Local number, 6-5631-02.

LOCATION.--Lat 20°56′51″, long 156°31′32″, Hydrologic Unit 20020000, 0.9 mi northwest of Waihee School, and 0.9 mi upstream from mouth of Waihee river. Owner: Hawaiian Investments.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 387 ft, 16-in. casing diameter, cased to 290 ft, perforated from 290 to 310 ft.

DATUM.--Elevation of land-surface datum is 281 ft. Measuring point is top of 16-in. casing, 285.23 ft above mean sea level (revised November 1997).

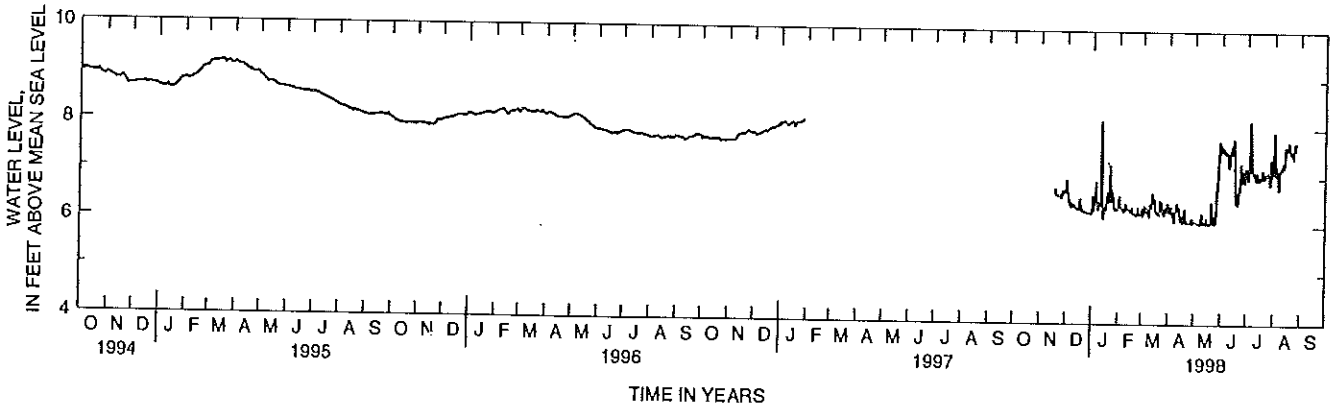
PERIOD OF RECORD.--Water-level recorder, April 1988 to January 29, 1997. Recorder removed due to installation of pump in the well. Water-level recorder reinstalled November 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.05 ft above mean sea level, October 22, November 2, 10, 11, 1989; lowest water level measured, 7.59 ft above mean sea level, November 8, 9, 1996. Lowest water level measured after pumping resumed, 5.50 ft above mean sea level, June 4, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	6.70	6.28	6.51	6.38	6.37	6.10	7.54	7.04	7.11	---
2	---	---	6.95	6.62	6.62	6.25	6.28	6.10	7.65	7.20	7.94	---
3	---	---	6.72	6.32	6.40	6.28	6.36	6.09	7.63	6.96	7.05	---
4	---	---	6.65	6.56	6.39	6.37	6.42	6.08	7.55	7.05	7.15	---
5	---	---	6.48	6.61	6.36	6.33	6.27	6.07	7.57	8.17	7.19	---
6	---	---	6.43	6.91	6.36	6.39	6.28	6.07	7.52	7.82	7.09	---
7	---	---	6.41	6.46	6.33	6.29	6.12	6.06	7.54	7.19	6.77	---
8	---	---	6.49	6.34	6.37	6.26	6.11	6.06	7.54	7.13	7.13	---
9	---	---	6.41	6.50	6.47	6.24	6.32	6.18	7.48	7.05	7.15	---
10	---	---	6.41	6.43	6.36	6.44	6.43	6.27	7.23	7.12	7.23	---
11	---	---	6.43	6.43	6.38	6.45	6.48	6.07	7.29	7.03	7.18	---
12	---	---	e6.40	8.16	6.36	6.41	6.33	6.08	7.58	6.95	7.31	---
13	---	---	6.38	e6.50	6.35	6.68	6.39	6.09	7.49	7.12	7.21	---
14	---	---	6.36	e6.16	6.34	6.54	6.16	6.07	7.69	7.04	7.28	---
15	---	---	e6.36	6.37	6.31	6.56	6.11	6.18	7.57	6.95	7.65	---
16	---	---	6.36	6.37	6.30	6.55	6.23	6.07	7.80	7.04	7.59	---
17	---	---	6.41	6.36	6.39	6.31	6.09	6.07	7.22	6.99	7.62	---
18	---	6.67	6.56	6.62	6.28	6.29	6.09	6.06	6.51	6.99	7.60	---
19	---	6.77	6.33	6.70	6.27	6.27	6.29	6.07	6.51	7.17	7.71	---
20	---	6.64	6.37	6.53	6.26	6.27	6.36	6.07	6.48	7.06	7.70	---
21	---	6.63	6.31	6.49	6.24	6.26	6.10	6.51	6.50	6.99	7.53	---
22	---	6.63	6.31	7.25	6.24	6.53	6.09	6.20	6.85	7.07	7.52	---
23	---	6.63	6.30	6.49	6.24	6.45	6.08	6.08	6.73	7.04	7.50	---
24	---	6.63	6.30	6.72	6.39	6.50	6.08	6.07	7.30	7.06	7.47	---
25	---	6.64	6.29	6.68	6.25	6.26	6.08	6.23	7.08	7.10	7.71	---
26	---	e6.57	6.28	6.59	6.24	6.30	6.09	6.07	6.92	7.04	7.57	---
27	---	6.66	6.28	6.36	6.25	6.23	6.09	6.75	7.11	7.03	7.73	---
28	---	6.74	6.28	6.35	6.28	6.40	6.17	6.76	7.15	6.86	---	---
29	---	6.68	6.28	6.36	---	6.31	6.09	7.28	6.91	7.39	---	---
30	---	6.69	6.27	6.36	---	6.31	6.10	7.75	7.21	7.02	---	6.70
31	---	---	6.27	6.36	---	6.48	---	7.53	---	7.10	---	---
MEAN	---	---	6.41	6.56	6.34	6.37	6.22	6.29	7.24	7.12	---	---
MAX	---	---	6.95	8.16	6.62	6.68	6.48	7.75	7.80	8.17	---	---
MIN	---	---	6.27	6.16	6.24	6.23	6.08	6.06	6.48	6.86	---	---

e Estimated



205856156400101. Local number, 6-5840-01.

LOCATION.--Lat 20°58′56″, long 156°40′01″, Hydrologic Unit 20020000, on pineapple plantation road 0.9 mi east of Kahana, and 1.5 mi southwest of Honokahua. Owner: State of Hawaii.

AQUIFER.--Honolua Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 274 ft, 8-in. casing diameter, cased to 264 ft, perforated from 264 to 274 ft. Hole was drilled to depth of 284 ft, but plugged back 10 ft with cement.

DATUM.--Elevation of land-surface datum is 257 ft. Measuring point is top of 9-in. casing, 257.45 ft above mean sea level. Levels of August 11, 1993.

REMARKS.--Water-quality records for 1964 and 1980 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, March 1972 to July 1975. Water-level recorder, August 1975 to June 25, 1993. Occasional measurements, July 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.68 ft above mean sea level, September 20, 1981; lowest, 2.40 ft above mean sea level May 4, 5, 1985.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	3.20	JAN 20	3.07	FEB 25	3.08	MAY 5	2.80	JUN 11	2.50	AUG 20	2.79

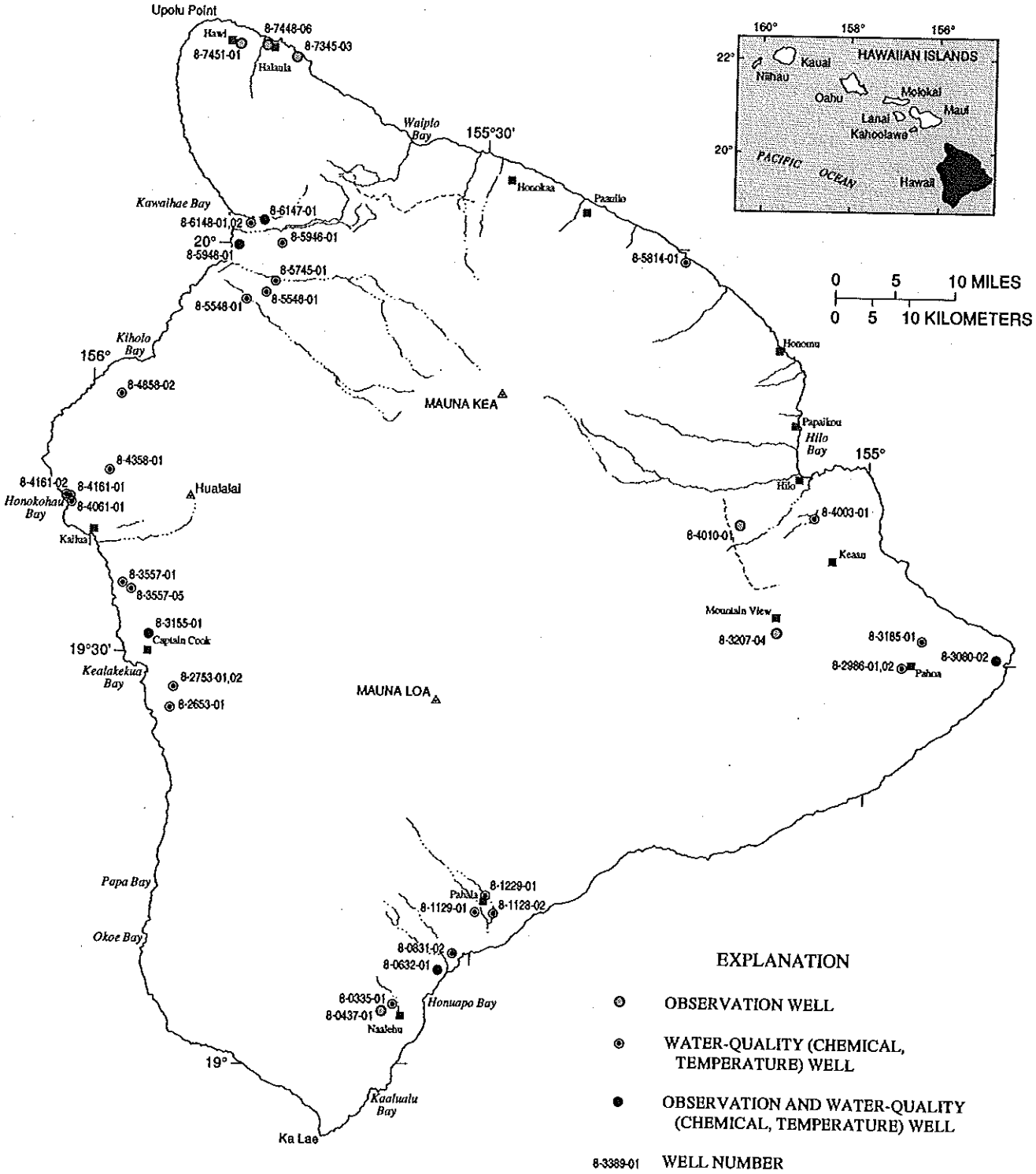


Figure 20. Locations of observation wells and ground-water quality sampling wells on Hawaii.

190423155371501. Local number, 8-0437-01.

LOCATION.--Lat 19°04′23″, long 155°37′15″, Hydrologic Unit 20010000, 2,500 ft northwest of Waiohinu. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 972 ft, 4-in. casing diameter, cased to 240 ft, screened from 240 to 972 ft.

DATUM.--Elevation of land-surface datum is 1,299 ft. Measuring point is top of 4-in. casing, 1,299.83 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, September 1995, September 1997 to current year.
Water quality: October 1994.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1,014.57 ft above mean sea level, September 23, 1997; lowest measured, 1,013.05 ft above mean sea level, September 15, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 4	1014.09	MAY 26	1013.60	SEP 15	1013.05
MAR 19	1013.90	JUL 15	1013.35		

190602155325901. Local number, 8-0632-01.

LOCATION.--Lat 19°06′02″, long 155°32′59″, Hydrologic Unit 20010000, 0.9 mi north of Whittington Park, and 3.3 mi northeast of Naalehu. Owner: Kau Agribusiness (formerly Kau Sugar Company).

AQUIFER.--Ninole Basalt, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 140 ft, 14-in. casing diameter, cased to 105 ft, perforated from 105 to 125 ft.

DATUM.--Elevation of land-surface datum is 102 ft. Measuring point is 0.38 ft above 1-in. hole in pump base, 103.64 ft above mean sea level.

REMARKS.--Water-quality records for 1972 and 1973 are available in files of the district office.

PERIOD OF RECORD.--
Water level: occasional measurements, April 1972 to current year.
Water quality: occasional measurements, 1994-97.

REVISED RECORDS.--WDR HI-91-1: 1984-90 (The units of the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.39 ft above mean sea level, October 19, 1978; lowest measured, 0.15 ft above mean sea level, May 26, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	1.41	MAR 19	1.12	JUL 15	1.21
FEB 4	1.78	MAY 26	0.15	SEP 15	1.83

193017154502101. Local number, 8-3080-02.

LOCATION.--Lat 19°30′17″, long 154°50′21″, Hydrologic Unit 20010000, 0.5 mi south of intersection of Highway 132 and Highway 137 near Pahoa. Owner: County of Hawaii.

AQUIFER.--Puna Basalt, Holocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, depth 46 ft, 66-in. casing diameter, with two horizontal infiltration tunnels 2 x 50 ft extending in opposite directions from 3 ft above bottom of well.

DATUM.--Elevation of land-surface datum is 39 ft. Measuring point is top of steel manhole cover at 1-in. hole, 39.50 ft above mean sea level.

REMARKS.--Water from this well is used for public supply and at times, water level is affected by pumping.

PERIOD OF RECORD.--
Water level: occasional measurements, March 1972 to current year.
Water quality: occasional measurements, 1972-81, 1983-97.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.99 ft above mean sea level, May 5, 1997; lowest measured, 1.18 ft above mean sea level, June 3, 1985.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	4.85	MAR 18	4.45	JUL 13	4.42
FEB 9	4.64	MAY 27	4.20	SEP 14	4.59

193117155550801. Local number, 8-3155-01.

LOCATION.--Lat 19°31′17″, long 155°55′08″, Hydrologic Unit 20010000, 0.3 mi east of Kealakekua Post Office and 0.6 mi north of Konawaena High School. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,510 ft, 4-in. casing diameter, cased to 1,500 ft perforated from 1,250 to 1,500 ft.

DATUM.--Elevation of land-surface datum is 1,745 ft. Measuring point is top of aluminum cap on 4-in. casing, 1,745.70 ft above mean sea level.

REMARKS.--Water level may be affected by pumping well 50 ft away.

PERIOD OF RECORD.--Water level: occasional measurements.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 469.06 ft above mean sea level, December 18, 1997; lowest measured, 468.17 ft above mean sea level, May 29, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 18	469.06	MAR 24	468.38	JUL 30	a--
FEB 6	468.55	MAY 29	468.17	SEP 16	a--

a Pump from nearby well was removed and well casing is covering this well hole

193251155072101. Local number, 8-3207-04.

LOCATION.--Lat 19°32′51″, long 155°07′21″, Hydrologic Unit 20010000, 1.4 mi southwest of Mountain View. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,143 ft, 4-in. casing and 8-in. casing diameter, from 0 to 75 ft, cased to 660 ft slotted from 660 to 1,120 ft, solid from 1,120 to 1,143 ft. Hole caved from 1,143 to 1,155 ft; hole grouted to 95 ft.

DATUM.--Elevation of land-surface datum is 1,687 ft. Measuring point is top of casing, 1,687.84 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, March 1995, December 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1,010.84 ft above mean sea level, March 27, 1995; lowest measured, 982.87 ft above mean sea level, May 26, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	992.09	MAR 19	988.16	JUL 14	988.48
FEB 9	990.58	MAY 26	982.87	SEP 15	990.02

194035155102201. Local number, 8-4010-01.

LOCATION.--Lat 19°40′35″, long 155°10′22″, Hydrologic Unit 20010000, 2 mi west of Kaumana at western end of Kaumana Estates subdivision. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,375 ft, 4-in. casing diameter, cased to 732 ft, screened from 732 to 1,375 ft.

DATUM.--Elevation of land-surface datum is 1,796 ft. Measuring point is top of 4-in. casing, 1,796.29 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, February 1995, January 1998 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 969.58 ft above mean sea level, January 6, 1998; lowest measured, 964.13 ft above mean sea level, September 14, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 6	969.58	MAR 18	968.85	JUL 13	965.08
FEB 9	969.14	MAY 27	966.57	SEP 14	964.13

194945155534401. Local number, 8-4953-01.

LOCATION.--Lat 19°49′45″, long 155°53′44″, Hydrologic Unit 20010000, 2.7 mi inland from Kiholo Bay. Owner: State of Hawaii.

AQUIFER.--Hualalai Volcanics, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 971 ft, 12-in. casing diameter, cased to 926 ft, screened from 926 to 966 ft.

DATUM.--Elevation of land-surface datum is 931 ft. Measuring point is top of 7 1/4 in. (O.D.) casing, 932.48 ft above mean sea level.

REMARKS.--State exploratory well drilling program.

PERIOD OF RECORD.--
Water level: occasional measurements, June 1972 to current year.
Water quality: 1972.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.85 ft above mean sea level, June 6, 1972 (data from Hawaii State Department of Land and Natural Resources, Circular C63, 1973); lowest measured, 1.94 ft above mean sea level, May 29, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 6	2.58	MAR 24	2.25	JUL 30	2.34
FEB 5	2.45	MAY 29	1.94		

195947155485801. Local number, 8-5948-01.

LOCATION.--Lat 19°59′47″, long 155°48′58″, Hydrologic Unit 20010000, 0.7 mi east of Hapuna Beach Park, and 3.1 mi southeast of Kawaihae. Owner: State of Hawaii.

AQUIFER.--Hamakua Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 268 ft, 10-in. casing diameter, cased to 246 ft, screened from 246 to 266 ft.

DATUM.--Elevation of land-surface datum is 244 ft. Measuring point is hole in pump base, 246.62 ft above mean sea level.

REMARKS.--Water from this well is used for irrigation.

PERIOD OF RECORD.--
Water level: occasional measurements, April 1970, March 1973 to current year.
Water quality: occasional measurements, 1970, 1973 to current year.

REVISED RECORDS.--WDR HI-91-1: 1976-80 (water-level data), 1976-90 (extremes for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.83 ft above mean sea level, August 29, 1994; lowest measured, 1.38 ft above mean sea level, September 28, 1979.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 22	3.49	MAR 23	3.10
FEB 10	3.17	MAY 28	2.72

200132155471101. Local number, 8-6147-01.

LOCATION.--Lat 20°01′32″, long 155°47′11″, Hydrologic Unit 20010000, on Highway 26, 3.1 mi east of Kawaihae, and 2.8 mi northeast of Hapuna Beach Park. Owner: State of Hawaii.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,008 ft, 8-in. casing diameter, cased to 997 ft, perforated from 997 to S1,008 ft. Hole was drilled to 1,040 ft, but was finally plugged back to 1,008 ft.

DATUM.--Elevation of land-surface datum is 982 ft. Measuring point is top of pipe coupling on casing cover 983.08 ft, revised, November 18, 1986, above mean sea level.

REMARKS.--Water-quality records for 1963-64 are available in files of district office.

PERIOD OF RECORD.--
Water level: occasional measurements, June to July 1963, June 1973 to current year.
Water quality: occasional measurements, 1994-97.

REVISED RECORDS.--WRD HI-91-1: 1975-90 (Station ID number).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.23 ft above mean sea level, May 1, 1987; lowest measured, 4.66 ft above mean sea level, May 3, 1994.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 19	5.66	MAR 23	5.30	JUL 29	5.43
FEB 6	5.57	MAY 28	5.14	SEP 17	5.55

201307155452001. Local number, 8-7345-03.

LOCATION.--Lat 20°13′07″, long 155°45′20″, Hydrologic Unit 20010000. Owner: U.S. Geological Survey.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 495 ft, 8-in. casing diameter, cased to 440 ft, open hole 440 to 495 ft.

DATUM.--Elevation of land-surface datum is 396 ft. Measuring point is top of casing, 395.87 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, April 1990 to September 1995, December 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.75 ft above mean sea level, April 25, 1990; lowest measured, 8.82 ft above mean sea level, July 1, 1992.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 22	9.30	FEB 5	9.20

201429155480201. Local number, 8-7448-06.

LOCATION.--Lat 20°14′29″, long 155°48′02″, Hydrologic Unit 20010000. Owner: U.S. Geological Survey.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 440 ft, 8-in. casing diameter, cased to 123 ft, open hole 123 to 440 ft.

DATUM.--Elevation of land-surface datum is 411 ft. Measuring point is top of casing, 411.62 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, May 1990 to January 1991, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.47 ft above mean sea level, September 17, 1998; lowest measured, 6.85 ft above mean sea level, March 23, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 23	6.85	JUL 29	7.72
MAY 28	7.62	SEP 17	8.47

201440155510601. Local number, 8-7451-01.

LOCATION.--Lat 20°14′45″, long 155°51′06″, Hydrologic Unit 20010000. Owner: U.S. Geological Survey.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 632 ft, 8-in. casing diameter, cased to 100 ft, open hole 100 to 632 ft.

DATUM.--Elevation of land-surface datum is 567 ft. Measuring point is top of casing, 566.65 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, May 1990 to September 1995, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.84 ft above mean sea level, July 15, 1993; lowest measured, 3.72 ft above mean sea level, July 15, 1993.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 22	4.13	MAR 20	3.83	JUL 29	4.04
FEB 5	4.03	MAY 28	3.63	SEP 17	4.12

HAWAII, ISLAND OF KAUAI

220136159205501 - 2-0120-01 W7 WAILUA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
15...	0800	800	25.5	134
DEC				
05...	0730	799	25.5	136
FEB 1998				
09...	0735	796	25.0	134
APR				
07...	0745	799	25.0	136
MAY				
27...	0730	807	25.0	139
JUL				
31...	0730	811	25.5	139

220354159205601 - 2-0320-01 W9-1A WAIL

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	a0945	--	--	--
DEC				
04...	a1455	--	--	--
FEB 1998				
06...	b0950	400	23.5	--
APR				
08...	a1445	--	--	--
JUN				
03...	1005	452	24.0	58.0
AUG				
05...	a0905	--	--	--

220354159205602 - 2-0320-03 W9-1B WAIL

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	0920	406	24.5	45.0
DEC				
04...	1400	401	24.0	45.0
FEB 1998				
06...	a0955	--	--	--
APR				
08...	1435	402	24.0	51.0
JUN				
03...	a0950	--	--	--
AUG				
05...	0940	418	24.0	54.0

220530159450401 - 2-0545-01 W59 KAULAU

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1245	752	24.0	133
DEC				
03...	1045	762	23.0	137
FEB 1998				
04...	1015	754	23.0	136
APR				
03...	1040	750	24.0	136
JUN				
01...	1345	747	26.0	136
AUG				
06...	1210	745	23.0	133

See footnotes at end of table

220621159232101 - 2-0623-04 KAPAA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1415	105	25.0	14.0
DEC				
04...	0945	108	23.5	13.0
FEB 1998				
06...	1045	108	23.5	13.0
APR				
08...	0930	108	24.0	14.0
JUN				
03...	1040	111	23.5	14.0
AUG				
05...	1015	112	23.5	14.0

220827159185401 - 2-0818-01 W90A ANAHO

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1020	241	24.5	21.0
DEC				
04...	a1030	--	--	--
FEB 1998				
06...	1125	244	24.0	22.0
APR				
08...	a1105	--	--	--
JUN				
03...	1130	234	24.0	21.0
AUG				
05...	a1100	--	--	--

220826159185401 - 2-0818-02 W90B ANAHO

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	a1020	--	--	--
DEC				
04...	1025	263	23.5	21.0
FEB 1998				
06...	a1130	--	--	--
APR				
08...	1110	241	23.5	20.0
JUN				
03...	a1140	--	--	--
AUG				
05...	1055	230	23.5	20.0

221038159203801 - 2-1020-03 W78 MOLOAA

DATE	TIME
OCT 1997	
09...	c1430
DEC	
01...	c1520
FEB 1998	
03...	c0840
APR	
02...	c1500
JUN	
03...	c1530
AUG	
03...	c1250

HAWAII, ISLAND OF KAUAI--Continued

221141159252501 - 2-1125-01 N1 KILAUEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1330	179	23.5	18.0
DEC				
04...	a1100	--	--	--
FEB 1998				
06...	a1205	--	--	--
APR				
08...	1130	161	26.5	16.0
JUN				
03...	a1455	--	--	--
AUG				
05...	1130	175	23.5	17.0

221141159252502 - 2-1125-02 N2 KILAUEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	a1330	--	--	--
DEC				
04...	1100	162	24.0	16.0
FEB 1998				
06...	1210	162	24.0	16.0
APR				
08...	a1135	--	--	--
JUN				
03...	1450	176	24.0	17.0
AUG				
05...	a1130	--	--	--

221150159264501 - 2-1126-01 KALIHIWAI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
09...	0740	185	22.0	20.0
DEC				
10...	a0800	--	--	--
FEB 1998				
03...	0745	162	21.5	18.0
APR				
03...	a0800	--	--	--
JUN				
04...	0800	161	22.0	18.0
AUG				
12...	a0755	--	--	--

221151159265001 - 2-1126-02 KALIHIWAI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
09...	a0745	--	--	--
DEC				
10...	0810	192	23.5	17.0
FEB 1998				
03...	a0750	--	--	--
APR				
03...	0820	189	23.5	17.0
JUN				
04...	a0810	--	--	--
AUG				
12...	0810	203	23.5	20.0

See footnotes at end of table

221201159293401 - 2-1229-03 W73 HANALE

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1100	265	24.5	37.0
DEC				
04...	1315	270	24.5	39.0
FEB 1998				
06...	1245	264	24.0	37.0
APR				
08...	1345	265	23.5	37.0
JUN				
03...	1420	265	24.0	38.0
AUG				
05...	1345	265	24.0	38.0

221247159324801 - 2-1232-01 W67 WAINIH

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1300	122	23.0	21.0
DEC				
04...	1240	141	22.5	21.0
FEB 1998				
06...	1340	128	22.5	21.0
APR				
08...	1325	143	22.5	22.0
JUN				
03...	1300	125	22.5	21.0
AUG				
05...	1325	145	22.5	22.0

221318159335901 - 2-1333-01 W66 HAENA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1215	203	22.0	21.0
DEC				
04...	c1220	--	--	--
FEB 1998				
06...	1255	205	21.5	21.0
APR				
08...	1240	203	22.0	22.0
JUN				
03...	1320	203	22.0	21.0
AUG				
05...	1230	204	22.0	21.0

215454159274201 - 2-5427-01 W16A KOLOA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	0800	231	23.0	26.0
DEC				
05...	a0800	--	--	--
FEB 1998				
05...	0830	232	22.0	27.0
APR				
07...	a0750	--	--	--
JUN				
02...	1025	236	23.0	27.0
AUG				
06...	a0820	--	--	--

215455159274201 - 2-5427-02 W16B KOLOA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	a0815	--	--	--
DEC				
05...	0825	225	22.5	25.0
FEB 1998				
05...	a0835	--	--	--
APR				
07...	0820	223	22.5	25.0
JUN				
02...	a1030	--	--	--
AUG				
06...	0820	226	23.0	--

215535159302601 - 2-5530-03 W22 LAWAI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1415	228	28.0	26.0
DEC				
03...	1150	220	21.5	26.0
FEB 1998				
05...	1400	221	24.5	26.0
APR				
03...	1130	220	23.0	26.0
JUN				
02...	1200	223	25.5	26.0
AUG				
06...	1410	228	28.0	25.0

215522159342601 - 2-5534-03 W25-1 HANA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	0940	433	24.0	37.0
DEC				
05...	0900	398	24.0	34.0
FEB 1998				
05...	1230	411	24.0	34.0
APR				
07...	1105	415	24.0	34.0
JUN				
02...	1135	418	24.0	34.0
AUG				
06...	1040	422	24.5	34.0

215803159401201 - 2-5840-01 W26 WAIMEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1040	1050	25.0	246
DEC				
05...	1100	1090	24.5	259
FEB 1998				
05...	1050	1100	24.5	260
APR				
07...	1030	1030	24.0	238
JUN				
02...	1015	901	24.0	199
AUG				
06...	1005	806	24.5	172

See footnotes at end of table

215857159430101 - 2-5843-01 S12 KEKAHA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1100	520	25.0	69.0
DEC				
05...	0930	530	24.0	69.0
FEB 1998				
05...	1000	484	24.0	59.0
APR				
07...	0915	464	24.0	55.0
JUN				
02...	0925	496	24.5	62.0
AUG				
06...	0920	479	24.5	61.0

215958159214301 - 2-5921-01 W10 HANAMA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	0850	504	25.5	51.0
DEC				
04...	0840	514	25.0	60.0
FEB 1998				
06...	0850	510	25.0	58.0
APR				
08...	0845	503	25.0	55.0
JUN				
03...	0830	509	25.5	60.0
AUG				
05...	0825	500	25.5	57.0

215901159235301 - 2-5923-01 KILOHANA A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	0815	243	25.0	20.0
DEC				
04...	0810	241	25.0	19.0
FEB 1998				
06...	0800	241	25.0	19.0
APR				
08...	0800	242	25.0	20.0
JUN				
03...	0805	247	25.0	21.0
AUG				
05...	0750	241	25.0	19.0

215901159235201 - 2-5923-07 KILOHANA I

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	0730	176	24.0	20.0
DEC				
04...	0800	192	23.0	21.0
FEB 1998				
06...	0815	186	23.0	20.0
APR				
08...	0745	190	23.0	21.0
JUN				
03...	0750	184	23.0	20.0
AUG				
05...	0735	184	23.0	21.0

215906159395601 - 2-5939-01 S9 WAIMEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1330	329	24.0	51.0
DEC				
05...	1130	370	24.0	50.0
FEB 1998				
05...	1145	376	24.0	53.0
APR				
07...	0950	363	24.0	52.0
JUN				
02...	0950	359	24.0	52.0
AUG				
06...	1330	359	24.5	50.0

211646157465201 - 3-1646-01 W1-B WAIAL

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
11...	c0910	--	--
MAR 1998			
19...	1315	860	22.0
MAY			
13...	1223	857	22.0
AUG			
11...	0901	900	22.0
SEP			
21...	1047	928	22.0

211832157515501 - 3-1851-19 W102 TUBEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
11...	1100	36300	24.0	13600
MAR 1998				
11...	1400	35500	24.0	13500
MAY				
13...	1400	34800	24.5	13200
AUG				
11...	0820	33600	24.5	12700
SEP				
23...	c1455	--	--	--

211832157515502 - 3-1851-19 W102 TUBEB

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
11...	1110	16900	24.0
MAR 1998			
11...	1410	16900	23.5
MAY			
13...	1345	16900	24.0
AUG			
11...	0817	17700	24.5
SEP			
23...	1452	17200	24.5

211828157515801 - 3-1851-22 W101 DWNTN

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
11...	1150	1650	24.5

212133158035501 - 3-2103-03 S14 MAKAKI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	0830	1090	23.0	227
MAR 1998				
13...	0850	1090	23.0	224
MAY				
28...	0845	1120	23.5	228
AUG				
06...	0850	1090	23.5	234
SEP				
25...	1212	1100	23.5	225

212106157533701 - 3-2153-02 W153 MOANA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
11...	1420	495	22.0	102
MAR 1998				
10...	1505	500	22.0	102
MAY				
14...	1500	492	22.5	103
AUG				
11...	1243	489	23.0	102
SEP				
21...	1416	494	22.0	102

212238157561102 - 3-2256-12 W187-C

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
28...	1520	838	24.5	211
DEC				
15...	1350	884	23.0	225
MAR 1998				
11...	1030	875	22.5	222
MAY				
14...	1410	865	23.0	222
AUG				
12...	1358	882	23.5	227
SEP				
23...	1400	861	23.5	220

212343158001001 - 3-2300-11 W238 WAIPH

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1120	620	22.0
MAR 1998			
10...	1330	612	22.0
MAY			
14...	0940	600	22.0
AUG			
11...	1443	590	22.0
SEP			
22...	1212	588	22.0

See footnotes at end of table

212340158001901 - 3-2300-18 W241 [d]

DATE	TIME	SAMPLE DEPTH DIS-TANCE BELOW MSL FEET (78890)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997			
18...	0930	400	191
18...	0950	500	571
18...	1015	550	1360
18...	1035	600	3090
18...	1100	650	5520
18...	1125	700	7480
18...	1155	750	9320
18...	1220	800	10700
18...	1250	850	12700
18...	1320	900	14200
18...	1350	950	15800
18...	1425	990	16400
MAR 1998			
25...	0930	400	168
25...	0945	500	564
25...	1005	550	1340
25...	1025	600	2980
25...	1050	650	5450
25...	1115	700	6870
25...	1140	750	9220
25...	1205	800	10600
25...	1235	850	12700
25...	1305	900	14400
25...	1335	950	15800
25...	1405	990	16400
UN			
12...	0920	400	167
12...	0935	500	553
12...	0955	550	1340
12...	1015	600	3010
12...	1040	650	5550
12...	1110	700	7540
12...	1145	750	9340
12...	1215	800	10800
12...	1245	850	12900
12...	1315	900	14400
12...	1345	950	16000
12...	1400	990	16600
SEP			
03...	0920	400	166
03...	0940	500	541
03...	1000	550	1330
03...	1020	600	2960
03...	1040	650	5470
03...	1105	700	7480
03...	1135	750	9330
03...	1200	800	10700
03...	1235	850	12900
03...	1310	900	14400
03...	1348	950	15800
03...	1420	990	16200

212358158010901 - 3-2301-09,10 W247-IJ

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	0925	560	22.0
MAR 1998			
11...	0840	589	22.0
MAY			
18...	0920	587	22.0
AUG			
11...	0901	663	22.0
SEP			
22...	0945	641	22.0

212332157582201 - 3-2358-02 W201

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1230	1380	21.0
MAR 1998			
10...	1430	1340	21.0
MAY			
14...	1340	1290	22.5
AUG			
12...	1118	1360	22.0
SEP			
22...	1255	1370	22.0

212342157584301 - 3-2358-22 W204-4

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1140	1770	20.5
MAR 1998			
10...	1345	1700	20.5
MAY			
14...	1002	1600	20.5
AUG			
11...	1415	1470	20.5
SEP			
22...	1228	1420	20.5

212343157584701 - 3-2358-29 W204-9

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1135	4880	20.5
MAR 1998			
10...	1340	4400	20.5
MAY			
14...	1000	4600	20.5
AUG			
11...	1414	3950	20.5
SEP			
22...	1225	3310	20.5

212336157591801 - 3-2359-05 W204-11

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1145	3320	22.0
MAR 1998			
10...	1355	3250	22.0
MAY			
14...	0955	3080	22.0
AUG			
11...	1424	2840	22.0
SEP			
22...	1235	2750	22.0

See footnotes at end of table

212422157485601 - 3-2448-01 W416

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	c1109	--	--	--
MAR 1998				
10...	c1515	--	--	--
JUN				
19...	1115	204	21.5	19.0
AUG				
24...	1429	207	20.5	20.0
SEP				
30...	c1500	--	--	--

212556157500301 - 3-2550-01 W407-16

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	1234	135	23.5	19.0
MAR 1998				
10...	1450	136	24.5	18.0
JUN				
19...	1132	137	23.5	19.0
AUG				
24...	1415	136	23.5	20.0
SEP				
30...	1442	137	24.0	20.0

212506157582301 - 3-2558-10 S16

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
DEC 1997			
15...	0850	253	21.0
MAR 1998			
10...	1410	255	21.5
MAY			
14...	0920	251	21.5
AUG			
11...	1402	251	23.0
SEP			
23...	1320	249	23.5

212617158033801 - 3-2603-01 W330-8

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	c0950	--	--	--
MAR 1998				
11...	c0910	--	--	--
MAY				
14...	1040	341	22.0	47.0
AUG				
12...	0942	338	22.0	46.0
SEP				
22...	1015	337	22.5	47.0

212656158071801 - 3-2607-01 W277-97

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
DEC 1997			
16...	0930	400	24.5
MAR 1998			
13...	1000	402	25.0
MAY			
28...	1005	352	25.0
AUG			
06...	1010	408	25.0
SEP			
25...	1040	411	25.0

212614157594301 - 3-2659-01 WAIPIO-MAUKA MONITOR WELL [d]

DATE	TIME	SAMPLE DEPTH DISTANCE BELOW MSL FEET (78890)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997			
16...	0945	400	26.0
16...	1015	500	44.0
16...	1050	600	77.0
16...	1125	700	563
16...	1155	800	1790
16...	1230	825	3130
16...	1309	850	4510
16...	1340	875	6980
17...	0930	900	8310
17...	1015	1000	13200
17...	1100	1100	15600
17...	1145	1200	17300
17...	1240	1300	17700
MAR 1998			
23...	0935	400	25.0
23...	1005	500	25.0
23...	1200	600	75.0
23...	1230	700	334
23...	1310	800	1820
23...	1335	825	3100
24...	0915	850	4520
24...	0955	875	7080
24...	1025	900	8260
24...	1100	1000	13000
24...	1140	1100	15300
24...	1230	1200	16500
24...	1320	1300	17000
UN			
09...	0940	400	29.0
09...	1015	500	26.0
09...	1045	600	78.0
09...	1115	700	400
09...	1150	800	1860
09...	1235	825	3080
09...	1315	850	4600
10...	0935	875	7140
10...	1015	900	8270
10...	1100	1000	13200
10...	1145	1100	15600
10...	1225	1200	16400
10...	1315	1300	17300
SEP			
01...	0945	400	29.0
01...	1015	500	27.0
01...	1055	600	78.0
01...	1125	700	563
01...	1210	800	1830
01...	1250	825	3030
01...	1320	850	4660
02...	0915	875	7110
02...	1010	900	8270
02...	1100	1000	13100
02...	1150	1100	15200
02...	1230	1200	16100
02...	1330	1300	16700

See footnotes at end of table

HAWAII, ISLAND OF OAHU--Continued

212803158000701 - 3-2800-01 W250-4A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1400	158	22.0	--
MAR 1998				
19...	c1210	--	--	--
MAY				
18...	c1025	--	--	--
JUL				
13...	c1425	--	--	--
SEP				
24...	0908	150	22.0	18.0

212828158092001 - 3-2809-06 TU WAIANAE

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
16...	1210	346	22.5
MAR 1998			
13...	1125	354	22.5
MAY			
28...	1125	390	22.5
AUG			
06...	1135	390	22.5
SEP			
25...	1324	401	22.5

212859158124301 - 3-2812-01 S1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
16...	1230	710	24.5
APR 1998			
28...	1405	682	25.5
MAY			
28...	1230	762	25.5
AUG			
06...	1245	760	25.5
SEP			
25...	1405	761	25.5

212927158014801 - 3-2901-07 S4

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
05...	0915	168	21.5	19.0
MAR 1998				
19...	0910	170	23.0	20.0
JUL				
13...	c0900	--	--	--

212945158014301 - 3-2901-09 W330-6

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1040	200	22.0	21.0
MAR 1998				
19...	c1145	--	--	--
MAY				
18...	1225	198	22.5	22.0
JUL				
13...	1305	198	22.0	22.0
SEP				
24...	0925	199	22.0	22.0

212945158014302 - 3-2901-12 WAHIAWA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1030	196	22.0	20.0

213224158135901 - 3-3213-06 W277-101

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	1300	883	23.0	197
MAR 1998				
13...	1210	880	23.0	197
MAY				
28...	1250	886	23.5	196
AUG				
06...	1325	869	23.5	197
SEP				
25...	1420	871	23.5	196

213327157524401 - 3-3352-01 W405

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1340	258	22.5	34.0
MAR 1998				
10...	1356	255	23.5	34.0
JUN				
17...	1412	259	22.5	34.0
AUG				
20...	1408	258	23.0	35.0
SEP				
30...	1405	258	23.0	35.0

See footnotes at end of table

213429158055501 - 3-3405-01 W323-1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1130	384	22.5
MAR 1998			
19...	1055	378	23.0
MAY			
18...	1200	371	23.0
JUL			
13...	a1400	--	--
SEP			
24...	1405	364	23.0

213427158055501 - 3-3405-02 W323-2

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	a1140	--	--
MAY 1998			
18...	a1200	--	--
JUL			
13...	1400	372	22.5
SEP			
24...	a1405	--	--

213411158074501 - 3-3407-25 W320

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1230	1590	22.5
MAR 1998			
19...	1030	1420	23.5
JUN			
05...	c0900	--	--
AUG			
04...	0905	1420	23.0
SEP			
30...	0940	1450	23.5

213444158075501 - 3-3407-30 W318-2

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	c1140	--	--	--
MAR 1998				
10...	1125	4600	24.0	1280
JUN				
03...	1420	5280	24.0	1420
AUG				
04...	c0915	--	--	--
SEP				
24...	c1312	--	--	--

213446158104901 - 3-3410-08 W286

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1310	690	22.0
MAR 1998			
10...	1035	700	22.0
JUN			
03...	1320	695	22.0
AUG			
04...	1015	695	22.0
SEP			
24...	1225	698	22.5

213512158061601 - 3-3506-03 TO 04 W329 A-B WSCO P8 A-C OAHU

DATE	TIME
DEC 1997	
18...	c1125
MAR 1998	
10...	c1015
JUN	
05...	c1115
SEP	
30...	c0955

213636158053701 - 3-3605-03 W334-C

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
18...	0940	1690	21.0
MAR 1998			
10...	0945	1690	21.0
JUN			
05...	1035	1660	21.0
JUL			
17...	1430	1650	21.0
SEP			
23...	0958	1640	21.0

213636158053702 - 3-3605-21 W334-U

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
18...	0955	1460	21.5
MAR 1998			
10...	1000	1460	21.5
JUN			
05...	1050	1440	21.5
JUL			
17...	1438	1430	21.5
SEP			
23...	1040	1420	21.5

See footnotes at end of table

213656157550401 - 3-3655-01 W394

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	c1305	--	--	--
MAR 1998				
10...	1327	245	22.0	32.0
JUN				
17...	1350	244	21.5	33.0
AUG				
20...	1044	242	21.5	33.0
SEP				
30...	1340	243	21.5	32.0

213902157561601 - 3-3956-04 W366

DATE	TIME
DEC 1997	
23...	c1200
MAR 1998	
10...	c1310
JUN	
17...	c1305
AUG	
20...	c1032
SEP	
30...	c1310

214157158000101 - 3-4100-01 W338

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1050	304	20.5	49.0
MAR 1998				
10...	c1028	--	--	--
JUN				
17...	c1125	--	--	--
AUG				
18...	1130	308	21.0	50.0
SEP				
30...	1035	312	21.0	50.0

214131158011601 - 3-4101-08 W337-6

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1200	229	21.0	33.0
MAR 1998				
10...	1138	228	20.5	33.0
JUN				
17...	c1056	--	--	--
AUG				
18...	1340	231	21.0	33.0
SEP				
30...	c1215	--	--	--

214233157583501 - 3-4258-04 W345

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1030	1270	23.5	436
MAR 1998				
10...	1000	1580	24.5	451
JUN				
17...	1155	1440	24.5	431
AUG				
18...	1030	1420	25.0	429
SEP				
30...	1000	1500	25.0	430

See footnotes at end of table

210425156483001 - 4-0448-02 S8

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
06...	1335	400	24.5	30.0
DEC				
11...	1020	412	23.5	31.0
FEB 1998				
05...	1130	380	24.5	26.0
APR				
22...	1340	353	25.0	24.0
JUN				
15...	1100	345	24.5	22.0
AUG				
10...	1225	346	24.5	24.0

210402156495801 - 4-0449-01 S6

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
06...	1400	326	21.0	60.0
DEC				
11...	1045	340	20.5	59.0
FEB 1998				
05...	1055	333	20.5	61.0
APR				
22...	1400	323	21.5	62.0
JUN				
15...	1120	331	21.0	63.0
AUG				
10...	1205	329	21.5	64.0

210414156565601 - 4-0456-04 KAWELA PLANTATION SH-5, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0915	77.0
DEC		
11...	1450	53.0
FEB 1998		
05...	0850	18.0
MAR		
03...	0950	39.0
APR		
01...	0830	78.0
MAY		
13...	0805	29.0
JUN		
03...	0955	21.0
JUL		
13...	1310	20.0
AUG		
10...	1330	23.0
SEP		
08...	0844	263

210429156565106 - 4-0456-06 KAWELA PLANTATION DW-3, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0855	93.0
DEC		
11...	1445	64.0
FEB 1998		
05...	0840	68.0
MAR		
03...	0825	74.0
APR		
01...	0820	75.0
MAY		
13...	0940	61.0
JUN		
03...	0945	61.0
JUL		
13...	1300	53.0
AUG		
10...	1320	62.0
SEP		
08...	0831	64.0

210419156562108 - 4-0456-08 KAWELA PLANTATION DW-1, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0830	489
DEC		
11...	1430	108
FEB 1998		
05...	0820	114
MAR		
03...	0850	474
APR		
01...	0755	477
MAY		
13...	0745	111
JUN		
03...	0925	482
JUL		
13...	1115	474
AUG		
10...	1300	472
SEP		
08...	0810	485

210426156563509 - 4-0456-09 KAWELA PLANTATION DW-2, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0845	153
DEC		
11...	1435	151
FEB 1998		
05...	0830	155
MAR		
03...	0840	160
APR		
01...	0805	164
MAY		
13...	0925	156
JUN		
03...	0935	154
JUL		
13...	1250	151
AUG		
10...	1310	151
SEP		
08...	0821	156

See footnotes at end of table

210419156570501 - 4-0457-01 S4

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
06...	1445	707	23.5	170
DEC				
11...	1115	565	23.5	124
FEB 1998				
05...	1250	669	23.5	155
APR				
22...	1440	682	23.5	165
JUN				
15...	1200	620	23.5	146
AUG				
10...	1435	560	23.5	127

210433156574201 - 4-0457-04 KAWELA PLANTATION AG-1, MOLOKAI [f]

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0930	330
DEC		
11...	1500	327
FEB 1998		
05...	0900	328
MAR		
03...	1005	333
APR		
01...	0855	331
MAY		
13...	0820	342
JUN		
03...	1010	340
JUL		
13...	1100	332
AUG		
10...	1240	329
SEP		
08...	0755	344

210605157012001 - 4-0601-01 W11

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
09...	1230	358	24.0	30.0
DEC				
11...	1215	244	24.0	21.0
FEB 1998				
05...	0955	295	24.0	21.0
APR				
22...	1535	246	24.0	18.0
JUN				
15...	1445	282	24.5	20.0
AUG				
10...	1115	295	24.5	24.0

210856157011201 - 4-0801-01 W16 [g]

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
06...	1130	100
DEC		
08...	1155	90.0
JAN 1998		
05...	1050	85.0
MAR		
02...	0900	90.0
APR		
06...	0800	90.0
MAY		
06...	0745	93.0
JUN		
01...	0945	135
03...	0800	91.0
JUL		
01...	0815	136
SEP		
16...	0945	108

210857156010701 - 4-0801-02 [g]

DATE	TIME	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997			
08...	0630	e354	72.0
DEC			
10...	0710	--	69.0
JAN 1998			
06...	1030	--	65.0
MAR			
02...	0905	--	70.0
APR			
06...	0805	--	70.0
MAY			
06...	0700	--	70.0
JUN			
01...	0935	--	78.0
05...	0700	--	70.0
JUL			
01...	0830	--	78.0
SEP			
17...	0615	--	72.0

210903157013001 - 4-0901-01 W17 [h]

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
01...	0915	50.0
NOV		
01...	0830	42.0
FEB 1998		
03...	0950	51.0
MAR		
01...	0930	42.0
APR		
01...	0935	43.0
JUN		
01...	0930	56.0
JUL		
01...	1000	51.0
AUG		
03...	0900	50.0
SEP		
01...	0845	51.0

See footnotes at end of table

203947156261201 - 6-3926-03 WAILEA 8

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
17...	c1250	--	--	--
DEC				
17...	1130	3240	19.0	799
FEB 1998				
13...	1245	3340	19.0	892
APR				
28...	1235	2420	19.0	635
AUG				
17...	c1215	--	--	--

204635156270101 - 6-4627-14 W226

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
17...	1045	1500	23.5	227
FEB 1998				
13...	1325	1490	23.5	222
APR				
28...	1015	1460	23.5	222
AUG				
17...	1100	1450	23.5	214

204845156255001 - 6-4825-01 S15

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
24...	1125	1220	23.5
JAN 1998			
16...	c1140	--	--
FEB			
13...	c1350	--	--
MAY			
08...	c1030	--	--
JUN			
24...	c1220	--	--
SEP			
04...	c1250	--	--

205014156212701 - 6-5021-01 PUKALANI [i]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
02...	1205	570
JAN 1998		
27...	1100	560
APR		
20...	1215	565
SEP		
23...	0745	570

205102156282501 - 6-5128-02 S16

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
24...	c1105	--	--
JAN 1998			
16...	c1125	--	--
FEB			
13...	1140	1270	23.5
MAY			
08...	c1015	--	--
JUN			
24...	c1245	--	--
SEP			
04...	c1230	--	--

205243156243201 - 6-5224-02 S22

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	1255	1350	23.5	274
JAN 1998				
16...	c1330	--	--	--
FEB				
13...	1420	1330	23.5	262
MAY				
08...	c1200	--	--	--
JUN				
24...	c1015	--	--	--
SEP				
04...	c1435	--	--	--

205329156305502 - 6-5330-09 W15A

DATE	TIME
OCT 1997	
24...	c1025
JAN 1998	
12...	c1345
FEB	
13...	c1100
MAY	
08...	c0945
JUN	
24...	c1305
SEP	
04...	c1015

205329156305501 - 6-5330-10 W15B

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	1030	718	22.0	154
JAN 1998				
12...	c1350	--	--	--
FEB				
13...	1105	672	22.0	141
MAY				
08...	c1040	--	--	--
JUN				
24...	1305	619	22.0	127
SEP				
04...	1015	571	22.0	113

See footnotes at end of table

205330156305401 - 6-5330-11 W15F

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	c1035	--	--	--
JAN 1998				
12...	c1340	--	--	--
FEB				
13...	1110	455	22.5	72.0
MAY				
08...	c1000	--	--	--
JUN				
23...	c1305	--	--	--
SEP				
04...	c1015	--	--	--

205322156394501 - 6-5339-01 W291

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	1345	525	21.5	69.0
JAN 1998				
20...	c1250	--	--	--
FEB				
25...	c1000	--	--	--
MAY				
04...	c1215	--	--	--
JUN				
11...	c0955	--	--	--
AUG				
20...	c0930	--	--	--

205320156394501 - 6-5339-02 W292

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CH) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	c1350	--	--	--
JAN 1998				
20...	c1255	--	--	--
FEB				
25...	c1005	--	--	--
MAY				
04...	1220	550	21.0	89.0
JUN				
11...	c0950	--	--	--
AUG				
20...	c0930	--	--	--

205343156401101 - 6-5340-01 S5

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	1300	1140	21.5	273
JAN 1998				
20...	1410	985	21.5	218
FEB				
25...	1025	1180	21.5	277
MAY				
05...	1050	846	21.0	180
JUN				
11...	1010	875	21.5	193
AUG				
20...	0955	968	21.5	217

See footnotes at end of table

205416156244301 - 6-5424-01 S24

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
24...	1240	1760	23.0
JAN 1998			
16...	c1320	--	--
FEB			
13...	c1435	--	--
MAY			
08...	c1145	--	--
JUN			
24...	c1025	--	--
SEP			
04...	c1430	--	--

205405156305401 - 6-5430-05 WAIEHU MONITOR WELL

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SAMPLE DEPTH DIS-TANCE BELOW MSL FEET (78890)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, DUCT-TOTAL (MG/L AS CL) (99905)
OCT 1997					
02...	0855	--	200	205	12.0
02...	0915	--	400	205	12.0
02...	0935	--	600	552	130
02...	0955	--	650	1850	524
02...	1015	--	675	3070	900
02...	1040	--	700	9160	2950
02...	1100	--	725	29600	11000
02...	1125	--	750	42800	15900
02...	1150	--	800	48600	18000
02...	1220	--	1000	50800	19100
JAN 1998					
06...	1005	22.5	200	203	11.0
06...	1021	22.0	400	429	95.0
06...	1040	22.0	600	543	128
06...	1107	21.5	650	1880	534
06...	1130	22.0	675	3400	991
06...	1155	22.0	700	9870	3280
06...	1220	22.0	725	32400	12100
06...	1246	22.0	750	43400	16200
06...	1313	22.0	800	48800	18100
06...	1347	22.0	1000	50600	19200
APR					
02...	1000	--	200	205	12.0
02...	1020	--	400	429	96.0
02...	1043	--	600	521	123
02...	1105	--	650	1950	568
02...	1240	--	675	3480	1040
02...	1305	--	700	10600	3480
02...	1335	--	725	32100	12000
02...	1400	--	750	43000	16000
02...	1430	--	800	47800	17600
02...	1500	--	1000	50100	18400
JUL					
01...	1020	23.0	200	203	12.0
01...	1035	22.5	400	399	85.0
01...	1100	22.5	600	527	125
01...	1120	22.5	650	2090	608
01...	1145	22.5	675	3810	1140
01...	1215	22.5	700	11800	3970
01...	1235	22.5	725	33300	12700
01...	1300	23.0	750	43300	16200
01...	1330	22.5	800	47600	17900
01...	1355	22.5	1000	50000	18800
SEP					
30...	0940	23.0	200	204	12.0
30...	0955	22.5	400	446	99.0
30...	1015	22.5	600	540	126
30...	1040	22.5	650	2270	646
30...	1105	22.5	675	4000	1180
30...	1130	22.5	700	13500	4580
30...	1155	23.0	725	34800	13100
30...	1220	22.5	750	43600	16200
30...	1255	23.0	800	47900	17600
30...	1325	23.0	1000	50000	18500

205511156222101 - 6-5522-01 S31

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	1225	1280	22.5	280
JAN 1998				
16...	c1310	--	--	--
FEB				
13...	1445	1200	22.5	255
MAY				
08...	c1145	--	--	--
JUN				
24...	c1035	--	--	--
SEP				
04...	c1415	--	--	--

205651156401001 - 6-5640-01 S36

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
20...	1200	1060	21.0
JAN 1998			
20...	c1400	--	--
FEB			
25...	c1055	--	--
MAY			
05...	c1115	--	--
JUN			
11...	c1035	--	--
AUG			
20...	1020	834	21.0

205837156384601 - 6-5838-01 NAPILI A

DATE	TIME
OCT 1997	
20...	c1110
JAN 1998	
20...	c1150
FEB	
25...	c1225
MAY	
05...	c1230
JUN	
11...	c1135
AUG	
20...	c1115

205838156383101 - 6-5838-02 NAPILI B

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	c1115	--	--	--
JAN 1998				
20...	1155	311	20.0	61.0
FEB				
25...	c1230	--	--	--
MAY				
05...	c1235	--	--	--
JUN				
11...	1145	305	20.0	61.0
AUG				
20...	c1125	--	--	--

205848156383601 - 6-5838-04 NAPILI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	1135	576	20.0	133
JAN 1998				
20...	1200	573	20.0	130
MAY				
05...	1255	462	20.0	104
AUG				
20...	1130	447	20.0	99.0

See footnotes at end of table

HAWAII, ISLAND OF HAWAII

190347155354301 - 8-0335-01 NAALEHU W1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	c1130	--	--	--
FEB 1998				
04...	1055	163	19.5	11.0
MAR				
19...	1025	160	19.5	11.0
MAY				
26...	c1045	--	--	--
JUL				
15...	c1220	--	--	--
SEP				
15...	c1053	--	--	--

190832155310901 - 8-0831-02 NINOLE A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	c1310	--	--	--
FEB 1998				
04...	1212	708	18.5	180
MAR				
19...	c1120	--	--	--
MAY				
26...	1130	725	18.5	175
JUL				
14...	c1330	--	--	--
SEP				
15...	c1126	--	--	--

191108155281701 - 8-1128-02 PALIMA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	1330	130	20.5	16.0
FEB 1998				
04...	1320	133	20.0	17.0
MAR				
19...	1145	133	20.0	17.0
MAY				
26...	1150	136	20.0	16.0
JUL				
14...	j1045	157	25.0	16.0
SEP				
15...	1232	143	20.0	19.0

191114155294801 - 8-1129-01

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	1410	92	19.5	5.00
FEB 1998				
04...	1345	89	19.0	4.00
MAR				
19...	1205	91	19.0	6.00
MAY				
26...	1325	95	19.0	6.00
JUL				
14...	1230	94	20.0	7.00
SEP				
15...	1255	95	18.5	7.00

191219155291601 - 8-1229-01 PAHALA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	c1500	--	--	--
FEB 1998				
04...	1415	96	18.0	5.00
MAR				
19...	1230	96	18.0	5.00
MAY				
26...	1250	100	18.0	6.00
JUL				
14...	1205	99	18.5	6.00
SEP				
15...	1315	99	18.0	7.00

192646155532001 - 8-2653-01 KEEI C

DATE	TIME
DEC 1997	
18...	c1445
FEB 1998	
06...	c0840
MAR	
24...	c0900
MAY	
29...	c0815
JUL	
30...	c0845
SEP	
16...	c1500

192738155534201 - 8-2753-01 W12-4

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	1430	744	20.0	181
FEB 1998				
06...	c0820	--	--	--
MAR				
24...	c0750	--	--	--
MAY				
29...	c0800	--	--	--
JUL				
30...	0820	650	20.0	148
SEP				
16...	c1445	--	--	--

192731155534101 - 8-2753-02 W12-8

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	c1440	--	--	--
FEB 1998				
06...	c0830	--	--	--
MAR				
24...	c0755	--	--	--
MAY				
29...	c0810	--	--	--
JUL				
30...	0830	1240	19.0	322
SEP				
16...	c1450	--	--	--

See footnotes at end of table

192924154564701 - 8-2986-01 W9-5B

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	c1320	--	--	--
FEB 1998				
09...	1200	127	23.5	7.00
MAR				
18...	c1205	--	--	--
MAY				
27...	c0935	--	--	--
JUL				
13...	1120	132	23.5	7.00
SEP				
14...	c1107	--	--	--

192923154564701 - 8-2986-02 W9-5A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	c1322	--	--	--
FEB 1998				
09...	1210	126	23.5	7.00
MAR				
18...	1215	126	23.5	7.00
MAY				
27...	c0940	--	--	--
JUL				
13...	1130	132	23.5	8.00
SEP				
14...	c1108	--	--	--

193113154555801 - 8-3185-01 W9-11 HAWN BEACHES

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1420	121	21.5	15.0
FEB 1998				
09...	1230	122	21.5	15.0
MAR				
18...	1100	122	21.5	15.0
MAY				
27...	1035	129	21.5	16.0
JUL				
13...	0945	130	21.5	16.0
SEP				
14...	1212	131	21.5	17.0

193510155570801 - 8-3557-01 W12-5

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1030	543	20.5	123
FEB 1998				
06...	1100	512	20.5	117
MAR				
24...	0930	525	20.5	122
MAY				
29...	0945	532	20.5	117
JUL				
30...	0930	384	20.5	76.0
SEP				
16...	1545	387	20.5	77.0

See footnotes at end of table

193502155572301 - 8-3557-05 KAH SHAFT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1010	1240	20.5	325
FEB 1998				
06...	1110	1050	20.0	271
MAR				
24...	0910	910	20.0	237
MAY				
29...	0930	1020	20.5	254
JUL				
30...	0950	1210	20.5	314
SEP				
16...	1600	1180	20.5	296

194037155035301 - 8-4003-01 W8-3

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1505	83	20.5	6.00
FEB 1998				
09...	1125	82	20.0	6.00
MAR				
18...	1330	80	20.5	6.00
MAY				
27...	0910	81	20.5	5.00
JUL				
13...	c1210	--	--	--
SEP				
14...	1330	84	20.5	7.00

194818155582301 - 8-4858-02 KONA VILLAGE

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	c1145	--	--	--
FEB 1998				
06...	c1215	--	--	--
MAR				
23...	c1520	--	--	--
MAY				
28...	1600	2500	21.0	555
JUL				
29...	1550	2540	21.0	579
SEP				
16...	c1335	--	--	--

195546155462001 - 8-5546-01 WAIKOLOA WATER WELL 2

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	c1330	--	--	--
FEB 1998				
06...	1345	564	28.5	94.0
MAR				
24...	1130	565	28.5	97.0
MAY				
29...	1400	592	28.5	95.0
JUL				
30...	1315	590	28.5	96.0
SEP				
16...	1150	625	28.5	105

195546155480301 - 8-5548-01 PARKER 1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1415	2380	28.5	619
FEB 1998				
06...	c1435	--	--	--
MAR				
24...	1240	2340	28.5	635
MAY				
29...	1345	2450	28.5	637
JUL				
30...	1330	2440	28.5	633
SEP				
16...	1110	2440	28.5	634

195724155455301 - 8-5745-01 PARKER 5

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1345	285	26.5	28.0
FEB 1998				
06...	c1405	--	--	--
MAR				
24...	1200	284	26.5	28.0
MAY				
29...	c1425	--	--	--
JUL				
30...	c1255	--	--	--
SEP				
16...	c1130	--	--	--

195857155142301 - 8-5814-01 LAUPAHOEHO

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
JAN 1998				
06...	c1435	--	--	--
FEB				
05...	c0900	--	--	--
MAR				
23...	c0930	--	--	--
MAY				
28...	0940	369	20.0	74.0
JUL				
29...	c0930	--	--	--
SEP				
16...	c0930	--	--	--

195929155462501 - 8-5946-01 LALAMILO A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1455	483	26.0	85.0
FEB 1998				
06...	1500	469	26.5	85.0
MAR				
23...	1422	489	26.0	92.0
MAY				
28...	c1515	--	--	--
JUL				
29...	c1505	--	--	--
SEP				
17...	c0845	--	--	--

195947155485801 - 8-5948-01 HAPUNA PRK

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
22...	1345	1880	26.0	508
FEB 1998				
10...	1050	1880	26.0	519
MAR				
23...	1330	1840	26.0	514
MAY				
28...	1430	1910	26.0	510
JUL				
29...	1430	1920	26.0	516
SEP				
17...	0930	1920	26.0	508

200122155480901 - 8-6148-01 W14

DEC 1997	
19...	c1520
FEB 1998	
06...	c1600
MAR	
23...	c1235
MAY	
28...	c1400
JUL	
29...	c1355
SEP	
17...	c1012

200121155480801 - 8-6148-02 W14B

FEB 1998	
06...	c1600
MAR	
23...	c1235
MAY	
28...	c1400
JUL	
29...	c1355
SEP	
17...	c1010

>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
a	Sampling alternated with a nearby well
b	Sample bottle broken; sample discarded
c	Unable to sample, pump off, locked, or inoperable
d	Sampled by Hawaii Commission on Water Resource Management
f	Sampled by Kawela Plantation Homeowners Association
g	Laboratory specific conductance
h	Sampled by Hawaii Department of Hawaiian Home Lands
i	Sampled by Kukui, Inc.
j	Sampled by Sport Shinko
k	Sampled secondary pipeline

HAWAII, ISLAND OF OAHU

203835156065001 - 6-3806-01 PUNAHOU SPRINGS

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
NOV 1997				
07...	1020	--	--	--
DEC				
16...	1020	675	20.0	157
FEB 1998				
18...	1000	--	--	--
MAY				
15...	1300	--	--	--
JUN				
10...	1400	--	--	--
SEP				
03...	1300	--	--	--

HAWAII, ISLAND OF MAUI

205030156154501 - LOWER KULA SP AT 2800 FT

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
FEB 1998		
06...	1030	7.00

205103156171501 - WAIOHIWI SPR AT 1160 FT

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
29...	1440	63	19.5	9.00

205201156171201 - AWALAU SPRING AT 1700 FT (LAT 20°52'01" LONG 156°17'12")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
NOV 1997			
18...	1140	81	18.5

205259156172501 - AWALAU SPRING AT 1420 FT (LAT 20°52'59" LONG 156°17'25")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
NOV 1997			
18...	1355	75	20.0

HAWAII, ISLAND OF MAUI--CONTINUED

205322156144201 - HOOLAWA SPRING AT 1200 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
FEB 1998				
05...	1130	75	20.0	15.0

205322156173501 - SANTOS SPRING AT 1180 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
NOV 1997				
18...	1325	129	21.0	18.0

205335156193001 - MALIKO SPRING AT 800 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
27...	1215	146	21.5	20.0

205352156173301 - AWALAU SPRING AT 940 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
NOV 1997			
18...	0930	92	20.0

205644156194901 - KANEMOEALA SPRING

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/ AS CL) (99905)
NOV 1997				
19...	1410	390	23.0	38.0

HAWAII, ISLAND OF MAUI--CONTINUED

204636156142401 - HOSMER GROVE SPRING

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
08...	1455	28	14.0	3.00

204833156172001 - WAIHOU SPRING

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
09...	1612	81	16.5	8.00

204938156131801 - WAIKAMOI SPR AT 3200 FT

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
09...	1320	37	18.0	6.00

204959156092301 - BANANA SPRING, NAHIKU HI (LAT 20°49'59" LONG 156°09'23")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
11...	1330	131	18.5	8.00

205115156084201 - OHIA SPR AT KEANAE, MAUI (LAT 20°51'15" LONG 156°08'42")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
11...	1715	114	18.5	6.00

205144156092001 - NUUAILUA ROADCUT SEEP HI (LAT 20°51'44" LONG 156°09'20")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
11...	1725	105	22.5	24.0

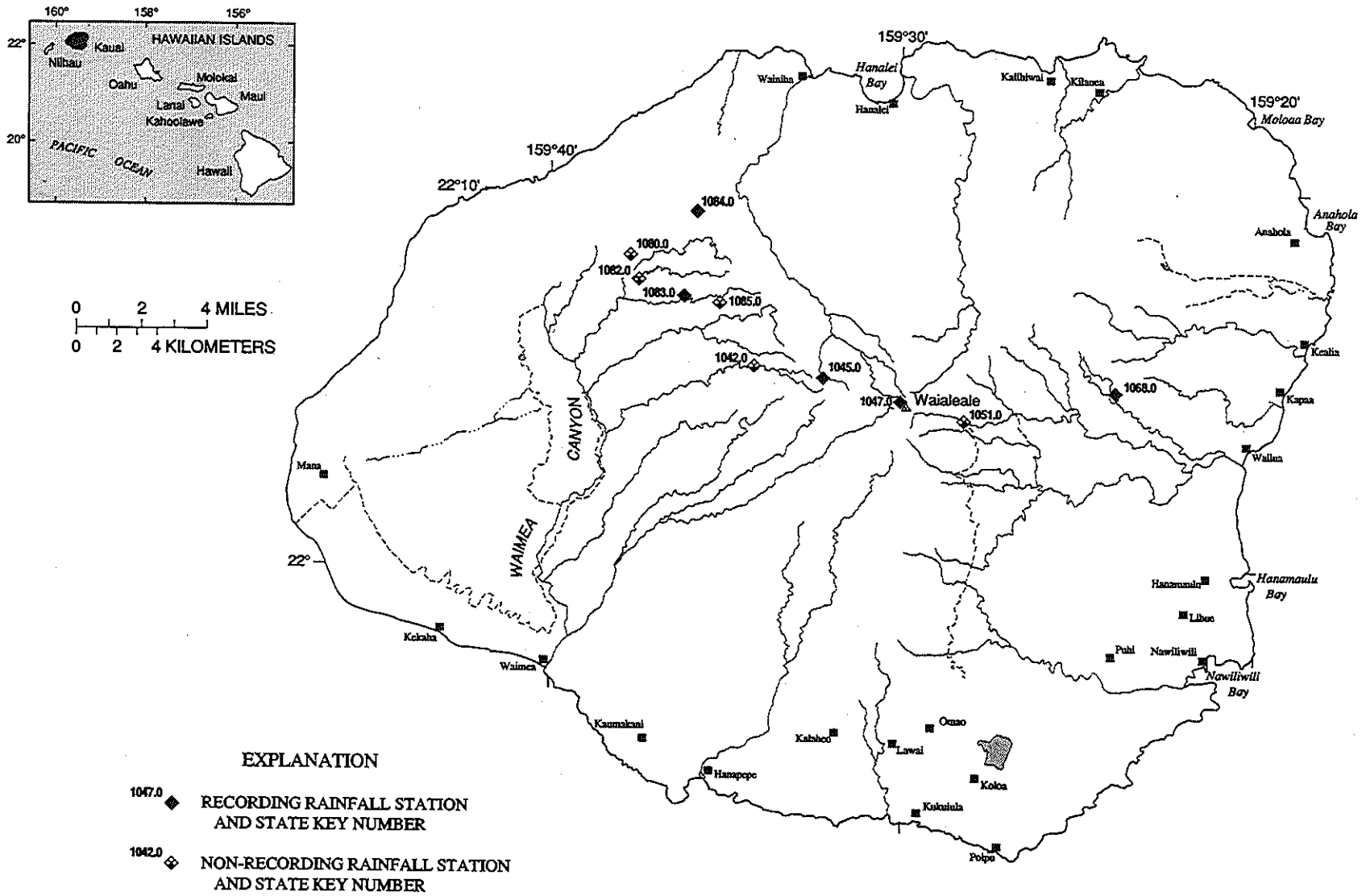


Figure 21. Locations of rainfall stations on Kauai.

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220523159341201. State Key Number 1042.0 Waialae rain gage near Waimea, Kauai.

LOCATION.--Lat 22°05′23″, long 159°34′12″, Hydrologic Unit 20070000, on ridge 6.4 mi southeast of Kokee Lodge, and 11.0 mi northeast of Waimea.

PERIOD OF RECORD.--1911 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage with a custom made reduced 1 to 2 ratio rain-gage catchment. Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 16	3.1 estimated (a)
Oct. 16 to Dec. 31	19.0 estimated (b)
Jan. 01 to Jan. 14	2.6 estimated (b)
Jan. 14 to May 28	24.8
May 28 to Aug. 19	14.6
Aug. 19 to Sep. 30	6.9 estimated (c)

CAL YR 1997 Total 97.0
WTR YR 1998 Total 71.0

(a) Estimated values based on accumulation rain can reading of 14.8 inches from Jul. 02 to Oct. 16
(b) Estimated values based on accumulation rain can reading of 21.6 inches from Oct. 16 to Jan. 14
(c) Estimated values based on accumulation rain can reading of 11.0 inches from Aug. 19 to Oct. 23

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220504159321401. State Key Number 1045.0 Waialeale Trail rain gage near Lihue, Kauai.

LOCATION.--Lat 22°05′04″, long 159°32′14″, Hydrologic Unit 20070000, 14.0 mi west of Kapaa Beach Park and 8.4 mi south of Hanalei Bay.

PERIOD OF RECORD.--1962 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 4,560 ft (from topographic map).

REMARKS.--Records good. Recording rainfall in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	1.43	.63	.01	.44	.00	.88	1.75	.00	.13	.49	1.10
2	.31	.10	.92	.18	.00	.01	.87	.09	.54	.29	.05	.39
3	3.46	.05	.22	.91	.00	.00	.26	.35	.14	.62	.06	.49
4	1.32	.00	.02	.01	.09	.02	.03	.30	.10	.81	.03	.12
5	.45	.01	.02	2.22	.00	.00	.22	.03	.17	.02	.82	.00
6	.39	.00	.51	.50	.00	.01	.54	.12	.00	.02	.06	.00
7	.31	.01	1.28	.04	.00	.00	.87	.07	.11	.50	.12	.01
8	.00	.22	2.05	.01	.00	.02	1.50	.52	.68	.42	.11	.00
9	.01	.01	.21	.00	.01	.00	3.11	1.11	.26	.06	.61	.24
10	.48	.00	.13	.00	.05	.27	1.47	.44	.24	.47	.01	.20
11	.01	.19	.23	.00	.00	.00	.59	.74	.06	1.09	.52	.04
12	.01	.02	.18	.00	.00	.00	1.91	.54	.16	.05	.14	.60
13	.02	.12	.00	.00	.12	.00	.97	.30	.90	.21	.42	.41
14	.00	.00	.01	.01	.02	.01	.50	.99	.68	1.05	.07	.26
15	.01	.00	.06	.00	.73	.00	.01	.33	.95	.37	.43	.20
16	.00	.00	.30	.06	.02	.03	.06	.10	.03	.00	.07	.07
17	.02	.01	.57	.52	.00	.01	.03	1.69	.03	.01	.39	.09
18	.20	.98	.06	.37	.01	.00	.07	1.03	.06	.00	.01	.32
19	.02	.35	.69	.16	.00	.00	.03	.52	.06	.01	.00	.04
20	.00	.11	.29	.08	.01	.01	.02	.88	.39	.01	.37	.91
21	1.36	.01	.00	.01	.73	.23	.32	.43	.68	.00	.33	.51
22	1.26	.21	.08	.50	.57	.54	.60	.29	1.24	.00	1.32	.37
23	.53	.51	.01	.00	.08	.31	.16	.81	1.75	.01	2.40	.06
24	.14	2.26	.05	.00	.32	.07	.66	.41	1.43	.27	.24	.05
25	.14	.74	.29	.01	.19	.26	.00	.76	.62	.08	.06	.04
26	.34	.34	.36	.00	.01	1.32	.27	.13	.41	.03	.18	.25
27	.53	1.81	.28	.28	.00	.48	.30	.05	.62	.00	.37	.09
28	.16	1.20	.08	.00	.00	.29	.08	.04	1.75	.07	.19	.22
29	.06	1.23	1.49	.00	---	.76	.14	.01	.99	.13	.11	.20
30	.02	.02	.23	.00	---	.53	.20	.38	.48	.56	.09	.18
31	.21	---	.00	.02	---	.86	---	.00	---	.04	.05	---
TOTAL	11.85	11.94	11.25	5.90	3.40	6.04	16.67	15.21	15.53	7.33	10.12	7.46

CAL YR 1997 Total 156.43
WTR YR 1998 Total 122.70

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220427159300201. State Key Number 1047.0 Mount Waialeale rain gage near Lihue, Kauai.

LOCATION.--Lat 22°04′27″, long 159°30′02″, Hydrologic Unit 20070000, 9.2 mi south of Hanalei Bay and 11.6 mi west of Kapaa Beach Park.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 5,150 ft (from topographic map).

REMARKS.--Records good for period of daily record. Recorded rainfall read in hundredths of an inch. Accumulated rainfall read in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	1.82	1.35	.11	.32	.06	1.97	2.41	.36	.37	1.18	3.03
2	1.22	.20	2.01	.28	.00	.00	1.39	.22	1.66	1.14	.20	2.09
3	7.05	.09	.52	1.03	.00	.00	.46	2.14	.70	1.21	.70	2.79
4	2.86	.06	.09	.00	.06	.00	.13	1.00	1.35	1.91	.31	.76
5	.62	.15	.06	2.01	.00	.00	.94	.12	3.54	1.23	1.69	.01
6	1.02	.00	1.36	.17	.00	.00	1.34	.37	.06	.62	.38	.00
7	2.52	.00	3.97	.01	.00	.21	2.26	.41	.36	1.71	.24	.05
8	.44	.19	4.63	.00	.01	.00	2.62	1.32	1.23	.92	.51	.06
9	.81	.01	.33	.01	.01	.00	3.08	2.41	2.26	.16	2.20	1.12
10	.45	.00	.02	.00	.15	.86	1.24	.96	1.77	.63	.68	4.07
11	.01	1.14	.04	.00	.01	.00	1.19	1.77	.89	1.67	.24	.18
12	.23	.41	.04	.00	.00	.05	1.23	1.26	1.25	.59	.24	1.89
13	.17	.84	.04	.00	.53	.00	1.10	.90	2.33	1.41	1.78	.89
14	.01	.03	.34	.00	.68	.00	.70	1.97	2.19	2.27	.42	.93
15	.04	.00	.54	.00	1.20	.00	.05	1.23	3.54	1.10	1.31	.60
16	.12	.00	.96	.07	.10	.04	.38	.48	1.83	.01	.22	.36
17	.16	.05	1.24	.42	.00	.01	.06	4.35	.54	.00	1.22	.36
18	1.44	1.12	.22	1.19	.01	.00	.73	2.25	.32	.00	.12	1.18
19	.07	.06	1.27	1.39	.00	.00	.27	1.20	.26	.17	.17	.17
20	.08	.03	.70	.25	.00	.00	.45	1.34	1.57	.34	.66	1.77
21	1.46	.02	.01	.03	1.83	.03	2.06	.90	2.53	.25	.92	2.27
22	1.38	.38	.39	.39	1.64	.47	2.37	.33	1.88	.08	5.14	.93
23	3.18	.98	.02	.00	.31	.60	2.34	1.31	2.60	.09	3.66	1.98
24	.32	3.79	.14	.00	2.06	.29	6.43	.67	3.37	.59	.45	.46
25	.51	1.65	.81	.00	1.59	.98	.00	3.46	2.43	.55	.19	3.92
26	1.24	1.47	1.07	.00	.02	2.62	.75	.67	2.04	1.07	.45	1.19
27	.58	3.05	.75	.21	.01	1.05	.18	.22	2.01	.31	1.24	.32
28	.24	2.10	.55	.00	.15	1.27	.02	.31	4.44	.52	1.55	.59
29	.33	1.98	2.04	.00	---	1.26	.39	.20	1.95	.58	.81	.57
30	.09	.06	.51	.00	---	.76	.33	1.96	1.17	1.16	.86	.49
31	.24	---	.18	.00	---	1.59	---	.24	---	.08	.32	---
TOTAL	29.10	21.68	26.20	7.57	10.69	12.15	36.46	38.38	52.43	22.74	30.06	35.03

CAL YR 1997 Total 355.44
WTR YR 1998 Total 322.49

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220356159281401. State Key Number 1051.0 North Wailua ditch rain gage near Lihue, Kauai.

LOCATION.--Lat 22°03′56″, long 159°28′14″, Hydrologic Unit 20070000, 4.0 mi west of Wailua Reservoir and 2.0 mi east southeast of Waialeale rain gage.

PERIOD OF RECORD.--1928 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service non-recording rain gage. Elevation of gage is 1,110 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest hundredths of an inch. Can readings are made by East Kauai Water Company.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall	Period	Rainfall
Oct. 01 to Oct. 06	3.92 estimated (a)	Mar. 30 to Apr. 13	5.83 estimated (c)
Oct. 06 to Oct. 13	3.65	Apr. 13 to Apr. 20	1.00
Oct. 13 to Oct. 20	.80	Apr. 20 to Apr. 27	3.46
Oct. 20 to Oct. 27	4.47	Apr. 27 to May 04	1.54
Oct. 27 to Nov. 03	3.00	May 04 to May 11	2.40
Nov 03 to Nov. 10	.85	May 11 to May 18	4.20
Nov. 10 to Nov. 17	.76	May 18 to May 25	2.90
Nov. 17 to Nov. 24	1.90	May 25 to Jun. 01	2.00
Nov. 24 to Dec. 01	4.08	Jun. 01 to Jun. 08	3.10
Dec. 01 to Dec. 08	3.98	Jun. 08 to Jun. 15	3.79
Dec. 08 to Dec. 15	1.20	Jun. 15 to Jun. 22	2.90
Dec. 15 to Dec. 22	2.10	Jun. 22 to Jun. 29	5.50
Dec. 22 to Dec. 29	1.30	Jun. 29 to Jul. 06	3.16
Dec. 29 to Dec. 31	1.10 estimated (b)	Jul. 06 to Jul. 13	2.52
Jan. 01 to Jan. 05	1.40 estimated (b)	Jul. 13 to Jul. 20	.65
Jan. 05 to Jan. 12	.35	Jul. 20 to Jul. 27	.58
Jan. 12 to Jan. 19	1.25	Jul. 27 to Aug. 03	1.35
Jan. 19 to Jan. 26	.35	Aug. 03 to Aug. 10	2.80
Jan. 26 to Feb. 02	.75	Aug. 10 to Aug. 17	2.00
Feb. 02 to Feb. 09	.09	Aug. 17 to Aug. 24	4.72
Feb. 09 to Feb. 17	1.46	Aug. 24 to Aug. 31	1.56
Feb. 17 to Feb. 23	.87	Aug. 31 to Sep. 08	3.30
Feb. 23 to Mar. 02	1.50	Sep. 08 to Sep. 14	3.08
Mar. 02 to Mar. 09	2.11	Sep. 14 to Sep. 21	2.20
Mar. 09 to Mar. 16	.83	Sep. 21 to Sep. 28	1.78
Mar. 16 to Mar. 23	.43	Sep. 28 to Sep. 30	.54 estimated (d)
Mar. 23 to Mar. 30	2.71		

CAL YR 1997 Total 166.98
WTR YR 1998 Total 116.07

(a) Estimated value based on accumulation rain can reading of 4.00 inches from Sep. 29 to Oct. 06
(b) Estimated value based on accumulation rain can reading of 2.50 inches from Dec. 29 to Jan. 05
(c) Estimated value when rain can was missing due to vandalism
(d) Estimated value based on accumulation rain can reading of 2.16 inches from Sep. 28 to Oct. 05

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220443159235601. State Key Number 1068.0 Left Branch Opaekea rain gage near Kapaa, Kauai.

LOCATION.--Lat 22°04′43″, long 159°23′56″, Hydrologic Unit 20070000, in USGS stream-gaging station 16071500 on left bank, 5.0 mi west of Kapaa Beach Park and 0.7 mi northeast of Wailua Reservoir.

PERIOD OF RECORD.--1960 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 470 ft (from topographic map).

REMARKS.--Records good. Recorded rainfall read in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.62	.12	1.31	.21	.00	.15	.42	.00	.05	.45	.22
2	.41	.02	.04	.14	.00	.00	.22	.01	.28	.21	.02	.58
3	1.22	.00	.01	.10	.00	.00	.04	.09	.07	.36	.09	.71
4	.28	.01	.00	.01	.00	.00	.00	.13	.36	.41	.00	.41
5	.18	.01	.00	.78	.00	.00	.31	.00	.06	.13	.46	.01
6	.12	.00	.27	.00	.00	.56	.21	.02	.01	.06	.07	.00
7	.12	.00	1.12	.00	.00	.80	.29	.05	.05	.28	.10	.03
8	.01	.00	.56	.00	.00	.20	.40	.18	.05	.12	.01	.00
9	.00	.01	.49	.00	.00	.00	.56	.72	.30	.11	.75	.12
10	.32	.00	.01	.00	.00	.02	.17	.12	.23	.05	.10	.18
11	.05	.21	.00	.00	.00	.00	.08	.58	.18	.24	.13	.00
12	.40	.00	.00	.00	.00	.00	.31	.11	.28	.00	.04	.23
13	.01	.10	.00	.00	.05	.00	.28	.04	.51	.27	.07	.16
14	.03	.01	.10	.00	.12	.00	.29	.45	.17	.34	.09	.16
15	.04	.00	.22	.00	.20	.00	.01	.14	.11	.50	.28	.24
16	.04	.01	.17	.00	.01	.00	.00	.12	.00	.00	.04	.07
17	.13	.00	.15	.05	.00	.00	.00	.87	.07	.00	.08	.02
18	.13	.87	.32	.37	.00	.00	.00	.67	.04	.00	.09	.06
19	.02	.18	.59	.12	.00	.00	.54	.28	.04	.00	.03	.04
20	.01	.00	.04	.11	.00	.00	.17	.23	.15	.07	.09	.08
21	.10	.00	.00	.00	.38	.02	.20	.09	.11	.05	.36	.23
22	.01	.04	.07	.00	.25	.02	.49	.00	.45	.00	1.03	.13
23	.85	.31	.00	.00	.00	.01	.19	.38	.60	.01	.07	.11
24	.06	.88	.18	.00	.12	.00	.50	.10	.43	.04	.04	.02
25	.13	.10	.27	.00	.07	.05	.06	.23	.21	.19	.10	.04
26	.12	.32	.14	.00	.01	.80	.29	.15	.18	.33	.14	.12
27	.09	.55	.05	.04	.01	.04	.08	.04	.41	.02	.31	.27
28	.13	.26	1.66	.00	.05	.18	.01	.08	.76	.05	.37	.04
29	.12	.24	.70	.00	---	.25	.03	.02	.16	.08	.25	.08
30	.10	.01	.02	.00	---	.14	.02	.06	.24	.22	.02	.01
31	.03	---	.09	.01	---	.19	---	.00	---	.03	.08	---
TOTAL	5.28	4.76	7.39	3.04	1.48	3.28	5.90	6.38	6.51	4.22	5.76	4.37

CAL YR 1997 TOTAL 84.25
WTR YR 1998 TOTAL 58.37

220817159374401. State Key Number 1080.0 Paukahana rain gage near Waimea, Kauai.

LOCATION.--Lat 22°08′17″, long 159°37′44″, Hydrologic Unit 20070000, 2.0 mi east of Kokee lodge and 7.0 mi south southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage. Elevation of gage is 3,700 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

REVISIONS.--The accumulated rainfall, in inches, from August 2, 1996 to October 25, 1996 has been revised to 8.0 inches. This supersedes the figure published in the water data report for 1996.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 06	1.1 estimated (a)
Oct. 25 to Dec. 09	10.3
Dec. 09 to Dec. 31	3.2 estimated (b)
Jan. 01 to Feb. 12	6.5 estimated (b)
Feb. 12 to Apr. 06	6.6
Apr. 06 to Jun. 03	15.7
Jun. 03 to Aug. 11	6.5
Aug. 11 to Sep. 30	4.6 estimated (c)

CAL YR 1997 TOTAL 68.9
WTR YR 1998 TOTAL 54.5

220739159373001. State Key Number 1082.0 Waiakoali rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07′39″, long 159°37′30″, Hydrologic Unit 20070000, 2.4 mi east southeast of Kokee Lodge and 7.4 mi south southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage with a custom made reduced 1 to 2 ratio rain-gage catchment. Elevation of gage is 3,420 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 06	1.0 estimated (d)
Oct. 06 to Dec. 09	11.6
Dec. 09 to Dec. 31	3.2 estimated (e)
Jan. 01 to Feb. 12	6.4 estimated (e)
Feb. 12 to Apr. 06	5.4
Apr. 06 to Jun. 03	15.2
Jun. 03 to Aug. 11	5.6
Aug. 11 to Sep. 30	5.9 estimated (f)

CAL YR 1997 Total 74.5
WTR YR 1998 Total 54.3

(a) Estimated values based on accumulation rain can reading of 5.3 inches from Aug. 11 to Oct. 06
(b) Estimated values based on accumulation rain can reading of 9.7 inches from Dec. 09 to Feb. 12
(c) Estimated values based on accumulation rain can reading of 6.0 inches from Aug. 11 to Oct. 13
(d) Estimated values based on accumulation rain can reading of 4.8 inches from Aug. 11 to Oct. 06
(e) Estimated values based on accumulation rain can raading of 9.6 inches from Dec. 09 to Feb. 12
(f) Estimated values based on accumulation rain can reading of 7.6 inches from Aug. 11 to Oct. 13

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220713159361201. State Key Number 1083.0 Mohihi crossing rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07′13″, long 159°36′12″, Hydrologic Unit 20070000, 3.8 mi east of Kokee Lodge and 7.5 mi south of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 3,420 ft (from topographic map).

REMARKS.--Records good for period of daily record. Accumulated rainfall recorded in tenths of an inch and recording rainfall recorded in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	2.66	.71	.00	.81	.00	.60	.82	.00	.01	.49	1.08
2	.19	.03	.98	.13	.00	.00	.47	.04	.07	.05	.01	.26
3	.88	.05	.16	.59	.00	.00	.35	.33	.01	.15	.00	.31
4	.38	.00	.00	.01	.30	.00	.02	.16	.01	.21	.03	.07
5	.09	.00	.01	2.01	.00	.00	.14	.02	.01	.01	.38	.00
6	.07	.00	.33	.89	.00	.00	.15	.01	.00	.00	.07	.00
7	.18	.01	.33	.04	.00	.00	.13	.07	.01	.34	.04	.00
8	.13	.23	1.06	.00	.01	.00	.41	.24	.02	.17	.11	.02
9	.00	.01	.15	.00	.00	.00	3.76	.52	.01	.05	.14	.09
10	.28	.00	.23	.00	.01	.18	1.65	.33	.02	.10	.02	.00
11	.00	.07	.22	.00	.00	.00	.69	.44	.01	.09	.63	.01
12	.01	.03	.13	.00	.00	.00	1.59	.43	.02	.00	.22	.08
13	.74	.03	.00	.00	.11	.00	.61	.09	.26	.13	.20	.03
14	.01	.01	.01	.00	.01	.00	.55	.31	.09	.28	.06	.09
15	.01	.00	.01	.00	.60	.00	.01	.10	.09	.12	.21	.02
16	.01	.00	.10	.10	.09	.00	.04	.03	.00	.00	.04	.03
17	.01	.03	.09	.38	.00	.00	.00	.58	.00	.00	.09	.06
18	.17	.91	.00	.17	.00	.00	.05	.72	.10	.00	.00	.00
19	.02	.32	.07	.04	.00	.00	.00	.08	.05	.00	.00	.02
20	.00	.01	.04	.06	.00	.02	.04	.04	.21	.00	.27	.16
21	.55	.02	.24	.00	.63	.49	.05	.20	.15	.01	.12	.21
22	.20	.19	.03	.61	.42	.55	.14	.10	.59	.00	.24	.03
23	.03	.39	.01	.02	.06	.31	.01	.28	.54	.00	1.29	.00
24	.03	1.69	.03	.00	.04	.06	.14	.13	.12	.08	.07	.00
25	.01	.40	.12	.00	.05	.07	.00	.11	.10	.03	.04	.00
26	.16	.15	.02	.00	.00	.32	.12	.00	.18	.01	.11	.00
27	.28	1.02	.03	.24	.00	.14	.45	.00	.25	.00	.09	.03
28	.05	.73	.02	.00	.00	.05	.05	.00	.73	.00	.15	.17
29	.00	.27	1.53	.00	---	.32	.12	.00	.44	.04	.04	.08
30	.00	.01	.12	.00	---	.15	.17	.00	.28	.21	.00	.11
31	.07	---	.00	.06	---	.17	---	.00	---	.05	.11	---
TOTAL	4.63	9.27	6.78	5.35	3.14	2.83	12.51	6.18	4.37	2.14	5.27	2.96

CAL YR 1997 Total 86.94
WTR YR 1998 Total 65.43

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220927159355001. State Key Number 1084.0 Kilohana rain gage near Hanalei, Kauai.

LOCATION.--Lat 22°09'27", long 159°35'50", Hydrologic Unit 20070000, 4.1 mi east southeast of Kalalau Beach and 4.9 mi south southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Recording rainfall in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.59	4.95	.89	.00	1.20	.11	1.83	1.60	.00	.06	1.91	1.91
2	.64	.02	1.58	.04	.00	.00	1.22	.11	.26	.24	.00	.83
3	1.77	.07	.57	.36	.00	.00	.89	1.20	.02	.83	.03	1.24
4	1.18	.03	.00	.01	.56	.01	.15	.29	.36	1.10	.07	.58
5	.21	.00	.01	1.92	.00	.00	1.49	.08	.02	.02	1.01	.03
6	.10	.00	1.30	.50	.00	.00	.40	.12	.00	.02	.17	.00
7	.05	.02	3.23	.03	.00	.12	.21	.35	.01	.80	.40	.04
8	.01	.96	3.93	.01	.01	.00	.93	1.08	.01	.37	.16	.01
9	.00	.03	.99	.00	.01	.01	5.45	1.58	.03	.39	.78	.17
10	.16	.00	.96	.00	.01	.19	4.02	1.93	.18	.37	.14	.09
11	.07	.78	.25	.00	.00	.00	2.52	2.07	.02	.29	.82	.07
12	.13	.21	.20	.00	.00	.00	2.22	2.79	.04	.06	.61	.07
13	.40	.10	.00	.00	.34	.00	2.27	.59	1.06	.38	.12	.05
14	.01	.00	.01	.01	.04	.01	1.90	1.90	.61	.65	.32	.08
15	.06	.00	.18	.00	1.63	.00	.12	.49	.30	.25	.72	.06
16	.04	.00	.35	.08	.46	.00	.03	.31	.01	.00	.29	.05
17	.02	.11	.10	1.26	.00	.00	.01	2.79	.01	.00	1.06	.06
18	.16	.75	.00	.24	.01	.00	.00	2.73	.43	.00	.00	.17
19	.03	1.01	.06	.11	.00	.00	.02	.25	.22	.00	.00	.04
20	.00	.32	.02	.01	.00	.01	.19	.19	.73	.03	.51	.08
21	.44	.09	1.19	.00	2.64	.80	.54	.24	.61	.03	.43	.06
22	.19	.43	.19	.16	.72	.69	.30	.23	1.46	.00	.44	.03
23	.02	.68	.01	.00	.10	.38	.08	.59	1.65	.02	.89	.02
24	.02	2.26	.06	.00	.04	.15	.22	.22	.82	.30	.32	.01
25	.01	.70	.14	.01	.03	.46	.01	.20	.58	.11	.09	.00
26	.47	.27	.03	.01	.00	.77	.22	.00	.63	.01	.26	.01
27	.49	1.77	.00	.50	.00	.35	.90	.03	.72	.01	.52	.04
28	.05	.80	.01	.00	.00	.18	.05	.02	2.19	.14	.31	.18
29	.00	1.20	3.42	.00	---	.89	.12	.00	1.69	.35	.06	.19
30	.02	.01	.44	.00	---	.40	.39	.02	.44	.71	.04	.15
31	.40	---	.03	.15	---	.70	---	.00	---	.17	.10	---
TOTAL	7.74	17.57	20.15	5.41	7.80	6.23	28.70	24.00	15.11	7.71	12.58	6.32

CAL YR 1997 Total 161.15
WTR YR 1998 Total 159.32

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220703159351201. State Key Number 1085.0 Mohihi-Koaie divide rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07′03″, long 159°35′12″, Hydrologic Unit 20070000, 5.0 mi east of Kokee Lodge and 7.5 mi south of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage. Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 16	3.3 estimated (a)
Oct. 16 to Dec. 31	21.3 estimated (b)
Jan. 01 to Jan. 14	2.9 estimated (b)
Jan. 14 to May 28	29.0
May 28 to Aug. 19	13.2
Aug. 19 to Sep. 30	6.2 estimated (c)

CAL YR 1997 Total 94.6
WTR YR 1998 Total 75.9

(a) Estimated values based on accumulation rain can reading of 15.8 inches from Jul. 02 to Oct. 16
(b) Estimated values based on accumulation rain can reading of 24.2 inches from Oct. 16 to Jan. 14
(c) Estimated values based on accumulation rain can reading of 9.8 inches from Aug. 19 to Oct. 23

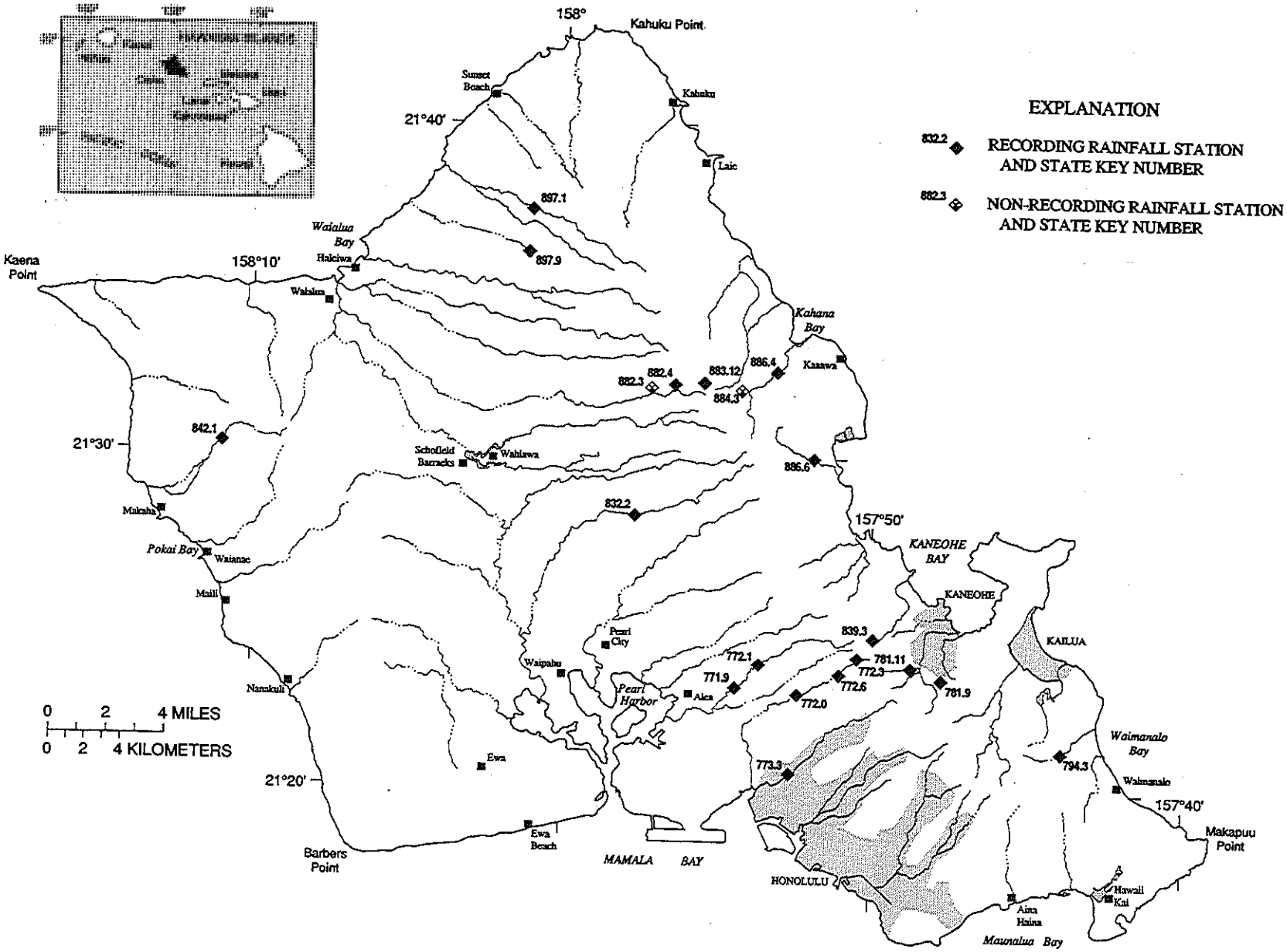


Figure 22. Locations of rainfall stations on Oahu.

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212428157511201. State Key Number 771.11 North Halawa Valley rain gage at tunnel portal near Kaneohe, Oahu.

LOCATION.--Lat 21°24′28″, long 157°51′12″, Hydrologic Unit 20060000, on roof of Halawa portal control center, 3.2 mi west of Kaneohe Post Office and 2.4 mi southwest of Ahuimanu School.

PERIOD OF RECORD.--Continuous-record station, July 15, 1998 to current year.

GAGE.--Standard 8-in. National Weather Service collector attached to a 7 5/16-in. rain can with float-type recorder system. Elevation of the gage is 1,100 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	.10	.90
2	---	---	---	---	---	---	---	---	---	---	.10	1.20
3	---	---	---	---	---	---	---	---	---	---	.10	.20
4	---	---	---	---	---	---	---	---	---	---	.10	.00
5	---	---	---	---	---	---	---	---	---	---	.10	.00
6	---	---	---	---	---	---	---	---	---	---	.60	.20
7	---	---	---	---	---	---	---	---	---	---	.40	.00
8	---	---	---	---	---	---	---	---	---	---	.40	.10
9	---	---	---	---	---	---	---	---	---	---	1.00	.30
10	---	---	---	---	---	---	---	---	---	---	.20	.20
11	---	---	---	---	---	---	---	---	---	---	.00	.00
12	---	---	---	---	---	---	---	---	---	---	.10	.70
13	---	---	---	---	---	---	---	---	---	---	.10	.10
14	---	---	---	---	---	---	---	---	---	---	.10	.50
15	---	---	---	---	---	---	---	---	---	---	.10	.40
16	---	---	---	---	---	---	---	---	---	.10	.30	.40
17	---	---	---	---	---	---	---	---	---	.00	.00	.10
18	---	---	---	---	---	---	---	---	---	.00	.00	.10
19	---	---	---	---	---	---	---	---	---	.00	.00	.20
20	---	---	---	---	---	---	---	---	---	.20	.20	.30
21	---	---	---	---	---	---	---	---	---	.00	.10	1.60
22	---	---	---	---	---	---	---	---	---	.00	1.10	.00
23	---	---	---	---	---	---	---	---	---	.00	.10	.10
24	---	---	---	---	---	---	---	---	---	.00	.00	.10
25	---	---	---	---	---	---	---	---	---	.50	.70	.30
26	---	---	---	---	---	---	---	---	---	.20	.10	.20
27	---	---	---	---	---	---	---	---	---	.00	.20	.00
28	---	---	---	---	---	---	---	---	---	.40	.40	.10
29	---	---	---	---	---	---	---	---	---	.30	.10	.40
30	---	---	---	---	---	---	---	---	---	.30	.20	.00
31	---	---	---	---	---	---	---	---	---	.00	.10	---
TOTAL	---	---	---	---	---	---	---	---	---	---	7.10	8.70

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

212304157542201. State Key Number 771.9 North Halawa rain gage near Honolulu, Oahu.

LOCATION.--Lat 21°23′04″, long 157°54′22″, (Waipahu quadrangle, 1983, 1:24000) Hydrologic Unit 20060000, in USGS stream-gaging station 16226200, on right bank, 0.6 mi north of Oahu Prison, 1.0 mi south of Keaiwa Heiau, and 1.7 mi east of Aiea High School.

PERIOD OF RECORD.--Continuous-record station, May 1, 1983 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage receiver and 7 5/16-in. rain can with float-type system attached to a digital recorder. Elevation of gage is 160 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.6	.2	.1	.0	.0	.1	.3	.0	.0	.0	.0
2	.2	.0	.2	.0	.0	.0	.6	.0	.0	.0	.0	.0
3	.9	.0	.1	.2	.0	.0	.1	.0	.0	.1	.0	.0
4	.3	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.4	.0	.0	.2	.0	.2	.2	.0	.0
6	.3	.0	.0	.0	.0	.4	.0	.2	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.2	.0	.0	.1	.1	.0
8	.5	.0	.0	.0	.0	.0	.2	.1	.0	.2	.0	.0
9	.2	.0	.2	.0	.0	.0	.9	.0	.0	.2	.0	.0
10	.2	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0
11	1.4	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0
12	.2	.1	.0	.0	.0	.0	.2	.3	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.1	.2	.0	.1	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.1	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0
16	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
18	.1	.3	.1	.3	.0	.0	.0	.1	.0	.0	.0	.0
19	.0	.0	.1	.0	.0	.0	.0	.1	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0	.1
21	.2	.0	.0	.0	.0	.0	.0	.1	.5	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.1	.1
23	.1	.0	.1	.0	.0	.0	.0	.1	.1	.0	.0	.0
24	.0	.1	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0
25	.0	.5	.3	.0	.0	.0	.0	.0	.0	.0	.3	.0
26	.1	.0	.1	.0	.0	.2	.0	.0	.3	.0	.2	.0
27	.0	.6	.0	.0	.0	.1	.3	.0	.0	.0	.0	.0
28	.0	.2	.1	.0	.0	.1	.0	.0	.8	.0	.0	.0
29	.1	.2	.0	.0	---	.0	.0	.0	.5	.3	.0	.0
30	.0	.0	.1	.0	---	.3	.0	.0	.3	.0	.0	.0
31	.0	---	.0	.0	---	.3	---	.0	---	.0	.0	---
TOTAL	4.8	2.6	1.8	1.4	0.0	1.4	3.2	2.0	4.1	1.4	0.8	0.2

CAL YR 1997 TOTAL 44.5
WTR YR 1998 TOTAL 23.7

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212253157522201. State Key Number 772.0 Moanalua rain gage near Honolulu, Oahu.

LOCATION.--Lat 21°22′53″, long 157°52′22″, Hydrologic Unit 20060000, 1.8 mi northeast of Tripler Hospital, and 5.0 mi north of Honolulu Post Office.

PERIOD OF RECORD.--Accumulated-rainfall station, June 1926 (revised) to December 8, 1964. Continuous-record station, December 8, 1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector attached to a 7 5/16-in. rain can with float-type recorder system. An electronic data logger was installed on February 6, 1997 replacing the digital recorder. Housed with recording crest-gage. Elevation of the gage is 340 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	1.0	.2	.3	.0	.0	.1	.6	.0	.0	.0	.4
2	.4	.1	.3	.0	.0	.1	.6	.0	.2	.0	.0	.3
3	1.8	.0	.1	.3	.0	.2	.2	.3	.1	.3	.0	.1
4	.8	.0	.0	.0	.0	.0	.0	.0	.1	.2	.2	.0
5	.1	.2	.0	.3	.0	.0	.4	.0	.6	.2	.1	.0
6	.7	.0	.3	.0	.0	.0	.1	.9	.0	.0	.2	.3
7	.1	.0	.3	.0	.0	.0	.5	.1	.0	.3	.1	.0
8	1.4	.2	.4	.0	.0	.0	.8	.2	.2	.7	.0	.0
9	.0	.1	.1	.0	.0	.0	.9	.1	.1	.2	.1	.0
10	.9	.0	.0	.0	.0	.0	.2	.1	.0	.1	.1	.0
11	.8	.2	.0	.0	.0	.0	.0	.3	.2	.0	.0	.0
12	.1	.3	.0	.0	.0	.0	.3	.4	.5	.0	.0	.4
13	.0	.0	.0	.0	.1	.0	.4	.2	.1	.2	.0	.0
14	.0	.1	.0	.0	.0	.0	.0	.1	1.2	.2	.1	.1
15	.4	.0	.1	.0	.0	.0	.0	.1	.3	.8	.1	.1
16	.2	.0	.4	.0	.0	.0	.0	.0	.0	.0	.1	.1
17	.0	.0	.6	.6	.0	.0	.1	.0	.3	.0	.0	.1
18	.2	.3	.4	.4	.0	.0	.1	.2	.0	.0	.0	.2
19	.0	.0	.1	.0	.0	.0	.1	.3	.2	.0	.0	.0
20	.1	.0	.1	.0	.0	.0	.2	.1	1.3	.0	.1	.2
21	.7	.0	.0	.0	.0	.0	.2	.2	1.1	.0	.0	.4
22	.4	.0	.1	.1	.4	.0	.2	.3	.2	.0	.8	.2
23	.2	.1	.3	.0	.0	.2	.1	.1	.5	.0	.0	.0
24	.1	.6	.2	.0	.1	.0	.1	.0	.9	.0	.1	.1
25	.0	.7	.4	.0	.2	.3	.0	.0	.1	.0	.7	.2
26	.2	.0	.2	.0	.1	.6	.0	.0	.9	.0	.1	.0
27	.0	1.5	.2	.0	.0	.2	.1	.0	.2	.0	.0	.3
28	.2	.7	.3	.0	.0	.2	.0	.1	.7	.0	.1	.1
29	.1	1.0	.1	.0	---	.3	.0	.0	.8	.3	.1	.2
30	.1	.2	.6	.0	---	.3	.0	.1	.4	.2	.1	.1
31	.0	---	.0	.0	---	.5	---	.2	---	.0	.0	---
TOTAL	10.0	7.3	5.8	2.0	0.9	2.9	5.7	5.0	11.2	3.7	3.2	3.9

CAL YR 1997 TOTAL 95.6
WTR YR 1998 TOTAL 61.6

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212346157533701. State Key Number 772.1 North Halawa rain gage near Aiea, Oahu.

LOCATION.--Lat 21°23'46 "(revised), long 157°53'37 ", Hydrologic Unit 20060000, 2.7 mi above confluence with South Halawa Stream, 2.7 mi northeast of Aiea Post Office, and 6.5 mi northwest of Honolulu.

PERIOD OF RECORD.--Continuous-record station, August 6, 1929 to June 30, 1933, June 3, 1953 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--A 12-in. collector and 10-in. storage tank with float-type recorder system. Elevation of gage is 320 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in 0.083 of an inch increments.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.75	.17	.17	.00	.00	.00	.33	.00	.00	.00	.17
2	.25	.00	.25	.00	.00	.08	.58	.00	.00	.00	.00	.08
3	1.50	.00	.00	.17	.00	.00	.17	.08	.00	.08	.00	.08
4	.50	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00	.00
5	.08	.00	.00	.42	.00	.00	.25	.00	.08	.17	.00	.00
6	.33	.00	.08	.00	.00	.17	.08	.33	.00	.00	.00	.08
7	.08	.00	.25	.00	.00	.00	.25	.00	.00	.08	.08	.00
8	.17	.00	.42	.00	.00	.00	.42	.08	.00	.42	.00	.00
9	.00	.08	.00	.00	.00	.00	.75	.08	.00	.17	.00	.00
10	.33	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00
11	1.17	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00
12	.00	.25	.00	.00	.00	.00	.00	.25	.17	.00	.00	.17
13	.00	.00	.00	.00	.00	.00	.17	.25	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.08	.42	.08	.00	.08
15	.00	.00	.00	.00	.00	.00	.00	.00	.08	.50	.00	.08
16	.08	.00	.25	.00	.00	.00	.00	.00	.00	.00	.00	.08
17	.00	.00	.33	.58	.00	.00	.08	.00	.25	.00	.00	.00
18	.17	.17	.25	.17	.00	.00	.08	.08	.00	.00	.00	.08
19	.00	.00	.00	.00	.00	.00	.00	.42	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.08	1.17	.00	.08	.17
21	.17	.00	.00	.00	.00	.00	.08	.00	.83	.00	.00	.17
22	.25	.00	.08	.00	.25	.00	.08	.25	.17	.00	.33	.00
23	.08	.00	.17	.00	.00	.00	.08	.00	.17	.00	.00	.00
24	.00	.33	.08	.00	.00	.08	.00	.00	.42	.00	.00	.08
25	.08	.50	.33	.00	.00	.17	.00	.00	.08	.00	.25	.08
26	.08	.00	.08	.00	.17	.33	.00	.00	.75	.00	.08	.00
27	.00	.92	.08	.00	.00	.17	.00	.00	.00	.00	.00	.00
28	.00	.50	.17	.00	.00	.08	.00	.00	.67	.00	.00	.17
29	.17	.42	.08	.00	---	.17	.00	.00	.42	.25	.00	.25
30	.00	.08	.42	.00	---	.25	.00	.00	.33	.00	.00	.00
31	.00	---	.00	.00	---	.50	---	.00	---	.00	.00	---
TOTAL	5.49	4.00	3.49	1.51	0.42	2.00	3.32	2.56	6.01	1.83	0.82	1.82

CAL YR 1997 TOTAL 57.15
WTR YR 1998 TOTAL 33.27

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212359157502601. State Key Number 772.3 Moanalua rain gage no. 1 at altitude 1,000 ft near Honolulu, Oahu.

LOCATION.--Lat 21°23′59″, long 157°50′26″, (Kaneohe quadrangle, 1959, 1:24000) Hydrologic Unit 20060000, 2.7 mi southwest of Kaneohe Post Office, and 4.2 mi northeast of Tripler Hospital.

PERIOD OF RECORD.--Continuous-record station, June 25, 1968 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in. rain can with recorder. An electronic data logger was installed on February 5, 1997 replacing the digital recorder. Elevation of gage is 1,000 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	3.3	.6	2.6	.1	.0	.1	.4	.0	.0	.1	.8
2	1.0	.1	.2	.0	.0	.3	.2	.1	.6	.1	.2	.7
3	2.8	.2	.1	.0	.0	.0	.1	.5	.3	1.0	.1	.2
4	1.3	.0	.0	.1	.0	.0	.0	.1	.8	1.0	.3	.1
5	.3	1.7	.0	.3	.0	.0	.5	.0	.3	.4	.1	.0
6	.4	.0	.6	.0	.0	.0	.1	1.0	.0	.1	.2	.4
7	.4	.0	.6	.0	.0	.0	.7	.1	.2	.3	.5	.0
8	1.0	1.2	.4	.0	.0	.0	.3	.0	1.3	1.0	.5	.0
9	1.6	.1	.2	.0	.0	.0	.4	.1	.1	.3	1.1	.3
10	.7	.1	.1	.0	.0	.0	.1	.0	.0	.2	.2	.2
11	.9	.4	.0	.0	.0	.0	.0	.3	.2	.0	.0	.0
12	.0	.8	.0	.0	.0	.2	.1	.4	.7	.1	.0	.4
13	.0	.0	.0	.0	.0	.0	.3	.1	.2	.6	.0	.1
14	.0	.0	.0	.0	.0	.0	.0	.1	.5	.2	.2	.3
15	.6	.0	.0	.0	.0	.0	.0	.0	1.2	1.0	.1	.1
16	.2	.0	.7	.0	.0	.0	.0	.0	.1	.0	.0	.5
17	.0	.0	.2	2.3	.0	.0	.0	.2	.3	.1	.0	.0
18	.3	.2	2.1	.3	.0	.0	.1	.1	.0	.0	.0	.3
19	.0	.0	.1	.0	.0	.0	.2	.4	.2	.0	.1	.1
20	.1	.0	.2	.0	.0	.0	1.2	.1	1.0	.0	.0	.1
21	.3	.0	.0	.0	.2	.0	.5	.2	.8	.1	.0	1.1
22	.6	.0	.1	.0	.2	.0	.6	.5	.1	.0	1.0	.1
23	.0	.1	.3	.0	.0	.3	.2	.2	.3	.0	.1	.0
24	.0	.6	.2	.0	.1	.1	.2	.0	1.9	.0	.0	.0
25	.1	.1	.5	.0	.1	.5	.1	.0	.2	.0	.5	.1
26	.1	.1	.1	.0	.9	.8	.1	.1	1.4	.2	.0	.2
27	.0	1.8	.4	.3	.1	.1	.4	.0	.2	.0	.1	.0
28	.1	.5	1.2	.0	.0	.1	.3	.0	.8	.3	.4	.0
29	.1	.6	.1	.0	---	.4	.0	.1	.8	.2	.1	.5
30	.0	.7	3.3	.0	---	.3	.0	.0	.6	.4	.0	.0
31	.0	---	.7	.0	---	.3	---	.1	---	.0	.1	---
TOTAL	12.9	12.6	13.0	5.9	1.7	3.4	6.8	5.2	15.1	7.6	6.0	6.6

WTR YR 1998 TOTAL 96.8

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212329157510501. State key Number 772.6 Moanalua rain gage near Kaneohe, Oahu.

LOCATION.--Lat 21°23′29″, long 157°51′05″, (Kaneohe quadrangle, 1959, 1:24000) Hydrologic Unit 20060000, in USGS stream-gaging station 16227500, on left bank 3.3 mi northeast of Tripler Hospital, and 3.6 mi southwest of Kaneohe Post Office.

PERIOD OF RECORD.--Continuous-record station, August 29, 1968 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector attached to 7 5/16-in. rain can with a digital recorder. An electonic data logger was installed on February 5, 1997 replacing the digital recorder. Elevation of gage is 660 ft above mean sea level (from topographic map).

REMARKS.--Records good except for period of no record, January 16 to March 18, which is poor. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	1.6	.3	1.2	---	---	.0	.5	.0	.0	.0	.8
2	.9	.0	.1	.0	---	---	.4	.1	.6	.0	.2	.8
3	3.0	.1	.0	.2	---	---	.2	.6	.3	.7	.1	.2
4	1.3	.0	.0	.1	---	---	.0	.0	.5	.7	.3	.0
5	.2	1.0	.0	.4	---	---	.6	.0	.6	.4	.1	.0
6	.4	.0	.5	.0	---	---	.1	1.3	.0	.1	.3	.2
7	.4	.0	.6	.0	---	---	.8	.1	.2	.4	.5	.0
8	2.6	.9	.1	.0	---	---	.4	.1	1.0	.9	.3	.0
9	.6	.2	.1	.0	---	---	.6	.1	.1	.2	.7	.2
10	.8	.0	.0	.0	---	---	.1	.1	.1	.3	.1	.1
11	.8	.4	.0	.0	---	---	.0	.3	.3	.0	.0	.0
12	.1	.5	.0	.0	---	---	.2	.4	.7	.1	.1	.2
13	.0	.0	.0	.0	---	---	.3	.2	.2	.6	.0	.1
14	.0	.0	.0	.0	---	---	.0	.2	1.0	.2	.3	.0
15	.6	.0	.0	.0	---	---	.0	.0	.9	1.1	.1	.1
16	.3	.0	.7	.0	---	---	.0	.0	.1	.0	.0	.0
17	.0	.0	.3	---	---	---	.1	.2	.6	.0	.0	.1
18	.3	.3	.8	---	---	a.1	.1	.1	.2	.0	.0	.0
19	.0	.0	.0	---	---	.0	.3	.5	.4	.0	.0	.0
20	.1	.1	.3	---	---	.0	.9	.1	1.4	.1	.2	.0
21	.8	.0	.0	---	---	.0	.5	.3	1.1	.0	.0	.0
22	.6	.0	.2	---	---	.0	.5	.5	.2	.0	1.2	.0
23	.1	.1	.5	---	---	.3	.3	.1	.3	.0	.0	.0
24	.0	.6	.2	---	---	.1	.1	.0	1.8	.0	.0	.0
25	.1	.4	.5	---	---	.5	.2	.0	.3	.2	.6	.0
26	.2	.1	.1	---	---	.8	.0	.1	1.5	.1	.2	.0
27	.0	2.0	.4	---	---	.2	.3	.0	.3	.0	.0	.0
28	.0	.2	.9	---	---	.1	.3	.0	.7	.2	.4	.0
29	.2	.6	.2	---	---	.4	.0	.0	1.2	.3	.1	.0
30	.0	.1	2.5	---	---	.4	.0	.1	.5	.5	.1	.0
31	.0	---	.4	---	---	.4	---	.3	---	.0	.1	---
TOTAL	14.4	9.2	9.7	---	---	---	7.3	6.3	17.1	7.1	6.0	2.8
MEAN	.5	.3	.3	---	---	---	.2	.2	.6	.2	.2	.1
MAX	3.0	2.0	2.5	---	---	---	.9	1.3	1.8	1.1	1.2	.8
MIN	.0	.0	.0	---	---	---	.0	.0	.0	.0	.0	.0

(a) No record January 16 (1130 hrs) to March 18 (1130 hrs). Faucet on rain can not closed.

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212029157523601. State Key Number 773.3 Kalihi rain gage at Kalihi, Oahu.

LOCATION.--Lat 21°20′29″, long 157°52′36″, Hydrologic Unit 20060000, in USGS stream-gaging station 16229300 on left bank, 0.4 mi northwest of Bishop Museum, and 2.4 mi northwest of Honolulu Post Office.

PERIOD OF RECORD.--Continuous-record station, July 1962 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage with tipping-bucket attachment. An electronic data logger records rainfall at 30-minute intervals. Elevation of gage is 70 ft above mean sea level (from topographic map).

REMARKS.--Records fair, January 26 to April 27. Rainfall recorded in tenths of an inch. For the rest of the year, rainfall was adjusted by the ratio of rain can readings divided by the total tips of the tipping bucket.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.55	.18	.18	.00	.00	.10	.10	.00	.00	.00	.00
2	.09	.00	.09	.00	.00	.00	.70	.00	.00	.00	.00	.00
3	.64	.00	.09	.28	.00	.00	.00	.00	.00	.05	.00	.00
4	.37	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
5	.00	.00	.00	.46	.00	.00	.10	.00	.05	.05	.05	.00
6	.18	.00	.00	.00	.00	1.40	.00	.10	.00	.00	.00	.11
7	.00	.00	.09	.00	.00	.00	.00	.00	.00	.05	.00	.00
8	.00	.00	.37	.00	.00	.00	.20	.10	.00	.05	.00	.00
9	.18	.00	.09	.00	.00	.00	.90	.05	.00	.10	.00	.00
10	.46	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00
11	.64	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00
12	.00	.09	.00	.00	.10	.00	.30	.16	.05	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.10	.00	.05	.00	.00
14	.00	.00	.00	.00	.00	.00	.10	.00	.05	.00	.00	.00
15	.09	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00
16	.00	.00	.09	.00	.00	.00	.00	.05	.00	.00	.00	.00
17	.00	.00	.09	.28	.00	.00	.00	.00	.00	.00	.00	.00
18	.09	.28	.09	.18	.00	.00	.00	.05	.00	.00	.00	.00
19	.00	.00	.09	.09	.00	.00	.00	.05	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.05	.21	.00	.00	.05
21	.18	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
22	.18	.00	.00	.00	.00	.00	.10	.10	.10	.00	.11	.00
23	.18	.00	.18	.00	.00	.00	.00	.00	.21	.00	.00	.00
24	.09	.46	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.37	.09	.00	.10	.00	.00	.00	.00	.00	.11	.00
26	.09	.00	.00	.00	.00	.10	.00	.00	.10	.00	.00	.00
27	.09	.46	.09	.00	.00	.10	.00	.00	.00	.00	.00	.00
28	.00	.18	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00
29	.00	.28	.09	.00	---	.30	.00	.00	.16	.05	.00	.00
30	.00	.00	.00	.00	---	.20	.00	.00	.05	.05	.00	.00
31	.00	---	.00	.00	---	.20	---	.00	---	.00	.00	---
TOTAL	3.55	2.67	1.81	1.47	0.20	2.30	2.80	1.17	1.24	0.56	0.27	0.16

CAL YR 1997 TOTAL 33.73
WTR YR 1998 TOTAL 18.20

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212342157484401. State Key Number 781.11 Luluku rain gage at altitude 220 ft near Kaneohe, Oahu.

LOCATION.--Lat 21°23′42″, long 157°48′44″, Hydrologic Unit 20060000, in USGS stream-gaging station 16270900 on right bank, 0.5 mi upstream from mouth, 1.4 mi southwest of Castle High School, and 1.9 mi south of Kaneohe Post Office.

PERIOD OF RECORD.--Continuous-record station, April 1984 to September 1998 (discontinued). Station was relocated 400 ft downstream in 1984. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service tipping-bucket rain gage. Elevation of gage is 220 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.0	1.7	.8	3.1	.0	.4	.0	.2	.0	.0	.0	.0
2	e.3	.0	.0	.1	.0	1.5	.1	.0	.2	.0	.0	.8
3	.9	.1	.0	.3	.0	.0	.2	.1	.2	.1	.0	.3
4	.7	.1	.0	.1	.0	.0	.0	.0	.3	.4	.0	.0
5	.2	1.2	.0	.5	.0	.1	.1	.0	.2	.2	.0	.0
6	.0	.0	.1	.0	.0	.0	.1	.3	.0	.0	.1	.1
7	.2	.1	.6	.0	.0	.0	.2	.1	.0	.0	.0	.0
8	.0	.1	.1	.0	.0	.0	.3	.0	.4	.2	.3	.0
9	.2	.1	.2	.0	.0	.0	.2	.1	.0	.2	.4	.0
10	.3	.0	.0	.0	.0	.0	.1	.0	.0	.1	.1	.1
11	.6	.1	.0	.0	.0	.0	.0	.1	.1	.1	.0	.0
12	.1	.4	.0	.0	.0	.0	.1	.0	.3	.0	.0	.1
13	.0	.0	.0	.0	.0	.0	.1	.0	.0	.3	.0	.1
14	.0	.0	.0	.0	.0	.0	.0	.1	.1	.3	.0	.0
15	.2	.0	.0	.0	.0	.0	.0	.0	.5	.4	.0	.1
16	.0	.0	.3	.0	.0	.0	.0	.0	.1	.0	.0	.3
17	.0	.0	.0	.7	.0	.0	.0	.0	.1	.0	.1	.0
18	.3	.3	1.4	.1	.0	.0	.1	.2	.1	.0	.0	.0
19	.1	.0	.1	.0	.1	.0	.4	.3	.1	.0	.0	.1
20	.0	.0	.3	.0	.0	.0	.4	.0	.5	.0	.0	.0
21	.2	.0	.0	.0	.0	.0	.3	.0	.4	.0	.0	.5
22	.1	.0	.0	.0	.0	.1	.2	.3	.1	.0	.1	.0
23	.0	.0	.2	.0	.0	---	.0	.1	.2	.0	.0	.0
24	.0	.0	.0	.0	.0	---	.0	.0	.7	.0	.0	.0
25	.0	.1	.1	.0	.1	---	.1	.1	.1	.0	.3	.0
26	.1	.0	.1	.0	.8	---	.0	.0	.3	.0	.0	.0
27	.0	.4	.1	.2	.1	---	.1	.0	.0	.0	.0	.0
28	.0	.3	1.8	.0	.0	---	.1	.0	.2	.0	.0	.3
29	.1	.2	.0	.0	---	---	.0	.0	.7	.0	.0	.0
30	.0	.4	.6	.0	---	---	.0	.0	.3	.1	.0	.0
31	.0	---	.8	.0	---	a--	---	.0	---	.0	.0	---
TOTAL	4.6	5.6	7.6	5.1	1.1	2.7	3.2	2.0	6.2	2.4	1.4	2.8

CAL YR 1997 TOTAL 74.7
WTR YR 1998 TOTAL 44.7

e Estimated
(a) Total accumulated rainfall from Mar. 23 to Mar. 31 is 0.60 inch

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212322157474401. State Key Number 781.9 Right Branch Kamooalii rain gage near Kaneohe, Oahu.

LOCATION.--Lat 21°23′22″, long 157°47′44″, Hydrologic Unit 20060000, in USGS stream-gaging station 16265600 on left bank, 0.3 mi south of Hawaiian Memorial Park Cemetery, 1.0 mi northwest of Pali Golf Course, and 1.3 mi south of Castle High School.

PERIOD OF RECORD.--Continuous-record station, February 1, 1983 to current year. Prior to 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage receiver and 7 5/16-in. rain can with float-type system attached to a digital recorder. Elevation of gage is 195.16 ft above mean sea level (from levels by the Hawaii State Department of Transportation, Highways Division).

REMARKS.--Records fair. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	1.5	.6	3.0	---	.1	.0	.0	.0	.0	.0	.0
2	.2	.0	.0	.0	---	1.2	.1	.0	.0	.0	.0	.0
3	.9	.1	.0	.3	---	.0	.0	.0	.0	.0	.0	.0
4	.6	.0	.0	.2	---	.1	.0	.0	.0	.0	.0	.0
5	.3	1.6	.0	1.1	---	.0	.1	.0	.0	.0	.0	.0
6	.0	.0	.1	.0	---	.0	.0	.0	.0	.0	.0	.0
7	.1	.0	.4	.0	---	.0	.1	.0	.0	.0	.0	.0
8	.0	.1	.2	.0	---	.2	.1	.0	.0	.0	.0	.0
9	.1	.0	.2	.0	a--	.0	.0	.0	.0	.0	.0	.0
10	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.6	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.1	.2	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.1	.0	.0	---	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.2	---	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0	.0
18	.1	.6	1.4	---	.0	.0	.1	.0	.0	.0	.0	.0
19	.0	.0	.1	---	.1	.0	e.1	.0	.0	.0	.0	.0
20	.0	.0	.0	---	.0	.0	e.3	.0	.0	.0	.0	.0
21	.1	.0	.0	---	.0	.0	e.2	.0	.0	.0	.0	.0
22	.1	.0	.1	---	.1	.0	e.2	.0	.0	.0	.0	.0
23	.0	.0	.1	---	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.3	.0	---	.0	.1	.0	.0	.0	.0	.0	.0
25	.0	.0	.1	---	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	---	.6	.0	.0	.0	.0	.0	.0	.0
27	.0	.9	.1	---	.0	.1	.1	.0	.0	.0	.0	.0
28	.1	.2	1.9	---	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.1	.4	---	---	.1	.0	.0	.0	.0	.0	.0
30	.0	1.0	.3	---	---	.0	e.0	.0	.0	.0	.0	.1
31	.1	---	.7	---	---	.1	---	.0	---	.0	.0	---
TOTAL	3.7	6.8	6.9	---	---	2.0	1.5	0.0	0.0	0.0	0.0	0.1

WTR YR 1998 TOTAL 27.3

e Estimated
(a) Total accumulated rainfall from Jan. 15 to Feb. 9 is 0.9 inch

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212114157435001. State Key Number 794.3 Waimanalo rain gage at Waimanalo, Oahu.

LOCATION.--Lat 21°21′14″, long 157°43′50″, Hydrologic Unit 20060000, in USGS stream-gaging station 16249000, 260 ft downstream from Kalanianaole Highway, and 2.3 mi northwest of Waimanalo Post Office.

PERIOD OF RECORD.--Continuous-record station, January 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage attached to a tipping-bucket counter and recorder. An electonic data logger on a float system was installed on March 26, 1998 replacing the digital recorder. Elevation of gage is 20 ft above mean sea level (from topographic map).

REMARKS.--Records are poor, October 1 to March 26; records are fair, March 26 to September 30. Rainfall recorded in increments of 0.10 inch, October 1 to March 26, and 0.12 inch, March 26 to September 30.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	.00	.00	.00	.00	.00	.36
2	---	---	---	---	---	---	.00	.00	.00	.00	.00	.12
3	---	---	---	---	---	---	.12	.24	.00	.12	.00	.00
4	---	---	---	---	---	---	.00	.00	.12	.12	.00	.00
5	---	---	---	---	---	---	.12	.00	.00	.12	.00	.00
6	---	---	---	---	---	---	.00	.36	.00	.00	.00	.12
7	---	---	---	b--	---	---	.00	.00	.00	.00	.12	.00
8	---	---	---	---	---	---	.00	.00	.00	.12	.12	.00
9	---	---	---	---	---	---	.12	.00	.00	.12	.12	.00
10	---	---	---	---	---	---	.00	.00	.00	.00	.12	.00
11	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
12	---	---	---	---	---	---	.12	.00	.12	.00	.00	.00
13	---	---	---	---	---	---	.00	.00	.00	.12	.00	.00
14	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
15	---	---	---	---	---	---	.00	.00	.00	.24	.00	.00
16	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
17	---	---	---	---	---	---	.00	.00	.12	.00	.00	.00
18	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
19	---	---	---	---	---	---	.00	.00	.12	.00	.00	.00
20	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
21	---	---	---	---	---	---	.12	.00	.24	.00	.00	.00
22	---	---	---	---	---	---	.00	.24	.24	.00	.00	.00
23	a--	---	---	---	---	---	.00	.00	.24	.00	.00	.00
24	---	---	---	---	c--	---	.00	.00	.00	.00	e.00	.00
25	---	---	---	---	---	---	.00	.00	.00	.00	.00	.12
26	---	---	---	---	---	d--	.00	.00	.24	.00	.00	.00
27	---	---	---	---	---	.00	.00	.00	.00	.00	.12	.00
28	---	---	---	---	---	.00	.00	.00	.12	.12	.00	.00
29	---	---	---	---	---	.12	.00	.00	.12	.00	.00	.00
30	---	---	---	---	---	.12	.00	.00	.12	.12	.00	.00
31	---	---	---	---	---	.00	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	0.60	0.84	1.80	1.20	0.60	0.72

(a) No record Sep. 12 to Oct. 23
(b) Total accumulated rainfall from Oct. 23 (1515 hrs) to Jan. 7 (1450 hrs) is 9.6 inches
(c) Total accumulated rainfall from Jan. 7 (1455 hrs) to Feb. 24 (0915 hrs) is 0.0 inches
(d) Total accumulated rainfall from Feb. 24 (0925 hrs) to Mar. 26 (0945 hrs) is 0.0 inches. Partial daily record Mar. 26 from 1315 hrs to 2400 hrs
(e) Total accumulated rainfall from May 13 (1430 hrs) to Aug. 24 (1100 hrs) is 0.5 inches greater (4.2 inches compared with 3.7 inches)

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212813157574001. State Key Number 832.2 Kipapa rain gage near Wahiawa, Oahu.

LOCATION.--Lat 21°28′13″, long 157°57′40″, Hydrologic Unit 20060000, on left bank of stream 1,700 ft below Forest Reserve Boundary, 4.9 mi southeast of Wahiawa Post Office, and 6.3 mi northeast of Waipahu. The rain gage was housed in the same shelter with USGS stream-gaging station 16212800, but was relocated to a new shelter 15 ft downstream on January 19, 1994.

PERIOD OF RECORD.--Continuous-record station, January 2, 1957 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in. storage can with a float-type recorder system. Elevation of gage is 690 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.40	.30	.20	.00	.00	.50	.60	.00	.00	.00	.20
2	.00	.00	.60	.00	.00	.00	.90	.00	.10	.10	.00	.10
3	1.60	.00	.00	.10	.00	.00	.00	.10	.10	.30	.00	.00
4	.40	.00	.00	.60	.10	.00	.00	.00	.00	.20	.00	.00
5	.40	.00	.00	.30	.00	.00	.60	.00	.10	.20	.00	.00
6	.70	.00	.00	.00	.00	.00	.20	.40	.00	.00	.10	.10
7	.00	.10	.20	.00	.00	.00	.30	.00	.00	.20	.10	.00
8	.00	.00	.60	.00	.00	.10	.60	.30	.30	.40	.00	.00
9	.00	.00	.00	.00	.00	.00	1.90	.00	.10	.10	.00	.00
10	.00	.00	.00	.00	.00	.00	.70	.00	.00	.20	.00	.00
11	.10	.10	.00	.00	.10	.00	.00	.40	.10	.10	.00	.00
12	.10	.10	.00	.00	.00	.00	.50	.50	.30	.00	.00	.10
13	.00	.10	.00	.00	.00	.00	.20	.70	.20	.20	.10	.00
14	.00	.00	.10	.00	.00	.00	.10	.30	.90	.20	.10	.00
15	.00	.00	.10	.00	.10	.00	.00	.20	.00	.20	.10	.00
16	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.10	.30	.40	.00	.00	.00	.10	.10	.00	.00	.20
18	.10	.30	.00	.20	.00	.00	.00	.40	.00	.00	.00	.10
19	.00	.20	.00	.10	.00	.00	.00	.20	.00	.00	.00	.00
20	.10	.00	.00	.00	.00	.00	.20	.10	1.10	.00	.00	.20
21	.40	.00	.00	.00	.00	.00	.10	.30	.90	.00	.00	.10
22	.60	.00	.00	.00	.20	.00	.10	.10	.40	.00	.30	.10
23	.20	.00	.20	.00	.10	.10	.10	.10	.30	.00	.00	.00
24	.00	.40	.00	.00	.10	.00	.10	.10	.60	.00	.10	.00
25	.30	.50	.60	.00	.10	.40	.00	.00	.10	.00	.10	.10
26	.20	.00	.30	.00	.10	1.00	.10	.00	.90	.00	.20	.00
27	.20	.70	.10	.00	.00	.30	.20	.00	.30	.00	.10	.20
28	.10	.30	.20	.00	.00	.20	.00	.10	.80	.10	.00	.00
29	.20	.40	.20	.00	---	.20	.00	.00	.50	.80	.00	.30
30	.00	.10	.30	.00	---	.50	.00	.00	.30	.20	.00	.00
31	.00	---	.00	.00	---	.70	---	.10	---	.00	.10	---
TOTAL	5.70	3.80	4.20	1.90	0.90	3.50	7.40	5.10	8.50	3.50	1.40	1.80

WTR YR 1998 TOTAL 47.70

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212434157495601. State Key Number 839.3 Haiku rain gage near Heeia, Oahu.

LOCATION.--Lat 21°24′34″, long 157°49′56″, near main building of Omega Station, 1.9 mi southwest of Kaneohe Post Office, and 2.0 mi south of Ahuimanu School.

PERIOD OF RECORD.--Continuous-record station, June 2, 1986 to September 1998 (discontinued). Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage receiver and 7 5/16-in. storage can with a float-type system attached to a digital recorder. Elevation of gage is 460 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	3.0	.4	3.1	.0	.0	.0	.1	.0	.0	.0	.5
2	.7	.0	.0	.2	.0	.3	.0	.0	.0	.0	.0	.5
3	1.4	.1	.0	.0	.0	.0	.0	.1	.4	.5	.0	.0
4	.9	.0	.0	.0	.0	.0	.0	.0	.3	.4	.1	.1
5	.2	1.6	.0	.5	.0	.0	.2	.0	.2	.2	.0	.0
6	.3	.0	.2	.1	.0	.0	.0	.4	.0	.0	.1	.1
7	.5	.0	.3	.0	.0	.0	.2	.0	.2	.1	.2	.0
8	.5	.2	.2	.0	.0	.0	.1	.0	.4	.2	.3	.0
9	1.2	.1	.1	.0	.0	.0	.2	.0	.0	.2	.6	.2
10	.3	.0	.1	.0	.0	.0	.0	.0	.1	.0	.2	.1
11	.7	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.5	.0	.0	.0	.0	.0	.2	.2	.0	.0	.3
13	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.1
15	.1	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0	.1
16	.1	.0	.5	.0	.0	.0	.0	.0	.0	.1	.0	.2
17	.0	.0	.0	.8	.0	.0	.0	.1	.0	.0	.2	.0
18	.0	.1	1.6	.1	.0	.0	.1	.0	.0	.0	.0	.1
19	.0	.1	.1	.0	.0	.0	.2	.1	.1	.0	.0	.0
20	.0	.0	.2	.0	.0	.0	.5	.1	.5	.0	.0	.1
21	.2	.0	.0	.0	.0	.0	.2	.1	.3	.0	.0	.6
22	.1	.0	.0	.0	.0	.0	.2	.2	.1	.0	.4	.0
23	.0	.0	.4	.0	.0	.0	.1	.0	.0	.0	.0	.0
24	.0	.2	.1	.0	.0	.0	.0	.0	.6	.0	.0	.0
25	.0	.0	.2	.0	.0	.1	.0	.0	.1	.0	.3	.0
26	.1	.0	.0	.0	1.6	.2	.1	.0	.4	.1	.0	.1
27	.0	.8	.1	.0	.1	.1	.2	.0	.1	.0	.1	.0
28	.0	.1	1.5	.0	.0	.0	.1	.0	.3	.0	.2	.0
29	.0	.1	.0	.0	---	.1	.0	.0	.4	.1	.0	.3
30	.0	.8	1.1	.0	---	.2	.0	.0	.3	.1	.0	.0
31	.1	---	1.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	7.4	7.9	8.1	4.8	1.7	1.0	2.4	1.4	5.3	2.5	2.7	3.4

CAL YR 1997 TOTAL 90.2
WTR YR 1998 TOTAL 48.6

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213016158105901. State Key Number 842.1 Makaha rain gage near Makaha, Oahu.

LOCATION.--Lat 21°30′16″, long 158°10′59″, Hydrologic Unit 20060000, in USGS stream-gaging station 16211600, on right bank, 1.5 mi northeast of Kaneaki Heiau, and 3.4 mi northeast of Makaha.

PERIOD OF RECORD.--Continuous-record station, July 1959 to current year. Prior to October 1992, unpublished records in files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in., 4-ft tall rain can with a float-type system attached to an electronic data logger. Readings are taken at 30-minute intervals. Elevation of gage is 957 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.00	.10	.00	.50	.10	.00	.30	.00	.00	.40	.10
2	.00	.00	.70	.00	.00	.00	.50	.00	.00	.00	.00	.50
3	.30	.00	.10	.10	.00	.00	.00	.00	.00	.10	.00	.00
4	.00	.00	.00	.30	.30	.00	.00	.00	.10	.00	.00	.00
5	.10	.10	.00	.20	.00	.00	.20	.00	.00	.10	.00	.00
6	.00	.00	.00	.00	.00	.10	.00	.30	.00	.00	.00	.00
7	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.20	.00
8	.00	.30	.20	.00	.00	.00	.10	.00	.00	.00	.00	.00
9	1.00	.00	.00	.10	.00	.00	1.00	.00	.00	.00	.00	.00
10	.50	.00	.10	.00	.00	.00	.20	.00	.00	.00	.00	.00
11	.50	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.10	.10	.10	.00	.00	.00	.10	.10	.00	.00	.10	.00
13	.00	.00	.00	.00	.30	.00	.10	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00
16	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	1.00	.10
17	.00	.10	.00	1.80	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.40	.00	.10	.00	.00	.00	.10	.00	.00	.00	.00
19	.00	.10	.00	.00	.00	.00	.00	.10	.10	.00	.00	.00
20	.00	.30	.00	.10	.00	.00	.00	.00	.50	.00	.00	.10
21	.10	.00	.00	.00	.00	.10	.10	.00	.00	.00	.00	.10
22	.00	.00	.00	.20	.30	.20	.00	.10	.00	.00	.10	.00
23	.10	.10	.20	.00	.10	.10	.00	.00	.10	.00	.00	.00
24	.00	.80	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
25	.00	.60	.00	.00	.00	.10	.40	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.40	.00	.00	.20	.00	.00	.00
27	.00	.50	.00	.30	.00	.10	.20	.00	.00	.00	.00	.00
28	.00	.20	.10	.00	.00	.10	.10	.00	.10	.10	.00	.10
29	.00	.10	.80	.00	---	.00	.00	.00	.20	.10	.00	.00
30	.00	.30	.60	.00	---	.00	.10	.00	.10	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	2.70	5.10	3.30	3.20	1.50	1.30	3.10	1.10	1.50	0.60	1.80	1.00

CAL YR 1997 TOTAL 55.60
WTR YR 1998 TOTAL 26.20

213205157571001. State Key Number 882.3 Poamoho rain gage no. 3 near Wahiawa, Oahu.

LOCATION.--Lat 21°32′05″, long 157°57′10″, Hydrologic Unit 20060000, on right side of Poamoho Trail, and 0.2 mi northeast from trail marker.

PERIOD OF RECORD.--Accumulated-rainfall station, July 12, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--A 3-in. diameter, 5-ft tall aluminum non-recording gage. Elevation of gage is 1,800 ft above mean sea level (from topographic map).

REMARKS.--Record good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Aug. 06 to Nov. 07	34.6
Nov. 07 to Nov. 28	4.1
Nov. 28 to Mar. 11	18.7
Mar. 11 to Jun. 16	30.6
Jun. 16 to Aug. 05	17.3
Aug. 05 to Dec. 14	44.6

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213211157562400. State Key Number 882.4 Poamoho rain gage no. 2 near Wahiawa, Oahu.

LOCATION.--Lat 21°32′11″, long 157°56′24″, Hydrologic Unit 20060000, on Poamoho trail 1.0 mi west of junction with Koolau Summit Trail, and 5.3 mi northeast of Leilehua High School in Wahiawa.

PERIOD OF RECORD.--Continuous-record station, June 8, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector on a 10-in. storage can with a float-type system attached to an electronic data logger. Elevation of gage is 1,960 ft above mean sea level (from topographic map).

REMARKS.--Record good for periods when logger was operational and poor when it malfunctioned. Rainfall recorded in increments of 0.188 inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.75	.37	1.69	---	.00	.38	c.00	---	---	---	.38
2	.19	.19	.19	.00	---	.00	.75	---	---	---	---	.75
3	2.63	.00	.19	.00	---	.19	.00	---	---	---	---	.38
4	.75	.19	.00	.19	---	.00	.00	---	---	---	---	.00
5	.38	.38	.00	.38	---	.00	.75	---	---	---	d.00	.00
6	.56	.00	.38	.00	b.00	.00	.38	---	---	---	.00	.19
7	1.31	.37	1.69	.00	.00	.00	.38	---	---	---	.19	.19
8	1.31	.38	.19	.00	.00	.19	1.13	---	---	---	.38	.00
9	.19	.19	.19	.00	.00	.00	.56	---	---	---	.38	.38
10	.00	.00	.00	.00	.00	.00	.19	---	---	---	.19	.38
11	.19	.56	.00	.00	.00	.00	.19	---	---	---	.00	.00
12	.19	.94	.19	.00	.00	.00	.00	---	---	---	.19	.56
13	.00	.56	.00	a.00	.00	.00	.19	---	---	---	.38	.19
14	.00	.00	.19	---	.00	.00	.00	---	---	---	.00	.19
15	.19	.00	.19	---	.19	.00	.00	---	---	---	.00	.38
16	.00	.00	.75	---	.00	.00	.00	---	---	---	.19	.19
17	.00	.00	.38	---	.00	.00	.00	---	---	---	.19	.19
18	.56	.19	1.31	---	.00	.00	.19	---	---	---	.19	.00
19	.00	.00	.75	---	.00	.00	.19	---	---	---	.00	.19
20	.00	.19	.38	---	.00	.00	1.69	---	---	---	.38	.38
21	.94	.00	.00	---	.00	.00	.19	---	---	---	.37	.56
22	1.88	.00	.19	---	.94	.19	.75	---	---	---	3.38	.19
23	1.50	.38	.38	---	.00	.38	.75	---	---	---	.19	.38
24	.00	.94	.19	---	.75	.00	1.31	---	---	---	.19	1.31
25	.19	.75	.38	---	.56	.38	.19	---	---	---	.00	.94
26	.19	.00	.19	---	.00	1.31	.00	---	---	---	.19	.00
27	.00	1.69	.75	---	1.31	.38	.19	---	---	---	.19	.38
28	.19	.75	.56	---	.00	.19	.19	---	---	---	.37	.19
29	.38	1.50	.94	---	---	.38	.00	---	---	---	.38	.19
30	.00	.56	1.13	---	---	.56	.00	---	---	---	.19	.00
31	.19	---	.19	---	---	.94	---	---	---	---	.00	---
TOTAL	13.91	11.46	12.24	---	---	5.09	10.54	---	---	---	---	9.06

CAL YR 1997 TOTAL 171.24
WTR YR 1998 TOTAL 117.15

(a) Partial daily record from 0015 hrs to 1115 hrs; no record Jan. 13 (1130 hrs) to Feb. 6 (0945 hrs). Total accumulated rainfall for this period is 3.65 inches
(b) Partial daily record from 1000 hrs to 2400 hrs
(c) Partial daily record from 0015 hrs to 0130 hrs; no record May 1 (0145 hrs) to Jun. 16 (1030 hrs). Total accumulated rainfall for this period is 18.49 inches (logger was removed)
(d) Partial daily record from 1100 hrs to 2400 hrs; no record Jun. 16 (1045 hrs) to Aug. 5 (1000 hrs). Total accumulated rainfall for this period is 18.59 inches

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213215157552800. State Key Number 883.12 Poamoho rain gage no. 1 near Wahiawa, Oahu.

LOCATION.--Lat 21°32′15″, long 157°55′28″, Hydrologic Unit 20060000, at junction of Poamoho and Koolau summit trails, and 6.2 mi northeast of Leilehua High School in Wahiawa.

PERIOD OF RECORD.--Continuous-record station, June 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector on a 10-in. storage can with a float-type system attached to an electronic data logger. Elevation is 2,480 ft above mean sea level (from topographic map).

REMARKS.--Records good when logger was operational and poor when it malfunctioned. Rainfall recorded in increments of 0.188 inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	.38	2.63	.00	1.13	.00	---	c--	---	---	.19
2	.19	---	.00	1.69	.38	.00	.56	---	.56	---	---	.56
3	2.25	---	.19	.00	.19	.00	.00	---	.38	---	---	.56
4	.56	---	.00	.00	.00	.19	.00	---	.38	---	---	.00
5	.56	---	.19	.19	.00	.38	.75	---	1.31	---	d.00	.00
6	.38	---	.00	.38	.00	.00	.38	---	.00	---	.00	.38
7	.94	---	1.50	.00	.00	.19	.19	---	.00	---	.19	.00
8	1.88	---	.38	.00	.00	.00	.94	---	1.31	---	.19	.00
9	.38	---	.19	.00	.00	.19	.38	---	.00	---	.75	.75
10	.00	---	.00	.00	.00	.19	.00	---	.19	---	.19	.38
11	.19	---	.19	.00	.00	.00	.00	---	.19	---	.00	.00
12	.00	---	.00	.00	.00	.00	.19	---	.75	---	.56	.56
13	.00	---	.00	.00	.00	.00	.00	---	.19	---	.19	.37
14	.00	---	.00	.00	.00	.00	.00	---	.94	---	.00	.00
15	.38	---	.19	.00	.00	.00	.00	---	.75	---	.00	.38
16	.00	---	.56	.00	.00	.00	.00	---	.00	---	.56	.19
17	.00	---	.19	.00	.00	.00	.00	---	.00	---	1.13	.19
18	.56	---	2.44	1.31	.00	.00	.00	---	.00	---	.19	.00
19	.00	---	.75	1.13	.00	.00	.75	---	.00	---	.00	.00
20	.00	---	.75	.00	.00	.00	1.87	---	.75	---	.19	.00
21	.75	---	.19	.00	.00	.00	.00	---	.94	---	.38	1.13
22	1.13	---	.00	.00	.00	.00	.75	---	.56	---	2.25	.00
23	.75	---	.19	.00	.00	.00	.75	---	.00	---	.00	.75
24	.19	---	.56	.00	.37	.00	.94	---	.38	---	.19	1.13
25	.00	---	.19	.00	.00	.00	.00	---	---	---	.00	.75
26	a.19	---	.19	.00	.38	.56	.19	---	---	---	.00	.19
27	---	b.00	.00	.00	1.13	.00	.38	---	---	---	.19	.00
28	---	.00	1.13	.00	.19	.19	---	---	---	---	.56	.19
29	---	.75	.94	.00	---	.19	---	---	---	---	.56	.38
30	---	.56	1.13	.19	---	.38	---	---	---	---	.19	.00
31	---	---	1.50	.00	---	.56	---	---	---	---	.19	---
TOTAL	---	---	13.92	7.52	2.64	4.15	---	---	---	---	---	9.03

WTR YR 1998 TOTAL 112.67

(a) Partial daily record from 0030 hrs to 1100 hrs; no record Oct. 26 (1130 hrs) to Nov. 7 (1300 hrs), station vandalized. Total accumulated rainfall during this period was 2.32 inches
(b) Partial daily record from 1230 hrs to 2400 hrs; no record Nov. 7 (1330 hrs) to Nov. 28 (1200 hrs), recorder removed. Total accumulated rainfall during this period was 6.72 inches
(c) No record Apr. 28 (0030 hrs) to Jun. 1 (2400), float wheel stuck. Total accumulated rainfall during this period was 12.14 inches
(d) Partial daily record from 1230 hrs to 2400 hrs; no record Jun. 25 (0030 hrs) to Aug. 5 (1550 hrs), float wheel stuck. Total accumulated rainfall during this period was 14.39 inches

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213221157541501. State Key Number 884.3 Punaluu rain gage near Punaluu, Oahu.

LOCATION.--Lat 21°32′21″, long 157°54′15″, Hydrologic Unit 20060000, 4.9 mi south of Hauula School, and 1.5 mi south of USGS stream-gaging station on Punaluu Ditch 16302000.

PERIOD OF RECORD.--Accumulated-rainfall station, July 14, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector with standard 8-in. can, and an auxiliary 3-in. diameter, 5-ft high measuring can. Elevation of gage is 750 ft above mean sea level (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Sep. 23 to Dec. 22	9.7
Dec. 22 to Feb. 25	37.0
Feb. 25 to May 7	12.7
May 7 to Oct. 14	55.3

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213237157530701. State Key Number 886.4 Kahana rain gage at altitude 95 ft near Kahana, Oahu.

LOCATION.--Lat 21°32′37″, long 157°53′07″, Hydrologic Unit 20060000, on right bank, 600 ft upstream from Kawa Stream, about 40 ft bankward from USGS stream-gaging station 16296500, 1.1 mi southwest of Kahana, and 2.2 mi southwest of Swanzy Beach Park in Kaaawa.

PERIOD OF RECORD.--Accumulated-rainfall station, December 23, 1958 to May 11, 1961, February 19, 1990 to June 17, 1994. Continuous-record station, May 11, 1961 to February 19, 1990, June 17, 1994 to current year. Prior to October 1992, unpublished records in files of the U.S. Geological Survey.

GAGE.--An electronic data logger with a float system using an 8-in. receiver and 7 5/16-in. diameter by 4-ft tall rain can takes readings at 30-minute intervals. Elevation of gage is 95 ft above mean sea level (from topographic map).

REMARKS.--Records good except for periods of no daily record, December 21 to April 7, which are poor.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.80	.40	---	---	---	---	.20	.10	.20	.20	.10
2	.2	.00	.00	---	---	---	---	.00	.30	.10	.10	.30
3	1.4	.00	.10	---	---	---	---	.10	.10	.80	.10	.20
4	.3	.00	.00	---	---	---	---	.00	.30	.30	.00	.00
5	.3	.70	.00	---	---	---	---	.00	.20	.30	.00	.00
6	.2	.00	.00	---	---	---	---	.20	.00	.00	.10	.10
7	.9	.00	1.70	---	---	---	b.10	.10	.00	.10	.10	.00
8	1.2	.20	.10	---	---	---	.50	.10	1.00	.20	.30	.00
9	.6	.00	.00	---	---	---	.10	.00	.10	.20	.40	.40
10	.00	.00	.20	---	---	---	.10	.00	.00	.00	.10	.30
11	.1	.20	.00	---	---	---	.00	.10	.10	.10	.00	.00
12	.2	.10	.00	---	---	---	.00	.20	.50	.00	.10	.20
13	.00	.00	.00	---	---	---	.10	.00	.10	.80	.10	.40
14	.00	.00	.20	---	---	---	.00	.20	.20	.20	.10	.00
15	.2	.10	.00	---	---	---	.00	.00	.50	.10	.00	.20
16	.10	.00	.20	---	---	---	.00	.00	.10	.10	.10	.20
17	.00	.00	.10	---	---	---	.00	.40	.20	.00	.60	.00
18	.3	.10	1.00	---	---	---	.00	.10	.10	.00	.00	.00
19	.00	.10	.10	---	---	---	.30	.40	.00	.00	.00	.00
20	.00	.30	.70	---	---	---	.50	.20	.40	.00	.10	.10
21	.2	.00	a.00	---	---	---	.20	.00	.10	.00	.20	.50
22	.3	.00	---	---	---	---	.50	.10	.10	.00	.60	.00
23	.10	.20	---	---	---	---	.20	.10	.30	.00	.00	.00
24	.00	.20	---	---	---	---	.20	.00	.80	.00	.10	.10
25	.00	.10	---	---	---	---	.20	.00	.20	.20	.00	.20
26	.10	.00	---	---	---	---	.60	.00	.30	.00	.00	.00
27	.00	.30	---	---	---	---	.30	c.30	.10	.00	.20	.00
28	.10	.10	---	---	---	---	.00	.00	.30	.10	.20	.10
29	.00	.40	---	---	---	---	.00	.10	.60	.30	.00	.10
30	.10	.60	---	---	---	---	.00	.20	.20	.00	.00	.00
31	.00	---	---	---	---	---	---	.00	---	.00	.10	---
TOTAL	6.90	6.50	---	---	---	---	---	3.10	7.30	4.10	3.90	3.50
MEAN	.22	.22	---	---	---	---	---	.10	.24	.13	.13	.12
MAX	1.40	2.80	---	---	---	---	---	.40	1.00	.80	.60	.50
MIN	.00	.00	---	---	---	---	---	.00	.00	.00	.00	.00

WTR YR 1998 TOTAL 64.00

(a) Partial daily record from 0015 hrs to 1030 hrs. No record, battery failed
(b) Partial daily record from 1415 hrs to 2400 hrs. No record from Dec. 17 (1045 hrs) to Apr. 7 (1415 hrs), battery failed. Total accumulated rainfall during this period was 20.0 inches
(c) Total accumulated rainfall from Apr. 7 to May 27 was 0.5 inches greater than amount shown

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213000157515401. State Key Number 886.6 Waikane rain gage at altitude 75 ft at Waikane, Oahu.

LOCATION.--Lat 21°30′00″, long 157°51′54″, Hydrologic Unit 20060000, in USGS stream-gaging station 16294900, 0.3 mi downstream from Waikeekee Stream, 0.7 mi west of Waikane, and 1.2 mi northwest of Waiahole School.

PERIOD OF RECORD.--Continuous-record station, February 18, 1960 to October 2, 1985, May 17, 1994 to current year. Accumulated-rainfall station, October 2, 1985 to May 17, 1994. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in., 4-ft tall rain can with a float-type system attached to an electronic data logger. Readings are taken at 15-minute intervals. Elevation of gage is 75 ft above mean sea level (from topographic map).

REMARKS.--Records good when the logger was operational and poor when it malfunctioned November 16, 1997 to January 16, 1998. Daily record read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.50	---	---	.20	.00	.00	.30	.00	.00	.10	.10
2	.10	.00	---	---	.00	.10	.00	.00	.00	.10	.00	.60
3	.60	.20	---	---	.00	.00	.00	.00	.30	.40	.20	.10
4	.10	.00	---	---	.00	.20	.00	.10	.00	.20	.10	.00
5	.00	.90	---	---	.00	.00	.20	.00	.20	.10	.00	.00
6	.00	.00	---	c--	.00	.00	.00	.00	.00	.00	.10	.00
7	.20	.00	---	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.10	.80	---	.00	.00	.30	.00	.00	.20	.00	.10	.00
9	.10	.10	---	.00	.00	.00	.00	.10	.10	.00	.10	.10
10	.00	.00	---	.00	.00	.00	.00	.10	.00	.00	.10	.00
11	.30	.00	---	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.10	---	.00	.00	.00	.00	.10	.30	.00	.00	.10
13	.00	.00	---	.00	.00	.00	.10	.00	.00	.50	.00	.10
14	.10	.00	---	.00	.00	.00	.00	.10	.10	.20	.00	.00
15	.00	.00	---	.00	.00	.00	.00	.00	.30	.10	.00	.10
16	.00	a.00	---	.00	.00	.00	.00	.00	.00	.00	.10	.00
17	.00	---	b--	.80	.00	.00	.00	.10	.10	.00	.00	.00
18	.10	---	---	.00	.00	.00	.10	.10	.00	.00	.00	.20
19	.00	---	---	.00	.10	.00	.10	.10	.00	.00	.00	.00
20	.00	---	---	.00	.00	.00	.60	.00	.30	.00	.00	.00
21	.10	---	---	.00	.00	.10	.10	.10	.10	.00	.00	.10
22	.10	---	---	.00	.00	.00	.10	.00	.00	.00	.20	.00
23	.00	---	---	.00	.00	.10	.00	.10	.10	.00	.10	.00
24	.00	---	---	.00	.00	.00	.00	.00	.30	.00	.00	.00
25	.00	---	---	.00	.10	.00	.50	.00	.10	.00	.00	.00
26	.00	---	---	.00	.50	.10	.00	.00	.20	.10	.00	.00
27	.00	---	---	.30	.00	.00	.20	.10	.10	.00	.10	.00
28	.00	---	---	.00	.00	.10	.20	.00	.30	.00	.00	.00
29	.00	---	---	.00	---	.00	.00	.00	.10	.10	.00	.00
30	.00	---	---	.00	---	.00	.10	.00	.10	.10	.00	.00
31	.00	---	---	.00	---	.10	---	.10	---	.00	.00	---
TOTAL	1.90	---	---	---	0.90	1.10	2.30	1.50	3.30	1.90	1.30	1.50

WTR YR 1998 TOTAL 38.9

(a) Partial daily record from 0015 hrs to 2045 hrs. Recorder stopped
(b) No record from Nov. 16 (2045 hrs) to Dec. 17 (1400 hrs), recorder stopped. Total accumulated rainfall during this period was 3.8 inches
(c) No record from Dec. 17 (1415 hrs) to Jan. 6 (1000 hrs), recorder stopped. Total accumulated rainfall during this period was 12.7 inches

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213725158010401. State Key Number 897.1 Kamananui rain gage at Pupukea Military Road near Maunawai, Oahu.

LOCATION.--Lat 21°37′25″, long 158°01′04″, Hydrologic Unit 20060000, on left bank, at USGS stream-gaging station 16325000, 75.0 ft upstream from Pupukea Military Road, and 3.5 mi southeast of Maunawai.

PERIOD OF RECORD.--Continuous-record station, July 1, 1963 to current year. Prior to October 1992, unpublished records are in the files of the Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 8-in. rain can attached to a tipping-bucket counter. An electronic data logger was installed on March 26, 1996 to record rainfall at 15-minute intervals. Elevation of gage is 590 ft above mean sea level (from topographic map).

REMARKS.--Records good January 14 to April 23. For the rest of the year, rainfall was adjusted by the ratio of rain can readings divided by the total tips of the tipping bucket. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.12	.36	.18	.30	.00	.10	.25	.00	.08	.00	.43
2	.37	.00	.18	.00	.00	.00	.30	.08	.08	.16	.00	.43
3	1.95	.09	.00	.09	.00	.10	.10	.08	.08	.25	.11	.32
4	.19	.00	.00	.09	.50	.00	.00	.00	.00	.08	.11	.00
5	.28	.00	.00	.46	.00	.00	.20	.00	.00	.00	.00	.00
6	.46	.00	.18	.09	.00	.00	.10	.74	.00	.00	.00	.32
7	.37	.00	.55	.00	.00	.00	.20	.08	.00	.16	.11	.00
8	.00	.18	.36	.00	.00	.00	.60	.49	.57	.25	.21	.00
9	.00	.00	.00	.00	.00	.00	.80	.08	.00	.08	.00	.00
10	.00	.00	.27	.00	.00	.00	.30	.08	.08	.16	.11	.11
11	.00	.27	.00	.00	.00	.00	.00	.16	.08	.08	.32	.00
12	.19	.36	.00	.00	.00	.00	.30	.66	.49	.08	.00	.11
13	.00	.27	.00	.00	.00	.00	.20	.25	.08	.16	.11	.11
14	.00	.00	.09	.00	.00	.00	.00	.16	.49	.25	.00	.11
15	.00	.00	.27	.00	.10	.00	.00	.08	.16	.33	.32	.00
16	.09	.00	.64	.00	.00	.00	.00	.08	.00	.00	.00	.00
17	.00	.00	.36	1.00	.00	.00	.00	.08	.16	.00	.00	.11
18	.09	.18	.00	.30	.00	.00	.00	.08	.16	.00	.00	.00
19	.00	.27	.09	.30	.00	.00	.10	.08	.25	.00	.00	.11
20	.09	.64	.46	.00	.00	.00	.10	.08	.90	.00	.00	.53
21	.56	.00	.00	.00	.00	.10	.30	.16	.66	.00	.11	.11
22	.46	.00	.09	.00	.20	.00	.10	.00	.16	.00	.32	.00
23	.28	.18	.09	.10	.10	.20	.30	.00	.33	.00	.11	.00
24	.00	.36	.09	.00	.10	.00	.00	.08	.57	.00	.00	.32
25	.37	.27	.46	.00	.10	.70	.00	.00	.08	.00	.11	.00
26	.00	.09	.18	.00	.40	.50	.25	.00	.49	.00	.00	.00
27	.09	1.18	.18	.10	.20	.20	.00	.00	.16	.00	.21	.11
28	.00	.18	.18	.00	.10	.20	.08	.08	.33	.00	.11	.11
29	.00	.55	.27	.00	---	.10	.00	.00	.49	.11	.00	.11
30	.00	.46	.46	.00	---	.30	.08	.00	.33	.00	.11	.00
31	.00	---	.00	.00	---	.60	---	.16	---	.00	.00	---
TOTAL	5.84	6.65	5.81	2.71	2.10	3.00	4.51	4.07	7.18	2.23	2.48	3.45

WTR YR 1998 TOTAL 50.03

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213608158011101. State Key Number 897.9 Pupukea Road rain gage at altitude 1,160 ft near Haleiwa, Oahu (formerly published as Pupukea Road rain gage at altitude 1,600 ft near Haleiwa, Oahu).

LOCATION.--Lat 21°36′08″, long 158°01′11″, Hydrologic Unit 20060000, 4.3 mi southeast of Maunawai, 5.5 mi east of Haleiwa Beach Park, and 400 ft left of the road on the ridge.

PERIOD OF RECORD.--Continuous-record station, November 1, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain collector attached to a 8-in. storage can with a recording float-type system. On January 23, an electronic data logger was installed to replace the recorder. Elevation of gage is 1,160 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in 0.12 of an inch increments.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.84	.48	.36	.12	.00	.24	.72	.00	.12	.00	.36
2	.00	.12	.12	.00	.00	.00	.84	.12	.00	.12	.00	.24
3	1.80	.00	.12	.00	.00	.00	.00	.24	.12	.60	.00	.24
4	.36	.00	.00	.12	.36	.00	.00	.00	.00	.00	.12	.00
5	.36	.00	.00	.72	.00	.00	.48	.00	.00	.12	.24	.00
6	.48	.00	.12	.00	.00	.00	.24	.96	.00	.00	.12	.12
7	.12	.00	.60	.00	.00	.00	.24	.00	.00	.12	.24	.00
8	.00	.24	.48	.00	.00	.00	.60	.24	.36	.36	.00	.00
9	.00	.00	.00	.00	.00	.00	1.08	.24	.12	.00	.12	.00
10	.00	.00	.12	.00	.00	.00	.24	.12	.00	.24	.12	.00
11	.00	.12	.00	.00	.00	.00	.12	.36	.12	.12	.12	.00
12	.24	.24	.12	.00	.00	.00	.12	.60	.36	.12	.12	.12
13	.00	.36	.00	.12	.00	.00	.48	.48	.12	.24	.12	.00
14	.00	.00	.12	.00	.00	.00	.00	.48	.60	.12	.00	.00
15	.00	.00	.24	.00	.00	.00	.00	.12	.12	.48	.12	.24
16	.12	.00	.60	.00	.12	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.12	1.68	.00	.00	.00	.24	.12	.00	.00	.00
18	.00	.12	.00	.72	.00	.00	.00	.12	.12	.00	.00	.12
19	.00	.24	.00	.36	.00	.00	.12	.24	.24	.00	.00	.00
20	.12	.36	.24	.00	.00	.00	.00	.12	1.68	.12	.24	.48
21	.36	.00	.00	.00	.00	.00	.12	.24	.96	.00	.00	.12
22	.72	.00	.00	.00	.48	.00	.36	.12	.72	.00	.24	.12
23	.12	.36	.36	.00	.00	.24	.12	.00	.36	.00	.00	.00
24	.00	.60	.00	.00	.12	.00	.00	.12	.84	.00	.12	.12
25	.24	.60	.24	.00	.00	.36	.00	.00	.24	.00	.00	.12
26	.12	.00	.36	.00	.12	.60	.24	.00	.84	.00	.12	.12
27	.12	1.44	.00	.12	.12	.24	.00	.00	.24	.00	.12	.00
28	.00	.48	.24	.00	.00	.24	.12	.00	.84	.00	.00	.24
29	.12	.96	.36	.00	---	.12	.00	.00	.60	.48	.12	.12
30	.00	.24	.60	.00	---	.48	.00	.12	.48	.00	.12	.00
31	.00	---	.00	.00	---	.72	---	.00	---	.00	.00	---
TOTAL	5.40	7.32	5.64	4.20	1.44	3.00	5.76	6.00	10.20	3.36	2.52	2.88
MEAN	.17	.24	.18	.14	.05	.10	.19	.19	.34	.11	.08	.10
MAX	1.80	1.44	.60	1.68	.48	.72	1.08	.96	1.68	.60	.24	.48
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

WTR YR 1998 TOTAL 57.72

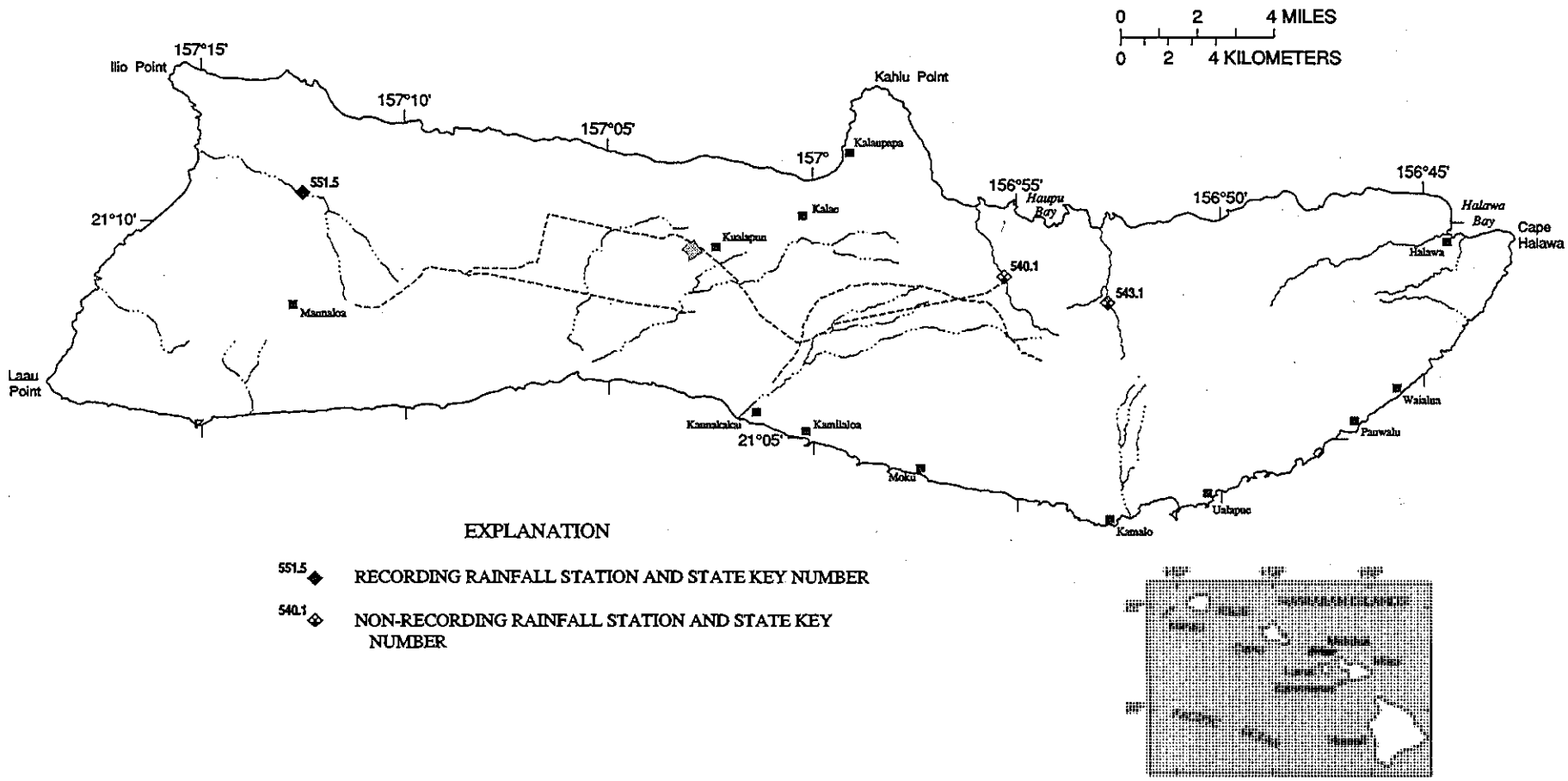


Figure 23. Locations of rainfall stations on Molokai.

RAINFALL RECORDS

HAWAII, ISLAND OF MOLOKAI

210843156551801. State Key Number 540.1 Waikolu rain gage at altitude 900 ft, near Kalaupapa, Molokai.

LOCATION.--Lat 21°08′43″, long 156°55′18″, Hydrologic Unit 20050000, on left bank near USGS stream-gaging station 16405500, 1.8 mi southwest of Haupu Bay, 2.3 mi upstream from mouth, and 5.2 mi southeast of Kalaupapa.

PERIOD OF RECORD.--1957 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard rain gage with reduced 1:2 catchment. Elevation of gage is 900 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 08	0.5(a)
Oct. 08 to Dec. 09	25.6
Dec. 09 to Dec. 31	5.7(b)
Jan. 01 to Feb. 03	5.3(b)
Feb. 03 to May 22	16.4
May 22 to Jun. 16	4.0
Jun. 16 to Sep. 30	26.1(c)

CAL YR 1997 TOTAL 78.8
WTR YR 1998 TOTAL 83.6

(a) Estimated value based on accumulation can reading of 4.0 inches from Jul. 30 to Oct. 08
(b) Estimated value based on accumulation can reading of 11.0 inches from Dec. 09 to Feb. 03
(c) Estimated value based on accumulation can reading of 41.6 inches from Jun. 16 to Dec. 02

RAINFALL RECORDS

HAWAII, ISLAND OF MOLOKAI--Continued

211039157123101. State Key Number 551.5 Kakaako rain gage near Mauna Loa, Molokai.

LOCATION.--Lat 21°10′39″, long 157°12′31″, Hydrologic Unit 20050000, in the USGS stream-gaging station 16411400 on left bank, 1.0 mi downstream of Kamakahi Gulch, and 3.0 mi north of Mauna Loa school.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. An electronic data logger (0.01 in. per tip) was installed on April 20, 1999 replacing the digital recorder. Elevation of gage is 380 ft (from topographic map).

REMARKS.--Records fair. Rainfall recorded in tenths of an inch through April 20, 1999 and hundredths of an inch afterwards.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	.2	.00	.01	.00	.00	.00	.00
2	.00	---	---	---	b--	.00	.2	.00	.00	.00	.00	.08
3	.00	---	---	---	.00	.00	.1	.00	.00	.06	.00	.01
4	.20	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
5	---	---	---	---	.00	.1	.00	.00	.00	.00	.00	.00
6	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.06
7	---	---	---	---	.00	.00	.00	.00	.00	.06	.01	.00
8	---	---	a--	---	.00	.00	.00	.00	.00	.00	.05	.00
9	---	---	---	---	.00	.00	.1	.00	.00	.00	.02	.00
10	---	---	---	---	.00	.00	.00	.01	.00	.00	.00	.00
11	---	---	---	---	.00	.00	.00	.00	.00	.01	.02	.00
12	---	---	---	---	.00	.00	.1	.01	.00	.00	.00	.00
13	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
14	---	---	---	---	.00	.00	.00	.00	.00	.06	.00	.00
15	---	---	---	---	.00	.00	.00	.00	.00	.25	.00	.00
16	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.06
17	---	---	---	---	.00	.00	.00	.03	.00	.00	.00	.03
18	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
19	---	---	---	---	.00	.00	.1	.01	.00	.00	.00	.00
20	---	---	---	---	.00	.00	.00	.00	.03	.00	.00	.00
21	---	---	---	---	.00	.00	.00	.00	.21	.00	.00	.01
22	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
23	---	---	---	---	.00	.00	.00	.00	.02	.00	.00	.00
24	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.17
25	---	---	---	---	.00	.00	.78	.00	.04	.00	.02	.00
26	---	---	---	---	.00	.00	.00	.00	.14	.00	.10	.00
27	---	---	---	---	.00	.00	.01	.00	.01	.00	.00	.00
28	---	---	---	---	.00	.00	.00	.00	.00	.05	.00	.01
29	---	---	---	---	---	.00	.00	.00	.01	.01	.00	.03
30	---	---	---	---	---	.1	.02	.00	.00	.00	.00	.02
31	---	---	---	---	---	.00	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	0.40	1.41	0.07	0.46	0.50	0.22	0.48

WTR YR 1998 TOTAL 11.44

(a) Total accumulated rainfall from Oct. 6 (1450 hrs) to Dec. 8 (1215 hrs) was 5.4 inches (station vandalized)
(b) Total accumulated rainfall from Dec. 8 (1215 hrs) to Feb. 2 (1345 hrs) was 2.3 inches (station vandalized)

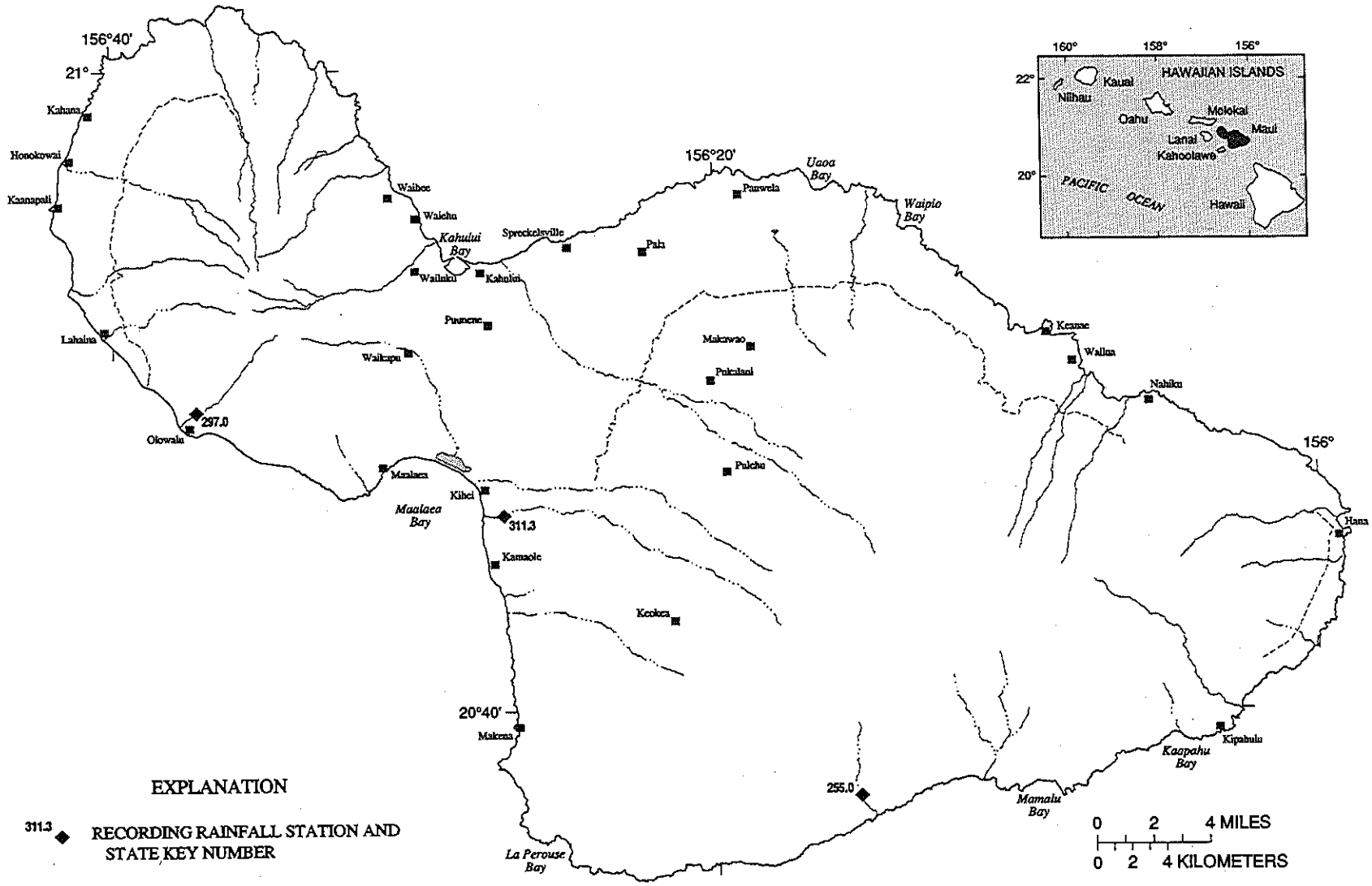


Figure 24. Locations of rainfall stations on Maui.

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI

203721156151601. State Key Number 255.0 Kepuni Gulch rain gage near Kaupo, Maui.

LOCATION.--Lat 20°37′21″, long 156°15′16″, Hydrologic Unit 20020000, next to the discontinued USGS stream-gaging station 16500100 on right bank, 120 ft upstream from bridge on Highway 31, 400 ft upstream from Kamole Gulch, 1.1 mi east of Kahikinui house, and 8.5 mi west of Kaupo.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. Elevation of gage is 740 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.3	.0	.0	.0	.0	.0	.0	.4	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0
18	.0	.2	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
30	.0	.3	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
31	.0	---	.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	0.2	1.3	0.8	1.2	0.0	0.1	0.1	0.0	0.4	0.0	0.2	0.2

CAL YR 1997 TOTAL 26.4
WTR YR 1998 TOTAL 4.5

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI--Continued

204923156371501. State Key Number 297.0 Olowalu rain gage at Olowalu, Maui.

LOCATION.--Lat 20°49′23″, long 156°37′15″, Hydrologic Unit 20020000, in USGS stream-gaging station 16646200 on downstream side of center pier of plantation road bridge, 0.6 mi northeast of Olowalu, and 5.5 mi southeast of Lahaina.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. Elevation of gage is 130 ft (from topographic map).

REMARKS.--Records good except for estimated record. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	e.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0
5	e.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
6	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	e.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	e.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	e.0	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0
10	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	e.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	e.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
31	.0	---	.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	0.0	0.9	0.0	0.3	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0

e Estimated

CAL YR 1997 TOTAL 12.5
WTR YR 1998 TOTAL 1.6

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI--Continued

204606156270301. State Key Number 311.3 Kulanihakoi rain gage near Kihei, Maui.

LOCATION.--Lat 20°46′06″, long 156°27′03″, Hydrologic Unit 20020000, in USGS stream-gaging station 16660000 on right bank, 0.5 mi northeast of Lihue Cemetery, 0.8 mi upstream from mouth, and 1.3 mi southeast of Kihei.

PERIOD OF RECORD.--1963 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. Elevation of gage is 35 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.1	.0	---	.0	.0	.0	.0	.0	.0	.0
31	.0	---	.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	0.2	1.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAL YR 1997 TOTAL 24.6
WTR YR 1998 TOTAL 1.9

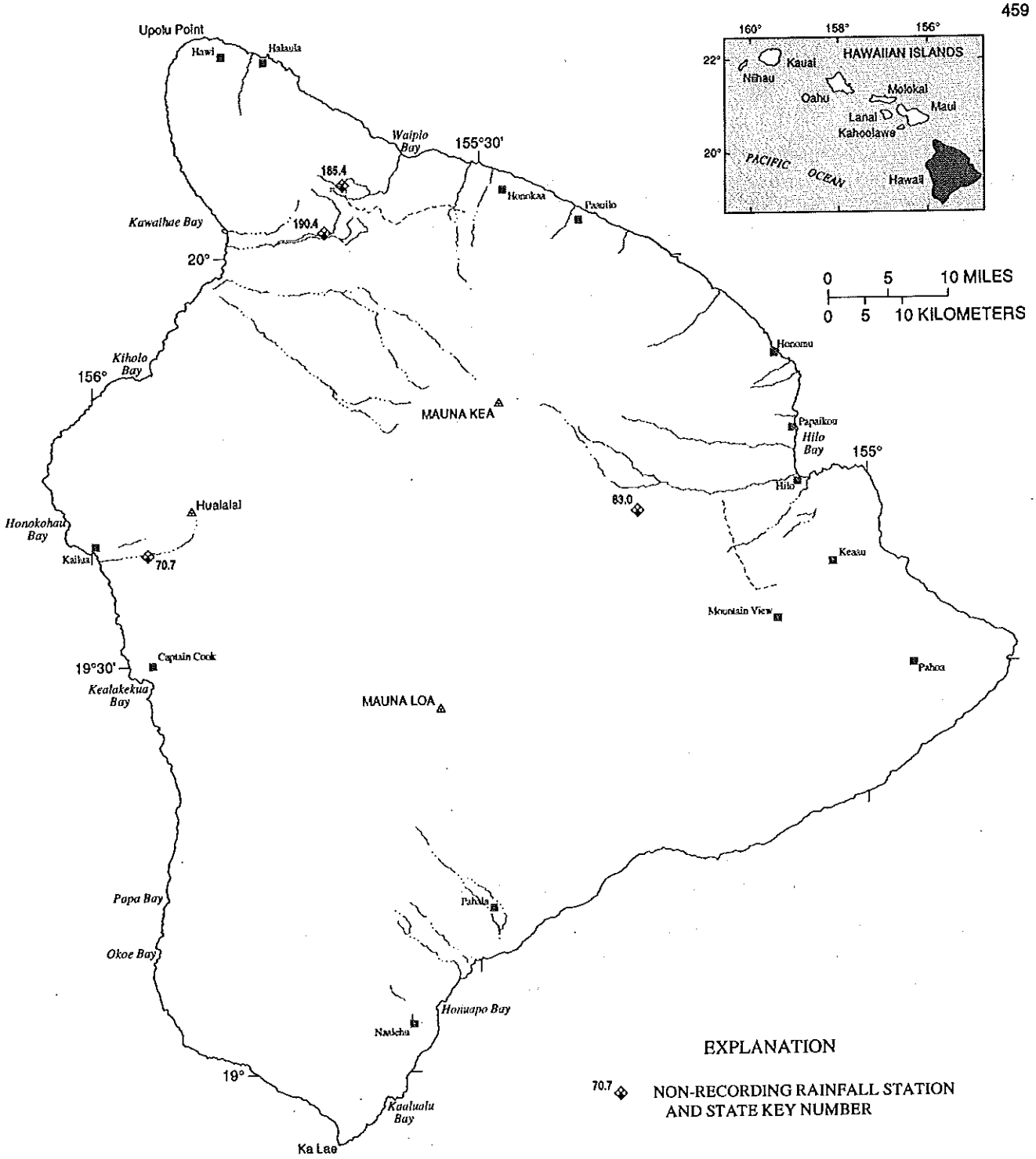


Figure 25. Locations of rainfall stations on Hawaii.

RAINFALL RECORDS

HAWAII, ISLAND OF HAWAII

193812155554501. State Key Number 70.7 Waiaha rain gage at Luawai, near Holualoa, Hawaii.

LOCATION.--Lat 19°38′12″, long 155°55′45″, Hydrologic Unit 20010000, 20 ft downstream of recording crest gage Waiaha Stream at Luawai, near Holualoa (16759300) on right bank, 1.8 mi northeast of Holualoa School, and 4.2 mi southeast of Honokohau School.

PERIOD OF RECORD.--1960 to December 1997 (discontinued). Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 2,580 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Dec. 18	7.3 estimate (a)

(a) Estimated value based on accumulated reading of 8.3 inches from Sep. 25 to Dec. 18, 1997

194117155174801. State Key Number 83.0 Quarry at Saddle Road rain gage, Hawaii.

LOCATION.--Lat 19°41′17″, long 155°17′48″, Hydrologic Unit 20010000, 200 ft north of 16 mi marker on Saddle Road west of Hilo, at old quarry site.

PERIOD OF RECORD.--1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 4,140 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Sep. 12 to Dec. 22	15.6
Dec. 22 to Feb. 09	0.1
Feb. 09 to Mar. 18	1.2
Mar. 18 to May 29	23.7
May 29 to Jul. 28	13.6
Jul. 28 to Oct. 05	21.5

200515155404201. State Key Number 185.4 Upper Hamakua Ditch rain gage below Kawaiki Stream near Kamuela, Hawaii.

LOCATION.--Lat 20°05′15″, long 155°40′42″, Hydrologic Unit 20010000, 15 ft from USGS stream-gaging station 16720500 on right bank, and 800 ft downstream of Kawaiki Stream.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 4,020 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Dec. 02	>34.2 estimate (a)
Dec. 02 to Dec. 31	30.0 estimate (b)
Jan. 01 to Jan. 29	8.9 estimate (b)
Jan. 29 to Apr. 01	41.2
Apr. 01 to May 20	44.0
May 20 to Jul. 22	44.8
Jul. 22 to Sep. 23	39.2
Sep. 23 to Sep. 30	5.0 estimate (c)

CAL YR 1997 TOTAL >228.4
WTR YR 1998 TOTAL >247.3

200148155420501. State Key Number 190.4 Keanuiomano rain gage near Kamuela, Hawaii.

LOCATION.--Lat 20°01′48″, long 155°42′05″, Hydrologic Unit 20010000, in USGS stream-gaging station 16756500 on left bank, 150 ft upstream from junction of State Highway 19 and 25, and 2.0 mi west of Kamuela.

PERIOD OF RECORD.--1963 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 2,410 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Dec. 05	7.7 estimate (d)
Dec. 05 to Dec. 31	1.5 estimate (e)
Jan. 01 to Jan. 29	0.7 estimate (e)
Jan. 29 to Apr. 01	2.0
Apr. 01 to May 21	11.1
May 21 to Jul. 27	5.5
Jul. 27 to Sep. 30	1.9 estimate (f)

CAL YR 1997 TOTAL 28.6
WTR YR 1998 TOTAL 30.4

> Estimated value based on accumulated reading of >44.2 inches from Sep. 17 to Dec. 02, 1997
(a) Estimated value based on accumulated reading of >44.2 inches from Sep. 17 to Dec. 02, 1997
(b) Estimated value based on accumulated reading of 38.9 inchee from Dec. 02, 1997 to Jan 29, 1998
(c) Estimated value based on accumulated reading of 43.4 inches from Sep. 23 to Nov. 18, 1998
(d) Estimated value based on accumulated reading of 9.7 inches from Sep. 18 to Dec. 05, 1997
(e) Estimated value based on accumulated reading of 2.2 inches from Dec. 05, 1997 to Jan 29, 1998
(f) Estimated value based on accumulated reading of 2.0 inches from Jul. 27 to Oct. 01, 1998

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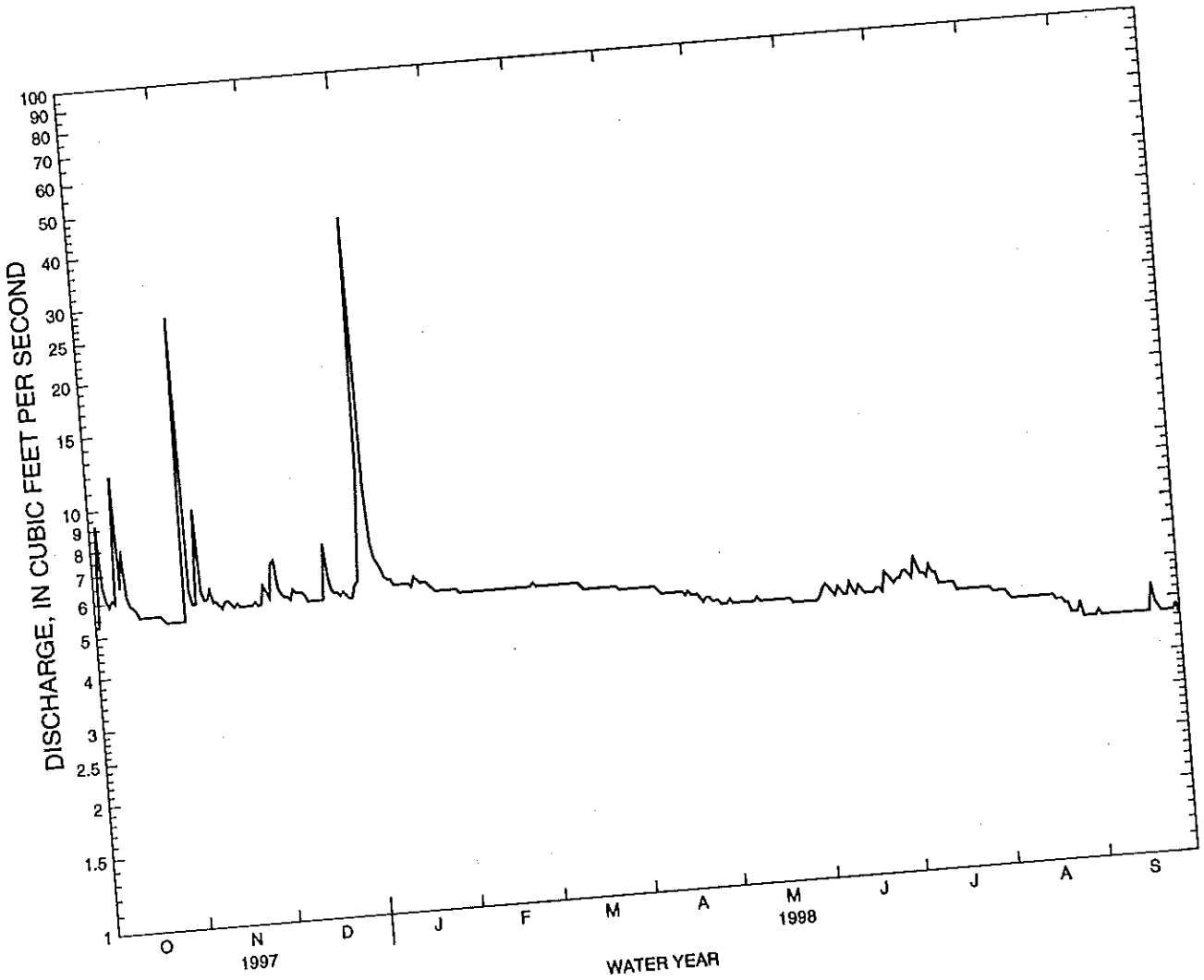
HAWAII, ISLAND OF OAHU

16284200 WAIHEE STREAM NEAR KAHALUU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1975 - 1998	
ANNUAL TOTAL	2349.2		1947.4		6.24	1982
ANNUAL MEAN	6.44		5.34		9.36	1977
HIGHEST ANNUAL MEAN					3.32	1991
LOWEST ANNUAL MEAN					149	Mar 19 1977
HIGHEST DAILY MEAN	47	Jan 3	45	Jan 1	1.3	Apr 15 1977
LOWEST DAILY MEAN	5.2	Sep 10	3.6	Sep 30	1.4	Apr 12 1977
ANNUAL SEVEN-DAY MINIMUM	5.3	Sep 5	3.7	Sep 4		
ANNUAL RUNOFF (AC-FT)	4660		3860		4520	
10 PERCENT EXCEEDS	7.1		6.0		7.5	
50 PERCENT EXCEEDS	5.9		5.2		5.6	
90 PERCENT EXCEEDS	5.4		4.0		4.0	



HAWAII, ISLAND OF OAHU

16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE

LOCATION.--Lat 21°30′00″, long 157°51′54″, Hydrologic Unit 20060000, on right bank, 0.3 mi downstream from Waikeekee Stream, 0.7 mi west of Waikane, and 1.2 mi northwest of Waiahole School.

DRAINAGE AREA.--2.22 mi^2.

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

REVISED RECORDS.--WSP 1937: Drainage area, WDR HI-94-1: 1993 (M).

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 75 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Vaughn Kunishige. Records fair. Waiahole tunnel diverts water from tributaries and tunnels upstream of station. Elevation of the Waiahole tunnel is 800 ft (from topographic map).

AVERAGE DISCHARGE.--38 years (water years 1961-98), 8.80 ft^3/s (6,370 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,800 ft^3/s, February 4, 1965, gage height, 10.76 ft, from rating curve extended above 120 ft^3/s on basis of slope-area measurements at gage heights 4.88 ft, 9.46 ft, and 10.76 ft; minimum, 0.76 ft^3/s, October 27, 1975.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft^3/s and maximum (*): (4.79 ft)

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1145	1,490	6.24	Jan. 1	0515	*2,320	*7.37

Minimum discharge, 1.50 ft^3/s, September 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	72	7.4	406	4.4	3.1	2.4	5.3	2.1	4.3	2.5	2.0
2	3.0	6.5	5.6	44	4.1	3.2	2.4	3.0	2.2	3.7	2.4	3.3
3	20	4.3	4.7	22	3.9	3.1	2.3	3.0	2.7	4.8	2.6	3.2
4	9.4	3.9	4.4	16	3.9	3.0	2.2	2.8	2.4	11	2.4	2.2
5	4.7	8.5	4.2	17	3.9	2.9	2.9	2.5	2.7	5.7	2.7	2.0
6	3.6	4.8	4.2	12	3.8	2.9	2.5	2.6	2.3	4.4	2.6	2.0
7	4.3	4.1	12	9.9	3.7	2.9	2.4	2.5	2.1	4.0	2.9	1.9
8	16	7.7	7.2	8.9	3.7	3.0	2.5	2.5	2.4	3.7	2.8	1.8
9	11	12	5.7	8.1	3.7	2.8	2.4	2.4	2.6	3.5	4.3	1.9
10	5.0	5.5	5.0	7.5	3.7	2.7	2.4	2.4	2.3	3.2	6.7	1.9
11	4.0	5.1	4.6	7.1	3.6	2.7	2.3	2.3	2.2	3.2	3.3	1.8
12	3.6	5.2	4.4	6.6	3.5	2.7	2.2	2.4	2.7	3.0	2.6	1.9
13	3.2	5.4	4.3	6.3	3.5	2.6	2.3	2.5	2.6	4.3	2.3	2.0
14	3.3	4.6	4.0	6.0	3.5	2.5	2.3	2.4	2.7	5.8	2.2	1.9
15	3.3	4.3	4.0	5.7	3.5	2.5	2.2	2.3	5.6	4.7	2.3	2.0
16	3.2	4.3	4.7	5.5	3.4	2.5	2.2	2.3	3.6	4.1	2.4	1.9
17	3.0	4.2	4.1	17	3.3	2.5	2.2	2.5	2.8	3.4	2.5	1.9
18	3.0	4.2	4.0	10	3.3	2.5	2.3	2.8	2.7	3.1	2.3	1.9
19	2.9	4.0	4.7	6.9	3.3	2.5	2.5	2.6	2.5	3.0	2.1	1.9
20	2.8	4.0	4.4	6.0	3.3	2.5	3.7	2.8	4.3	2.8	2.2	1.9
21	2.9	3.8	5.7	5.6	3.3	2.5	2.6	2.5	6.2	2.8	2.1	2.5
22	2.9	3.6	4.5	5.5	3.3	2.5	4.2	2.4	3.6	2.7	2.4	2.0
23	2.8	4.9	5.4	5.4	3.1	2.5	3.7	2.3	3.4	2.8	2.5	1.8
24	2.7	4.3	6.2	5.1	3.1	2.5	2.7	2.2	6.9	2.8	2.2	1.7
25	2.7	4.1	4.7	5.0	3.3	2.5	2.8	2.2	6.4	2.7	2.1	1.7
26	2.7	3.6	4.3	4.9	6.5	2.8	3.5	2.5	6.1	2.7	2.1	1.7
27	2.8	8.8	4.4	4.8	4.7	2.7	3.0	2.3	5.4	2.6	2.2	1.7
28	2.8	12	9.2	4.6	3.2	2.5	3.3	2.1	6.7	2.7	2.3	1.8
29	2.7	6.4	8.9	4.5	---	2.7	2.6	2.2	5.3	3.4	2.2	2.0
30	2.7	5.9	26	4.4	---	2.4	2.4	2.1	5.3	2.6	2.2	1.6
31	2.8	---	31	4.3	---	2.5	---	2.1	---	2.5	2.0	---
TOTAL	142.5	232.0	213.9	682.6	103.5	83.2	79.4	78.8	110.8	116.0	80.4	59.8
MEAN	4.60	7.73	6.90	22.0	3.70	2.68	2.65	2.54	3.69	3.74	2.59	1.99
MAX	20	72	31	406	6.5	3.2	4.2	5.3	6.9	11	6.7	3.3
MIN	2.7	3.6	4.0	4.3	3.1	2.4	2.2	2.1	2.1	2.5	2.0	1.6
AC-FT	283	460	424	1350	205	165	157	156	220	230	159	119

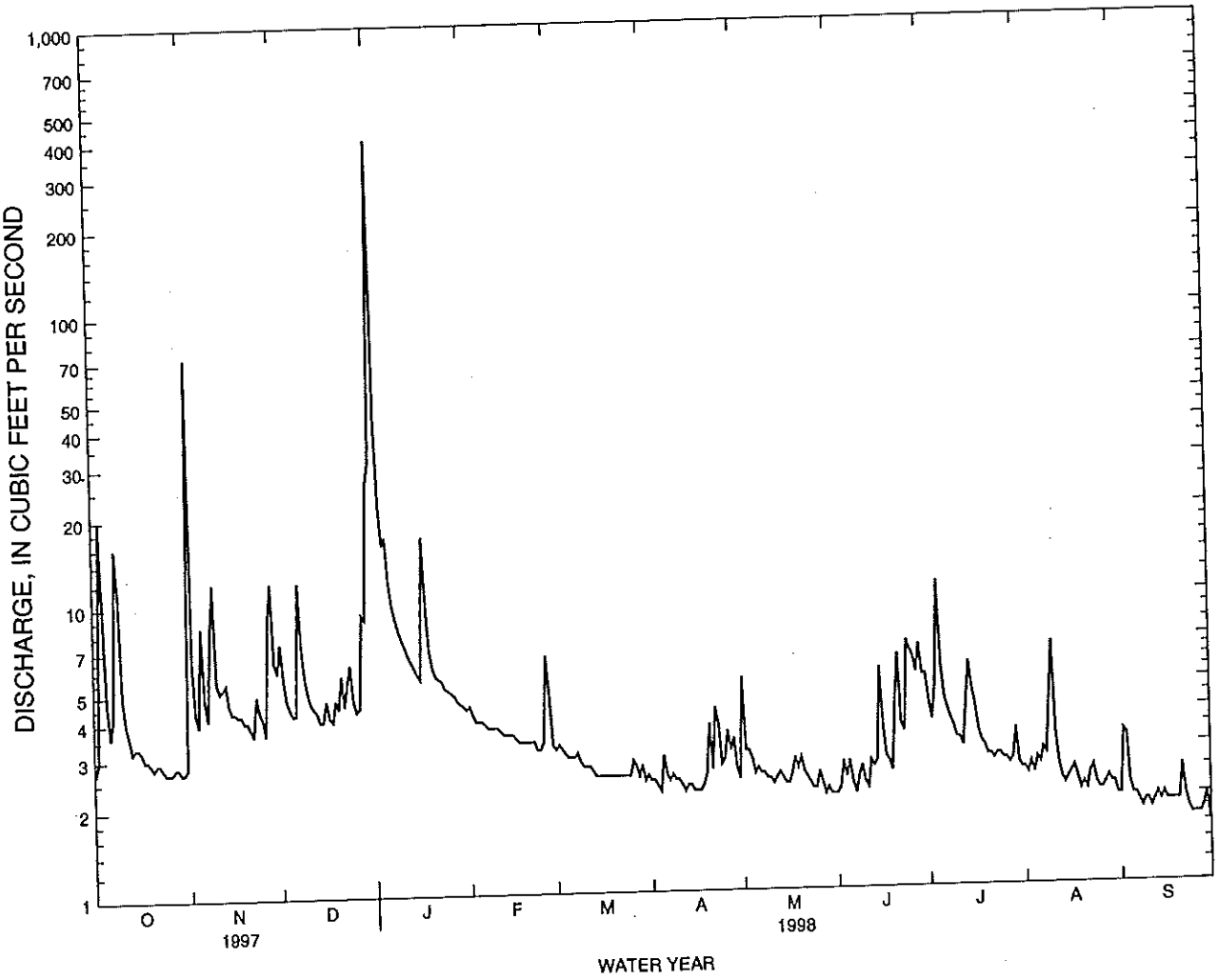
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

MEAN	6.75	11.6	9.56	11.6	12.0	12.9	10.4	8.55	5.44	6.41	5.36	5.29
MAX	31.0	55.7	44.1	45.6	65.5	53.1	49.3	29.3	16.2	30.2	25.0	22.1
(WY)	1992	1966	1988	1988	1994	1982	1963	1965	1977	1987	1967	1986
MIN	1.55	2.13	2.23	1.67	1.77	2.03	2.65	2.19	1.83	1.76	1.57	1.38
(WY)	1985	1963	1978	1977	1978	1978	1998	1991	1984	1984	1984	1984

HAWAII, ISLAND OF OAHU

16294900 WAIKANE STREAM AT ALTITUDE 75 FT, AT WAIKANE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1960 - 1998	
ANNUAL TOTAL	3111.1		1982.9			
ANNUAL MEAN	8.52		5.43		8.80	
HIGHEST ANNUAL MEAN					16.7	1982
LOWEST ANNUAL MEAN					3.33	1984
HIGHEST DAILY MEAN	177	Jan 3	406	Jan 1	868	Feb 4 1965
LOWEST DAILY MEAN	2.7	Oct 1	1.6	Sep 30	1.1	Oct 17 1975
ANNUAL SEVEN-DAY MINIMUM	2.7	Oct 24	1.7	Sep 24	1.3	Sep 19 1984
ANNUAL RUNOFF (AC-FT)	6170		3930		6370	
10 PERCENT EXCEEDS	16		6.5		14	
50 PERCENT EXCEEDS	5.0		3.0		4.2	
90 PERCENT EXCEEDS	3.5		2.2		2.2	



HAWAII, ISLAND OF OAHU

16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA

LOCATION.--Lat 21°32′37″, long 157°53′07″, Hydrologic Unit 20060000, on right bank 600 ft upstream from Kawa Stream, 1.1 mi southwest of Kahana, and 2.2 mi southwest of Swanzy Beach Park in Kaaawa.

DRAINAGE AREA.--3.74 mi^2.

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

REVISED RECORDS.--WSP 1937: 1959-60.

GAGE.--Water-stage recorder and concrete-masonry control. Elevation of gage is 30 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Ben Shimizu. Records fair. Waiahole tunnel diverts water from tributaries and tunnels upstream of station. Elevation of the Waihole tunnel is 800 ft (from topographic map). Recording rain gage located 50 ft from the streamgage at an elevation of 80 ft.

AVERAGE DISCHARGE.--39 years (water years 1960-98), 36.7 ft^3/s (26,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,250 ft^3/s, March 20, 1991, gage height, 8.60 ft, from rating curve extended above 530 ft^3/s on basis of computation of peak flow over submerged weir; minimum, 10 ft^3/s, September 17, 18, 20, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 8	2100	*2,860	*6.11	Jan. 1	0600	1,680	4.88
Nov. 1	1115	2,080	5.33				

Minimum discharge, 13 ft^3/s, March 21-25, April 4, 5, 17, 18, and September 19-21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	153	29	443	20	16	14	32	15	28	15	15
2	19	23	19	81	19	16	14	19	16	26	15	25
3	106	19	18	54	19	17	14	18	20	28	15	21
4	46	18	17	44	18	16	14	18	18	59	15	17
5	28	26	16	44	18	15	17	17	27	34	15	16
6	23	19	16	35	18	15	15	17	19	27	14	15
7	33	18	51	32	18	15	14	17	17	25	15	15
8	265	19	25	30	18	16	17	17	20	23	14	14
9	182	26	20	28	18	15	16	16	21	23	17	16
10	50	18	18	27	18	15	15	15	18	21	23	17
11	35	18	17	26	18	15	14	15	17	20	15	15
12	29	21	17	25	17	15	14	16	29	19	15	15
13	26	24	17	24	17	15	14	16	20	22	16	17
14	24	18	17	23	17	15	14	16	33	29	14	15
15	23	18	17	23	17	15	14	15	63	22	14	15
16	21	17	18	22	16	15	14	15	42	21	14	16
17	20	17	18	47	16	14	14	16	32	19	24	15
18	20	17	46	39	16	14	14	16	26	18	26	14
19	19	17	36	31	16	14	14	16	23	18	16	14
20	19	16	101	25	16	14	27	18	32	17	15	14
21	19	16	57	23	16	14	32	16	43	17	15	34
22	25	15	26	23	16	14	41	16	27	16	28	18
23	27	16	33	22	16	13	38	15	25	16	23	16
24	20	16	28	21	15	13	27	15	91	16	17	14
25	18	17	25	20	17	14	30	15	50	15	15	42
26	18	16	22	20	23	17	28	17	47	17	15	26
27	17	23	24	20	23	16	23	17	36	16	15	18
28	17	34	50	20	17	14	24	15	37	16	23	18
29	17	32	40	19	---	15	20	15	33	20	16	18
30	17	23	56	19	---	15	18	15	37	16	21	16
31	17	---	64	19	---	16	---	16	---	15	15	---
TOTAL	1220	730	958	1329	493	463	584	517	934	679	530	541
MEAN	39.4	24.3	30.9	42.9	17.6	14.9	19.5	16.7	31.1	21.9	17.1	18.0
MAX	265	153	101	443	23	17	41	32	91	59	28	42
MIN	17	15	16	19	15	13	14	15	15	15	14	14
AC-FT	2420	1450	1900	2640	978	918	1160	1030	1850	1350	1050	1070

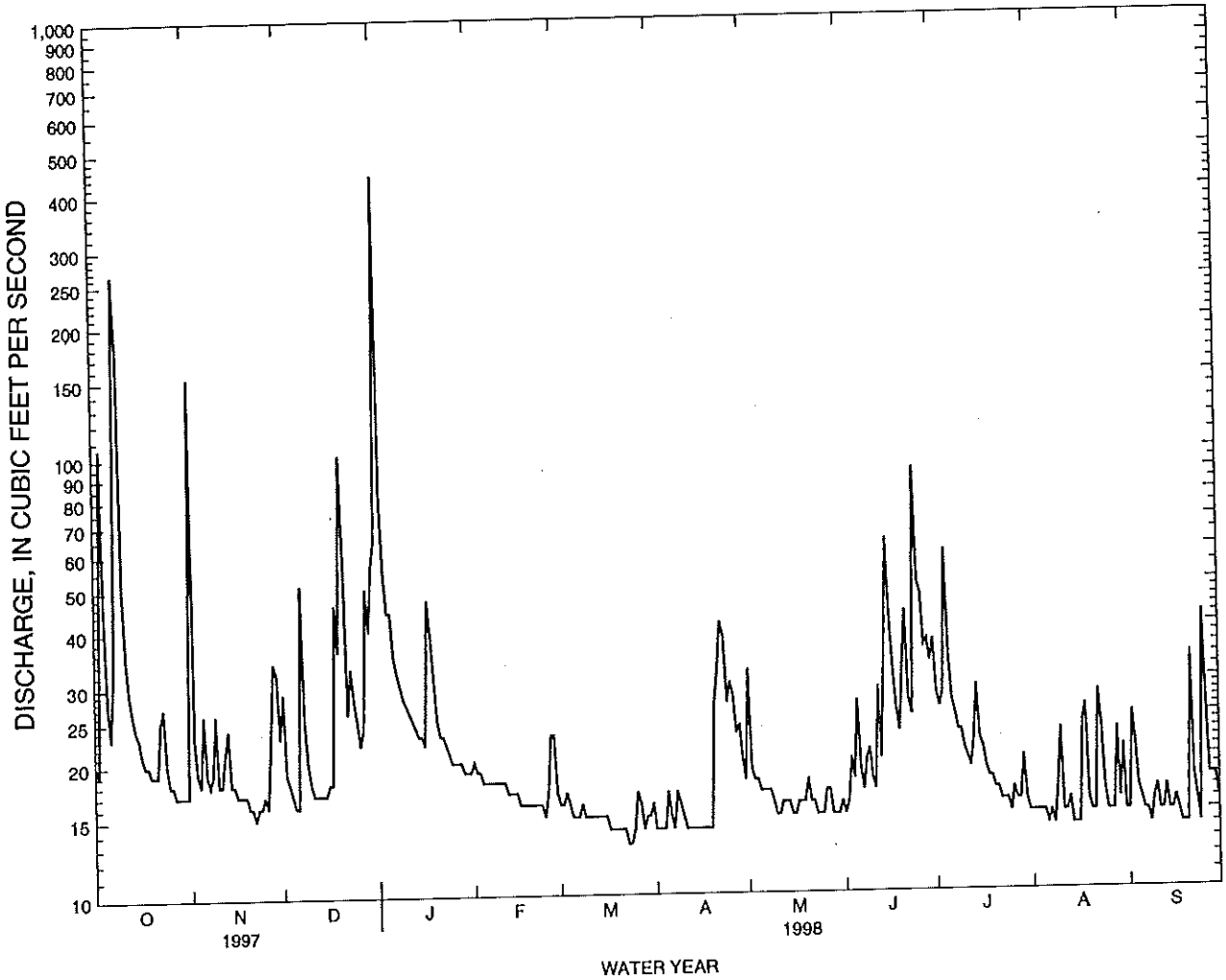
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1998, BY WATER YEAR (WY)

MEAN	32.7	44.9	37.7	37.2	36.5	44.7	45.4	38.9	27.5	32.6	30.3	29.7
MAX	55.1	170	101	94.9	141	176	137	102	56.5	90.5	73.7	84.7
(WY)	1992	1991	1988	1988	1969	1982	1963	1965	1978	1987	1978	1994
MIN	12.6	14.5	14.5	12.9	13.2	14.9	19.3	16.7	14.3	15.0	13.6	13.3
(WY)	1985	1963	1978	1977	1978	1998	1992	1998	1984	1984	1984	1975

HAWAII, ISLAND OF OAHU

16296500 KAHANA STREAM AT ALTITUDE 30 FT, NEAR KAHANA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1959 - 1998	
ANNUAL TOTAL	11838		8978			
ANNUAL MEAN	32.4		24.6		36.7	
HIGHEST ANNUAL MEAN					67.2	1982
LOWEST ANNUAL MEAN					20.1	1984
HIGHEST DAILY MEAN	299	Jan 3	443	Jan 1	1750	Apr 15 1963
LOWEST DAILY MEAN	15	Nov 22	13	Mar 23	11	Sep 16 1961
ANNUAL SEVEN-DAY MINIMUM	16	Nov 20	14	Mar 18	11	Oct 16 1984
ANNUAL RUNOFF (AC-FT)	23480		17810		26600	
10 PERCENT EXCEEDS	52		35		57	
50 PERCENT EXCEEDS	23		18		23	
90 PERCENT EXCEEDS	18		15		15	



HAWAII, ISLAND OF OAHU

16302000 PUNALUU DITCH NEAR PUNALUU

LOCATION.--Lat 21°33'41", long 157°54'10", Hydrologic Unit 20060000, on right bank 800 ft downstream from intake, 1.5 mi west of Kahana, and 1.7 mi southwest of Punaluu.

PERIOD OF RECORD.--May 1953 to current year.

REVISED RECORDS.--WSP 1719: 1954-55, WDR HI-91-1: 1990 (Maximum and minimum daily discharges).

GAGE.--Water-stage recorder. Elevation of gage is 200 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Vaughn Kunishige. Records good except for days of estimated discharge which are fair. Ditch diverts water from Punaluu Stream for irrigation in Punaluu Valley.

AVERAGE DISCHARGE.--45 years (water years 1954-98), 8.12 ft^3/s (5,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 54 ft^3/s, October 31, 1964; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 16 ft^3/s, January 2, 12; minimum daily, 2.6 ft^3/s, December 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	2.9	8.0	11	e9.4	11	5.8	4.6	11	4.7	9.8	9.5
2	12	7.2	5.6	16	e7.0	9.2	9.3	8.0	10	9.7	8.4	9.1
3	6.3	11	4.6	13	e9.7	8.2	11	12	9.2	12	10	8.2
4	10	9.4	9.9	11	e9.2	7.0	11	10	8.5	8.9	12	7.1
5	12	7.0	10	12	e7.0	5.7	7.0	9.1	10	6.7	9.4	6.0
6	9.4	5.4	6.4	9.8	e6.0	10	11	7.8	9.7	9.6	7.1	5.2
7	3.5	4.4	3.5	8.5	e6.0	13	12	10	7.2	12	5.5	7.5
8	9.1	8.3	11	7.3	e11	11	10	13	11	10	8.8	10
9	2.7	8.4	8.4	6.5	e14	8.9	7.7	10	13	9.2	13	8.9
10	6.3	6.4	12	5.7	e13	7.6	5.6	9.0	10	11	11	8.2
11	12	5.7	12	11	e10	6.7	8.8	7.8	7.2	11	9.3	6.9
12	14	5.2	8.2	16	e9.4	5.7	12	10	6.5	8.7	8.2	9.8
13	12	11	6.6	14	e9.2	10	11	13	6.0	6.9	7.1	13
14	8.7	13	5.8	12	e7.9	14	10	10	5.5	8.6	6.2	11
15	6.4	11	10	11	e7.2	12	11	12	9.5	14	8.5	10
16	4.8	12	14	9.6	e6.0	10	12	13	9.8	13	12	9.2
17	11	11	9.9	8.7	e4.0	9.0	9.6	10	8.0	12	8.8	8.5
18	12	9.8	4.5	7.3	e9.7	7.9	7.7	7.3	6.8	10	10	11
19	9.2	8.7	14	6.5	e13	10	6.8	9.5	10	9.3	12	13
20	13	7.7	11	11	e13	13	6.2	13	12	8.4	9.9	12
21	13	6.8	7.4	15	e13	9.0	5.1	12	9.7	7.1	8.6	11
22	13	7.7	6.4	12	e8.3	6.3	8.7	11	8.0	9.5	6.7	9.3
23	11	6.7	5.8	9.4	e6.7	5.5	11	11	6.9	10	7.6	8.3
24	12	5.8	5.1	8.2	e12	5.1	9.3	11	4.5	9.2	11	7.3
25	12	4.7	4.2	7.1	12	8.5	10	11	7.7	8.8	9.5	9.8
26	10	4.6	8.5	6.7	9.0	11	14	12	10	8.1	7.9	13
27	8.4	6.8	12	6.1	12	8.2	12	11	8.6	7.5	7.0	13
28	7.3	6.2	9.4	11	12	9.5	9.4	9.5	6.9	7.6	6.3	13
29	6.5	11	7.0	14	---	13	7.3	9.2	5.8	12	10	12
30	6.1	11	5.8	12	---	10	6.2	11	5.2	12	13	11
31	5.3	---	2.6	12	---	7.3	---	13	---	12	11	---
TOTAL	294.0	236.8	249.6	321.4	266.7	283.3	278.5	320.8	254.2	299.5	285.6	291.8
MEAN	9.48	7.89	8.05	10.4	9.53	9.14	9.28	10.3	8.47	9.66	9.21	9.73
MAX	15	13	14	16	14	14	14	13	13	14	13	13
MIN	2.7	2.9	2.6	5.7	4.0	5.1	5.1	4.6	4.5	4.7	5.5	5.2
AC-FT	583	470	495	637	529	562	552	636	504	594	566	579

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1998, BY WATER YEAR (WY)

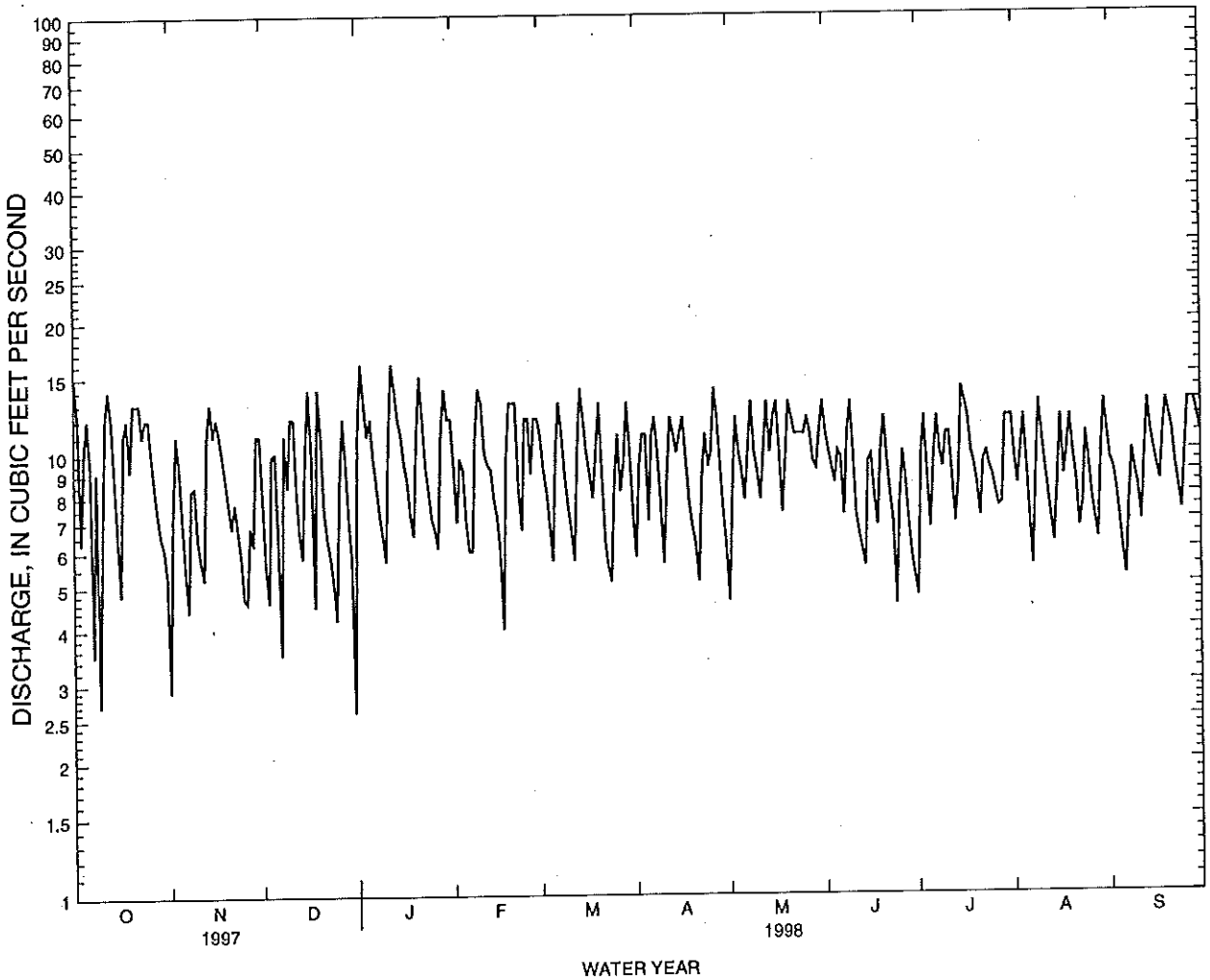
MEAN	9.11	7.46	5.99	5.87	5.84	6.79	8.31	8.71	9.55	9.95	10.2	9.99
MAX	26.4	15.3	16.0	17.6	21.7	16.1	19.0	21.2	22.6	22.0	23.9	21.3
(WY)	1965	1988	1988	1960	1964	1964	1961	1964	1963	1963	1958	1958
MIN	.002	.000	.001	.003	.011	.046	.015	.027	.020	.003	.002	.001
(WY)	1981	1981	1981	1981	1981	1979	1979	1981	1979	1980	1974	1980

e Estimated

HAWAII, ISLAND OF OAHU

16302000 PUNALUU DITCH NEAR PUNALUU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1953 - 1998	
ANNUAL TOTAL	3644.63		3382.2			
ANNUAL MEAN	9.99		9.27		8.12	
HIGHEST ANNUAL MEAN					15.2	1964
LOWEST ANNUAL MEAN					.23	1981
HIGHEST DAILY MEAN	18	Jan 30	16	Jan 2	54	Oct 31 1964
LOWEST DAILY MEAN	.33	Apr 3	2.6	Dec 31	.00	Dec 7 1963
ANNUAL SEVEN-DAY MINIMUM	6.1	Sep 23	6.1	Nov 22	.00	Jan 5 1969
ANNUAL RUNOFF (AC-FT)	7230		6710		5880	
10 PERCENT EXCEEDS	14		13		17	
50 PERCENT EXCEEDS	10		9.4		6.8	
90 PERCENT EXCEEDS	5.6		5.8		.22	



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 west of Kahana, and 1.8 mi southwest of Punaluu.

DRAINAGE AREA.--2.78 mi^2.

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.--Gage destroyed by flood of March 20-21, 1991 was restored and water-stage recorder installed on March 29, 1993. Masonry control and elevation of gage is 212 ft above mean sea level (from topographic map). Prior to March 29, 1993, datum 2.00 ft higher.

REMARKS.--Records computed by Vaughn Kunishige. Records fair, except for periods of no gage height which are poor. Records do not include flow of Punaluu ditch (see station 16302000).

AVERAGE DISCHARGE.--45 years (water years 1954-98), 17.0 ft^3/s (12,310 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft^3/s, March 20, 1991, gage height, 10.02 ft, from rating curve extended above 170 ft^3/s on basis of slope-area measurements at gage heights 7.77 ft and 9.60 ft; no flow at times (datum was lowered 2.0 ft after the flood of March 20, 1991).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 930 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 1	0615	*790	*5.08				

Minimum discharge, no flow on several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	51	9.8	188	9.6	5.3	8.5	9.8	2.9	13	4.5	3.9
2	5.2	20	15	31	11	6.6	6.0	6.4	4.3	6.9	5.6	5.4
3	26	9.3	18	22	8.3	7.7	3.8	2.4	5.7	5.9	3.6	7.7
4	14	11	16	18	7.8	8.6	3.5	3.9	6.1	13	2.0	7.0
5	8.2	14	16	16	10	9.9	7.4	5.3	9.4	12	4.5	7.2
6	11	16	7.0	15	11	5.2	3.6	7.3	5.1	7.7	7.0	8.4
7	31	16	11	15	11	2.9	2.2	4.4	6.9	4.3	9.0	8.6
8	39	17	14	15	5.8	5.0	5.4	2.3	6.4	6.2	6.2	2.5
9	31	18	34	16	2.6	6.3	7.0	4.5	2.8	7.1	1.8	4.6
10	17	14	12	16	4.2	7.4	8.6	5.5	4.1	4.8	5.0	6.6
11	8.7	14	14	10	6.8	8.1	5.3	6.8	6.9	4.8	5.0	6.7
12	7.1	15	6.8	4.1	7.6	9.2	2.6	4.2	9.2	6.5	6.4	7.1
13	9.3	17	10	5.1	7.8	5.0	2.8	1.7	8.5	9.1	7.5	.71
14	11	10	14	7.1	9.1	1.5	3.7	4.5	9.7	8.2	8.1	2.1
15	13	5.7	15	8.8	9.8	3.0	2.6	2.6	9.5	1.4	6.4	3.2
16	15	7.8	15	9.4	10	4.5	1.9	1.4	6.5	2.2	1.8	4.3
17	8.2	7.0	7.2	18	12	5.6	4.1	4.6	7.4	3.2	7.7	5.2
18	7.6	6.9	7.0	17	6.3	6.7	6.0	7.0	8.2	4.4	8.9	4.9
19	9.9	9.4	17	16	2.9	4.2	7.2	4.9	4.4	5.3	1.5	.09
20	5.5	10	39	9.5	2.8	2.0	11	1.8	3.8	6.2	3.8	.84
21	5.7	12	13	4.8	3.3	5.5	11	2.1	7.9	7.5	5.2	2.1
22	9.8	12	e14	8.1	e7.7	8.4	6.6	3.5	8.0	4.9	9.6	5.3
23	9.9	12	15	9.7	e9.3	8.7	5.7	3.5	8.8	4.0	20	4.9
24	6.5	13	17	11	e4.0	9.0	7.2	2.7	26	5.2	3.2	5.7
25	6.6	14	16	12	e5.0	6.2	5.6	3.1	12	5.6	4.4	9.2
26	9.3	15	11	13	7.8	4.3	1.9	2.0	7.8	7.8	6.2	2.4
27	11	15	8.1	13	6.6	6.5	4.2	4.1	8.7	7.2	7.0	.04
28	11	15	18	7.5	4.4	5.0	7.4	4.7	10	6.9	8.2	.24
29	13	22	18	3.8	---	1.6	7.6	4.8	11	3.1	6.4	1.2
30	14	15	39	5.8	---	4.5	8.1	3.7	16	2.4	1.0	1.9
31	14	---	44	5.9	---	7.4	---	1.6	---	2.3	2.5	---
TOTAL	391.2	434.1	510.9	551.6	204.5	181.8	168.5	127.1	244.0	189.1	180.0	130.02
MEAN	12.6	14.5	16.5	17.8	7.30	5.86	5.62	4.10	8.13	6.10	5.81	4.33
MAX	39	51	44	188	12	9.9	11	9.8	26	13	20	9.2
MIN	2.7	5.7	6.8	3.8	2.6	1.5	1.9	1.4	2.8	1.4	1.0	.04
AC-FT	776	861	1010	1090	406	361	334	252	484	375	357	258

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1998, BY WATER YEAR (WY)

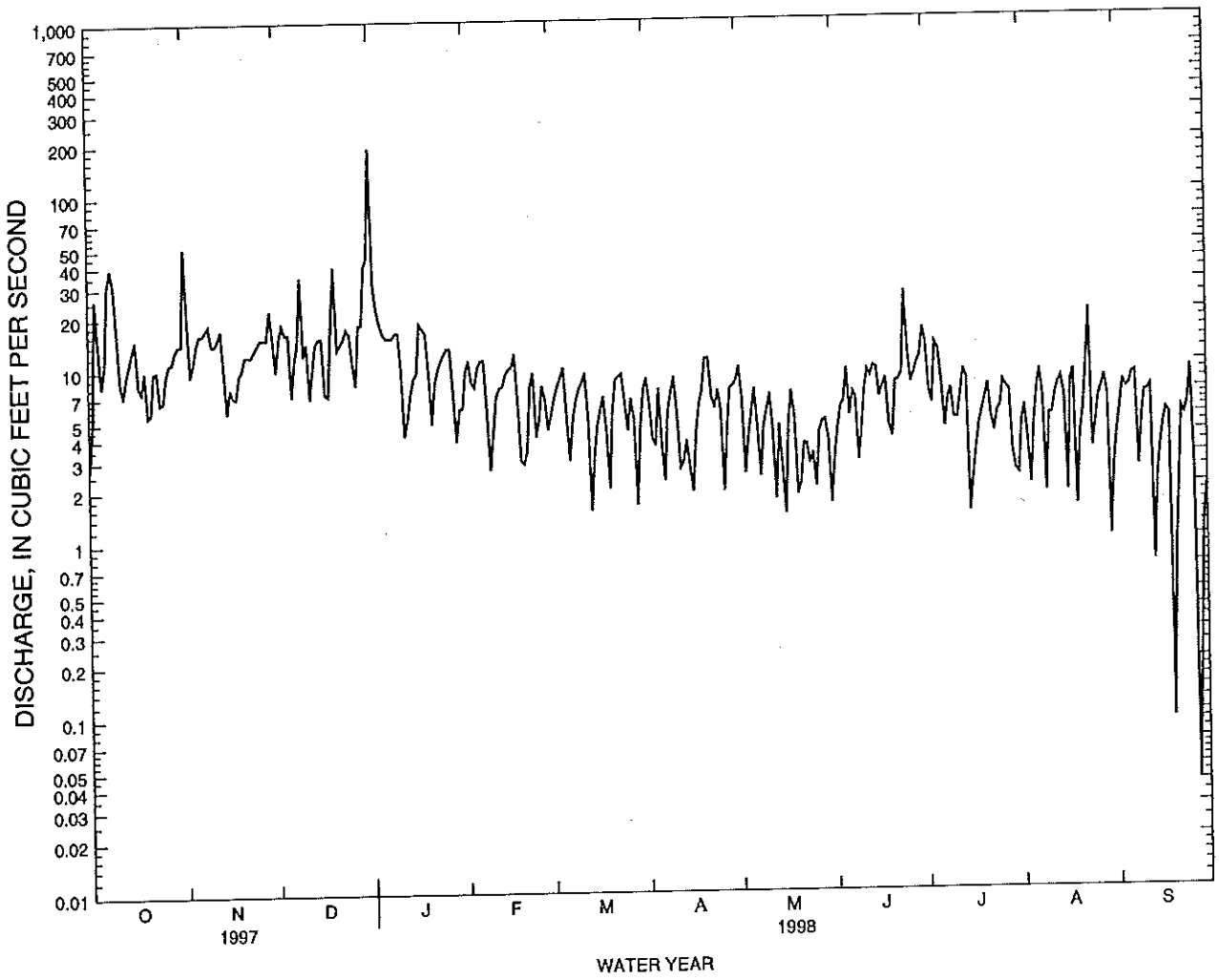
MEAN	13.8	20.4	20.6	21.0	21.4	22.0	21.6	17.1	11.4	12.2	11.4	10.3
MAX	38.7	74.7	64.5	40.9	76.3	73.1	84.6	64.9	35.4	39.0	36.9	30.0
(WY)	1959	1991	1965	1988	1969	1982	1963	1965	1982	1974	1982	1994
MIN	.28	4.58	.23	3.32	.58	3.19	2.37	1.00	.000	.000	.31	.49
(WY)	1958	1960	1960	1960	1964	1993	1954	1961	1953	1953	1961	1961

e Estimated

HAWAII, ISLAND OF OAHU

16303000 PUNALUU STREAM NEAR PUNALUU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1953 - 1998	
ANNUAL TOTAL	5391.5		3312.82			
ANNUAL MEAN	14.8		9.08		17.0	
HIGHEST ANNUAL MEAN					35.4	1982
LOWEST ANNUAL MEAN					7.27	1961
HIGHEST DAILY MEAN	145	Jan 3	188	Jan 1	1010	Apr 15 1963
LOWEST DAILY MEAN	2.7	Oct 1	.04	Sep 27	.00	Jun 1 1953
ANNUAL SEVEN-DAY MINIMUM	5.1	Apr 16	2.7	May 20	.00	Jun 1 1953
ANNUAL RUNOFF (AC-FT)	10690		6570		12310	
10 PERCENT EXCEEDS	25		16		30	
50 PERCENT EXCEEDS	12		7.1		12	
90 PERCENT EXCEEDS	6.1		2.6		2.5	



HAWAII, ISLAND OF OAHU

16304200 KALUANUI STREAM NEAR PUNALUU

LOCATION.--Lat 21°35′22″,, long 157°54′38″, Hydrologic Unit 20060000, on right bank, 0.8 mi downstream from Sacred Falls, 1.6 mi west of Punaluu Beach Park, and 1.7 mi south of cemetery in Hauula.

DRAINAGE AREA.--1.11 mi^2.

PERIOD OF RECORD.--May 1967 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 110 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Ben Shimizu. Records good except for discharges greater than 50 ft^3/s which are fair and for estimated periods which are poor. No diversion upstream of station.

AVERAGE DISCHARGE.--31 years (water years 1968-98), 4.36 ft^3/s (3,160 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,390 ft^3/s, January 6, 1982, gage height, 11.90 ft, from rating curve extended above 14 ft^3/s on basis of slope-area measurements at gage heights 8.85 ft and 10.0 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 1	1045	*266	*7.48				

Minimum discharge, no flow March 14-26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.61	21	9.0	80	1.9	.33	1.3	1.5	1.1	5.8	1.1	.57
2	.59	1.2	1.6	7.9	.53	.19	5.7	.76	1.4	4.3	.74	3.4
3	23	.47	.95	4.0	.21	.14	2.6	1.3	2.6	12	.57	5.7
4	8.7	.35	.64	2.8	.46	.13	.65	1.1	2.9	8.9	.46	.99
5	2.9	7.1	.50	2.9	.39	.12	2.4	.48	2.9	5.3	e.43	.70
6	1.9	.79	.67	2.6	.17	.10	.98	3.8	1.2	3.0	e.90	.68
7	9.2	.43	18	1.5	.14	.08	1.5	1.4	.81	2.2	e.65	.58
8	7.5	8.9	4.5	1.2	.13	.99	5.9	.73	9.2	3.1	e3.5	.42
9	5.7	7.9	1.5	1.0	.12	.21	4.2	.65	4.2	2.7	e.80	1.7
10	1.6	.71	1.1	.87	.11	.12	1.5	.91	3.0	1.8	e7.5	5.8
11	1.2	1.8	1.7	.72	.11	.08	1.0	1.0	1.3	4.9	e2.0	.78
12	1.1	5.6	.74	.62	.10	.07	.60	1.5	5.0	1.7	e.90	.75
13	.92	5.7	.55	.52	.08	.04	.47	.99	1.8	7.6	e4.2	7.6
14	.74	1.1	.51	.46	.08	.01	.38	2.8	4.9	7.0	e1.7	1.1
15	1.1	.71	1.2	.40	.10	.00	.28	1.0	7.7	7.4	e1.3	1.0
16	2.6	.54	2.7	.35	.08	.00	.25	.78	3.7	2.6	e.85	.93
17	.71	.44	2.1	22	.08	.00	.21	4.7	3.8	1.9	e.70	1.0
18	2.0	.41	7.1	10	.08	.00	.21	2.2	2.1	1.5	e.62	.66
19	1.7	.43	4.8	3.9	.06	.00	.30	1.9	2.0	1.3	e.55	.61
20	.51	3.3	11	1.4	.05	.00	4.9	3.8	9.7	1.1	e.53	1.4
21	1.4	.50	2.6	.93	.05	.00	6.1	1.4	7.0	1.3	1.1	6.2
22	5.2	.32	1.2	.72	.14	.00	8.1	1.4	3.1	.90	6.9	1.4
23	2.6	.31	1.2	.58	.21	.00	4.3	1.3	6.7	.84	2.4	1.0
24	.72	1.6	5.7	.46	.15	.00	1.4	1.1	15	.73	1.1	.67
25	.49	3.9	1.4	.39	.51	.00	1.2	.87	4.6	.64	.73	2.6
26	.39	.54	1.3	.33	3.7	5.2	2.6	.83	5.1	1.1	.61	2.8
27	.34	6.8	2.0	.31	3.4	2.3	3.3	.85	3.0	.89	.71	.84
28	.34	4.3	14	.47	.94	.76	7.1	.64	9.6	1.3	1.7	1.0
29	1.3	4.7	6.6	.27	---	1.4	1.1	.53	7.4	4.1	.83	1.7
30	.56	10	38	.22	---	1.4	.78	.99	6.2	.76	.66	.80
31	.28	---	23	.18	---	3.1	---	1.8	---	.55	.52	---
TOTAL	87.90	101.85	167.86	150.00	14.08	16.77	71.31	45.01	139.01	99.21	47.26	55.38
MEAN	2.84	3.39	5.41	4.84	.50	.54	2.38	1.45	4.63	3.20	1.52	1.85
MAX	23	21	38	80	3.7	5.2	8.1	4.7	15	12	7.5	7.6
MIN	.28	.31	.50	.18	.05	.00	.21	.48	.81	.55	.43	.42
AC-FT	174	202	333	298	28	33	141	89	276	197	94	110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1998, BY WATER YEAR (WY)

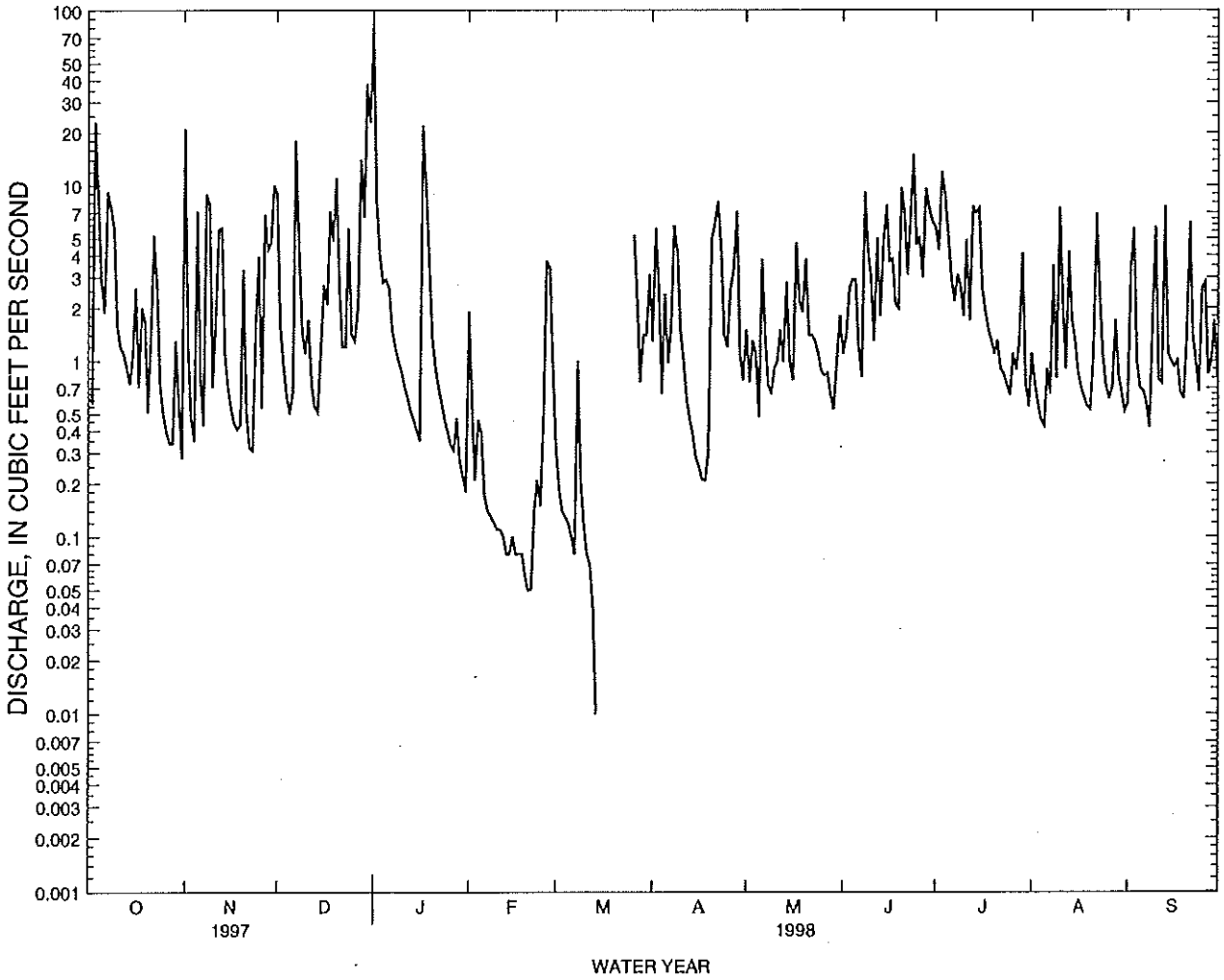
MEAN	3.36	6.00	5.00	5.33	4.54	5.59	5.78	3.79	2.84	4.04	3.22	3.05
MAX	7.68	19.0	17.7	17.9	19.7	32.2	19.3	7.93	7.72	11.7	8.37	9.34
(WY)	1992	1991	1988	1988	1979	1982	1989	1988	1987	1982	1991	1994
MIN	.27	1.66	.48	.26	.41	.14	.87	.85	.61	.21	.53	.22
(WY)	1985	1981	1977	1986	1983	1983	1979	1991	1981	1971	1984	1975

e Estimated

HAWAII, ISLAND OF OAHU

16304200 KALUANUI STREAM NEAR PUNALUU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1967 - 1998	
ANNUAL TOTAL	1569.10		995.64			
ANNUAL MEAN	4.30		2.73		4.36	
HIGHEST ANNUAL MEAN					9.94	1982
LOWEST ANNUAL MEAN					2.04	1984
HIGHEST DAILY MEAN	70	Jan 3	80	Jan 1	230	Feb 1 1969
LOWEST DAILY MEAN	.19	Feb 21	.00	Mar 15	.00	Jul 24 1971
ANNUAL SEVEN-DAY MINIMUM	.31	Feb 15	.00	Mar 15	.00	Sep 14 1975
ANNUAL RUNOFF (AC-FT)	3110		1970		3160	
10 PERCENT EXCEEDS	9.6		6.9		9.5	
50 PERCENT EXCEEDS	1.7		1.1		1.4	
90 PERCENT EXCEEDS	.53		.14		.26	



HAWAII, ISLAND OF OAHU

16325000 KAMANANUI STREAM AT PUPUKEA MILITARY ROAD, NEAR MAUNAWAI

LOCATION.--Lat 21°37′25″, long 158°01′04″, Hydrologic Unit 20060000, on left bank 75 ft upstream from Pupukea Military Road, and 3.5 mi southeast of Maunawai.

DRAINAGE AREA.--3.13 mi^2.

PERIOD OF RECORD.--June 1963 to current year. Occasional low-flow measurements, water years 1961 and 1963.

REVISED RECORDS.--WDR HI-94-1: 1992-93 (M).

GAGE.--Water-stage recorder and combination pipe culvert and paved road control. Elevation of gage is 590 ft above mean sea level (from topographic map).

REMARKS.--Records computed by C.W. Yeung. Records fair. No diversion upstream of station. Recording rain gage located at station.

AVERAGE DISCHARGE.--35 years (water years 1964-98), 10.2 ft^3/s (7,410 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,810 ft^3/s, revised, November 20, 1990, gage height, 11.34 ft, from rating curve extended above 42 ft^3/s on basis of slope-area measurements at gage heights 10.06 ft, and 11.34 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 950 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 17	1545	*241	*5.08				

Minimum discharge, 0.29 ft^3/s, April 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	25	29	57	2.7	1.7	6.5	.57	.42	15	1.6	.81
2	.98	6.5	7.7	13	2.7	.92	2.7	.57	.56	7.0	1.7	2.8
3	56	2.1	4.3	7.3	2.1	.76	5.7	.56	.74	12	1.5	9.4
4	27	1.8	3.0	6.5	2.7	.75	2.3	2.7	2.9	46	1.3	3.1
5	11	3.3	2.4	9.5	3.4	.60	1.1	1.2	.90	12	1.7	1.2
6	9.2	2.9	2.2	11	2.0	.56	2.1	4.4	.83	8.8	1.6	.77
7	25	1.3	15	5.3	1.6	.54	1.5	7.1	.61	6.9	1.7	.67
8	6.0	1.2	12	4.3	1.5	.51	7.1	2.0	7.4	6.3	3.4	.63
9	3.9	15	5.5	3.9	1.5	.50	14	1.1	4.8	7.7	2.7	.56
10	3.2	2.8	3.4	3.6	1.4	.51	6.9	.86	2.4	6.6	9.6	.58
11	2.5	1.6	3.3	3.3	1.4	.47	2.4	2.0	1.5	6.5	3.7	1.9
12	2.3	5.9	3.0	3.0	1.3	.44	1.2	2.6	6.7	6.9	2.5	.83
13	2.1	12	2.1	2.8	1.2	.44	.79	2.4	5.4	9.2	4.3	.71
14	1.8	3.8	1.9	2.7	1.3	.42	.79	10	8.0	19	2.4	1.1
15	1.6	1.9	2.1	2.5	1.2	.41	.65	3.8	14	13	1.6	.78
16	1.7	1.4	4.0	2.4	1.2	.40	.48	1.7	5.0	12	1.4	.61
17	2.1	1.1	6.4	52	1.0	.38	.38	1.1	2.6	4.2	1.1	1.0
18	1.5	1.0	7.1	28	.89	.41	.33	1.3	5.9	3.4	.91	1.0
19	1.4	1.1	6.4	17	.91	.41	.31	1.1	3.9	3.0	.76	.63
20	1.2	4.2	8.4	7.5	.98	.40	.34	2.0	13	2.7	.71	.91
21	1.7	2.7	5.4	5.0	.91	.41	2.2	3.2	23	2.6	1.1	7.6
22	5.5	1.2	3.2	4.2	1.0	.39	5.6	1.4	21	2.3	2.3	5.2
23	6.2	1.5	3.0	3.7	1.4	.53	12	1.1	8.3	2.2	8.0	1.7
24	2.9	2.3	4.7	3.4	1.1	.56	3.5	.77	58	2.1	2.1	.78
25	2.8	11	3.7	3.0	1.1	.69	1.4	.59	19	2.0	1.3	.79
26	2.4	3.8	4.3	2.8	1.1	3.6	2.3	.47	21	2.2	.88	2.3
27	1.5	9.6	3.2	2.7	2.7	6.1	3.4	.41	14	2.1	.90	2.1
28	1.1	24	3.4	2.7	3.4	2.6	1.5	.41	9.4	1.8	.94	.82
29	1.0	8.7	9.5	2.4	---	2.2	1.5	.39	26	3.4	.80	1.0
30	1.3	8.3	43	2.3	---	1.7	.67	.36	14	2.9	.97	1.8
31	1.1	---	42	2.2	---	3.4	---	.36	---	1.7	1.1	---
TOTAL	189.28	169.0	254.6	277.0	45.69	33.71	91.64	58.52	301.26	233.5	66.57	54.08
MEAN	6.11	5.63	8.21	8.94	1.63	1.09	3.05	1.89	10.0	7.53	2.15	1.80
MAX	56	25	43	57	3.4	6.1	14	10	58	46	9.6	9.4
MIN	.98	1.0	1.9	2.2	.89	.38	.31	.36	.42	1.7	.71	.56
AC-FT	375	335	505	549	91	67	182	116	598	463	132	107

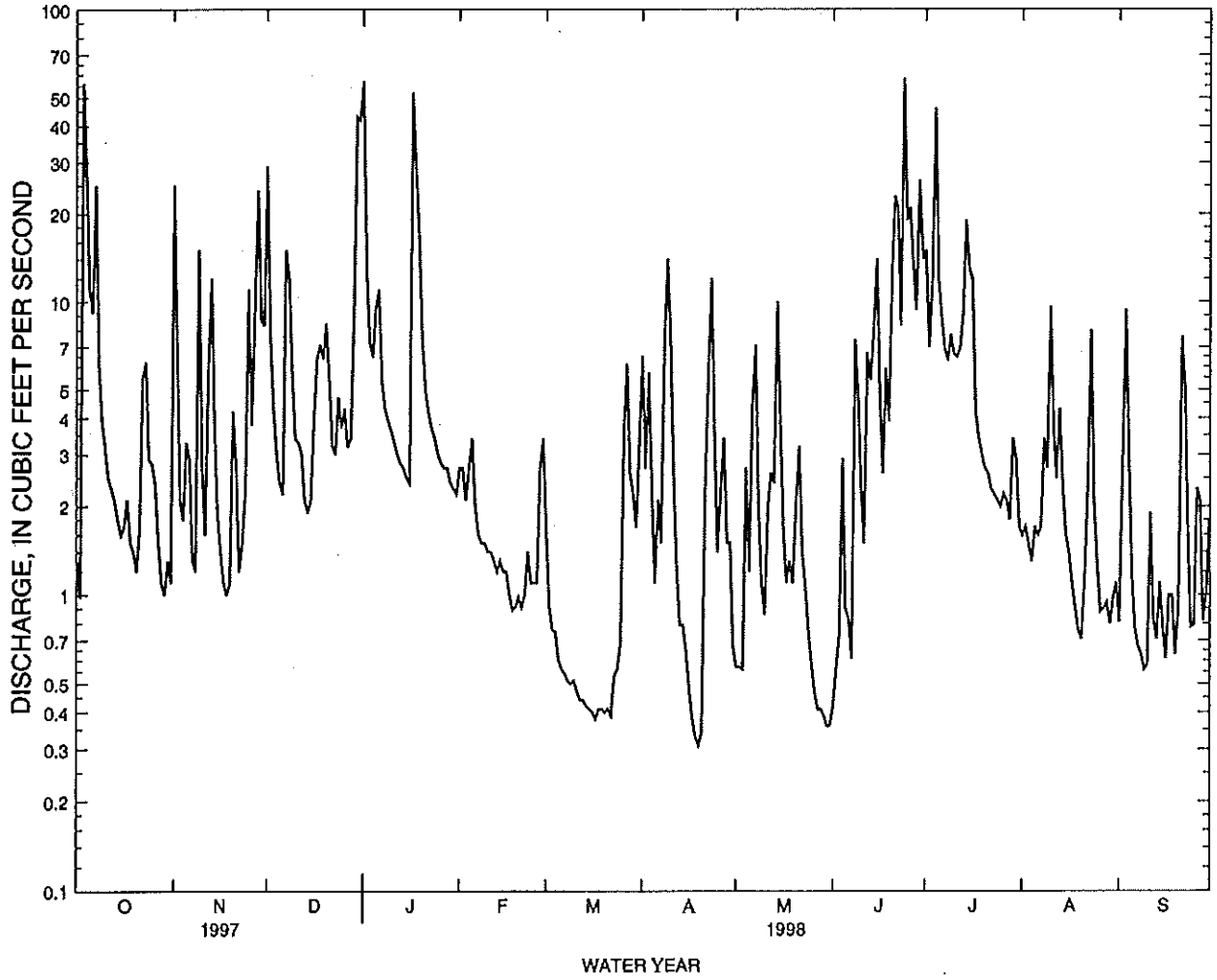
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

MEAN	6.65	15.9	12.5	14.9	12.2	15.5	14.1	8.29	5.19	8.07	5.40	4.05
MAX	16.3	68.6	44.8	75.8	64.2	77.3	53.6	30.5	20.1	20.2	19.7	10.8
(WY)	1966	1966	1965	1988	1969	1968	1989	1965	1978	1982	1982	1994
MIN	.000	2.27	.91	.45	.073	1.07	.79	.95	1.00	.76	.57	.000
(WY)	1985	1990	1977	1986	1978	1983	1992	1966	1992	1971	1984	1984

HAWAII, ISLAND OF OAHU

16325000 KAMANANUI STREAM AT PUPUKEA MILITARY ROAD, NEAR MAUNAWAI--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1963 - 1998	
ANNUAL TOTAL	3915.58		1774.85			
ANNUAL MEAN	10.7		4.86		10.2	
HIGHEST ANNUAL MEAN					22.1	1982
LOWEST ANNUAL MEAN					4.09	1984
HIGHEST DAILY MEAN	132	Apr 3	58	Jun 24	620	Nov 20 1990
LOWEST DAILY MEAN	.98	Oct 2	.31	Apr 19	.00	Aug 27 1971
ANNUAL SEVEN-DAY MINIMUM	1.2	Sep 2	.40	Mar 16	.00	Oct 15 1971
ANNUAL RUNOFF (AC-FT)	7770		3520		7410	
10 PERCENT EXCEEDS	27		11		19	
50 PERCENT EXCEEDS	4.4		2.3		3.3	
90 PERCENT EXCEEDS	1.6		.58		.67	



HAWAII, ISLAND OF OAHU

16330000 KAMANANUI STREAM AT MAUNAWAI

LOCATION.--Lat 21°38′20″, long 158°03′27″, Hydrologic Unit 20060000, on right bank, 0.5 mi upstream from Kamehameha Highway, 4.9 mi northeast of Waialua School, and 7.3 mi southwest of Kahuku School.

DRAINAGE AREA.--12.36 mi^2, revised, including that of Elehaha Stream which is mostly diverted into Kamananui Stream since June 14, 1975.

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

REVISED RECORDS.--WSP 1937: 1958-60. WRD Hawaii 1974: 1971(P), 1972-73(M). WDR HI-81-1: Drainage area.

GAGE.--Gage destroyed by flood of November 20, 1990 was restored and water-stage recorder installed on February 25, 1993. Control rebuilt about 75 ft downstream of gage. Elevation of gage is 20 ft above mean sea level (from topographic map). Prior to May 18, 1966, datum 2.00 ft higher.

REMARKS.--Records computed by C.W. Yeung. Records fair except for estimated periods which are poor. Small diversion upstream of station.

AVERAGE DISCHARGE.--24 years (water years 1975-98), 19.8 ft^3/s (14,350 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft^3/s, November 20, 1990, gage height, 15.84 ft, from rating curve extended above 150 ft^3/s on basis of slope-area measurements at gage heights 5.68 ft, 11.46 ft, and 15.84 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 17	1715	*408	*4.16				

Minimum daily discharge, 0.03 ft^3/s, March 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	20	47	109	e2.6	2.5	7.5	1.1	.04	28	1.9	1.5
2	.98	13	17	28	e3.0	1.4	7.0	.60	.05	13	1.3	1.8
3	55	3.2	7.5	14	e3.2	.88	5.1	.47	.08	7.7	1.5	15
4	56	1.8	4.5	9.0	e2.6	.72	3.7	.95	1.4	53	1.3	10
5	16	2.0	3.0	7.2	e4.0	.63	1.5	2.3	2.6	16	1.3	4.3
6	14	2.9	3.0	20	e4.2	.49	1.1	1.4	1.3	11	1.6	2.5
7	32	1.8	11	9.4	e2.2	.33	1.2	11	.34	8.3	1.7	1.6
8	13	1.0	20	6.4	e1.8	.16	2.9	4.0	2.9	6.4	3.1	1.1
9	6.2	13	14	5.0	e1.7	.13	20	2.4	6.6	6.0	4.0	.77
10	4.6	4.7	6.1	4.0	e1.6	.12	13	1.2	3.7	4.8	14	.44
11	4.1	1.8	5.0	3.6	e1.5	.12	3.8	1.1	1.7	3.8	8.4	1.6
12	3.2	2.2	5.0	3.3	e1.4	.09	1.8	2.9	2.0	4.4	4.8	e2.1
13	2.7	15	4.2	3.3	e1.3	.05	1.2	2.5	12	3.7	12	e1.0
14	2.4	7.0	3.5	2.7	e1.2	.05	.73	8.5	6.2	12	5.5	e1.0
15	2.3	3.0	3.1	2.4	e1.2	.06	.54	5.3	23	8.8	3.0	e1.3
16	2.3	1.9	3.2	2.1	1.5	.06	.35	2.6	11	11	2.2	e.90
17	2.8	1.2	8.8	73	1.2	.05	.17	2.0	2.4	6.1	1.7	e.65
18	4.2	.98	7.3	64	1.0	.04	.14	1.5	5.2	4.1	1.1	e.72
19	3.4	.82	9.1	27	1.1	.05	.08	1.4	2.4	3.3	.94	e.80
20	1.8	2.2	7.7	15	.85	.05	.05	.79	8.5	2.7	.76	e.70
21	1.2	5.7	9.6	e8.0	.80	.03	.07	3.0	44	2.5	.57	3.4
22	3.0	3.2	3.9	e6.0	.80	.04	1.9	2.1	45	2.4	.89	8.9
23	6.9	1.6	2.9	e4.5	.80	.05	16	.95	15	2.1	9.6	2.2
24	5.2	1.9	4.4	e4.0	.98	.06	9.0	.80	92	2.0	5.4	.83
25	2.9	9.4	4.7	e3.5	1.1	.06	3.6	.69	35	1.7	3.0	e.60
26	3.0	6.1	6.0	e3.2	.98	.10	1.3	.33	28	1.6	1.9	e1.3
27	2.1	4.5	4.6	e3.1	1.4	8.1	6.6	.14	35	1.5	1.4	e2.5
28	1.4	40	3.8	e3.1	3.7	5.0	3.5	.09	14	1.5	1.0	e1.0
29	.82	9.6	16	e3.0	---	1.7	2.0	.07	37	1.8	1.1	e.70
30	.66	15	35	e2.8	---	1.7	1.4	.05	31	4.5	1.1	e1.0
31	.66	---	99	e2.7	---	1.5	---	.05	---	3.1	1.2	---
TOTAL	256.62	196.50	379.9	452.3	49.71	26.32	117.23	62.28	469.41	238.8	99.26	72.21
MEAN	8.28	6.55	12.3	14.6	1.78	.85	3.91	2.01	15.6	7.70	3.20	2.41
MAX	56	40	99	109	4.2	8.1	20	11	92	53	14	15
MIN	.66	.82	2.9	2.1	.80	.03	.05	.05	.04	1.5	.57	.44
AC-FT	509	390	754	897	99	52	233	124	931	474	197	143

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

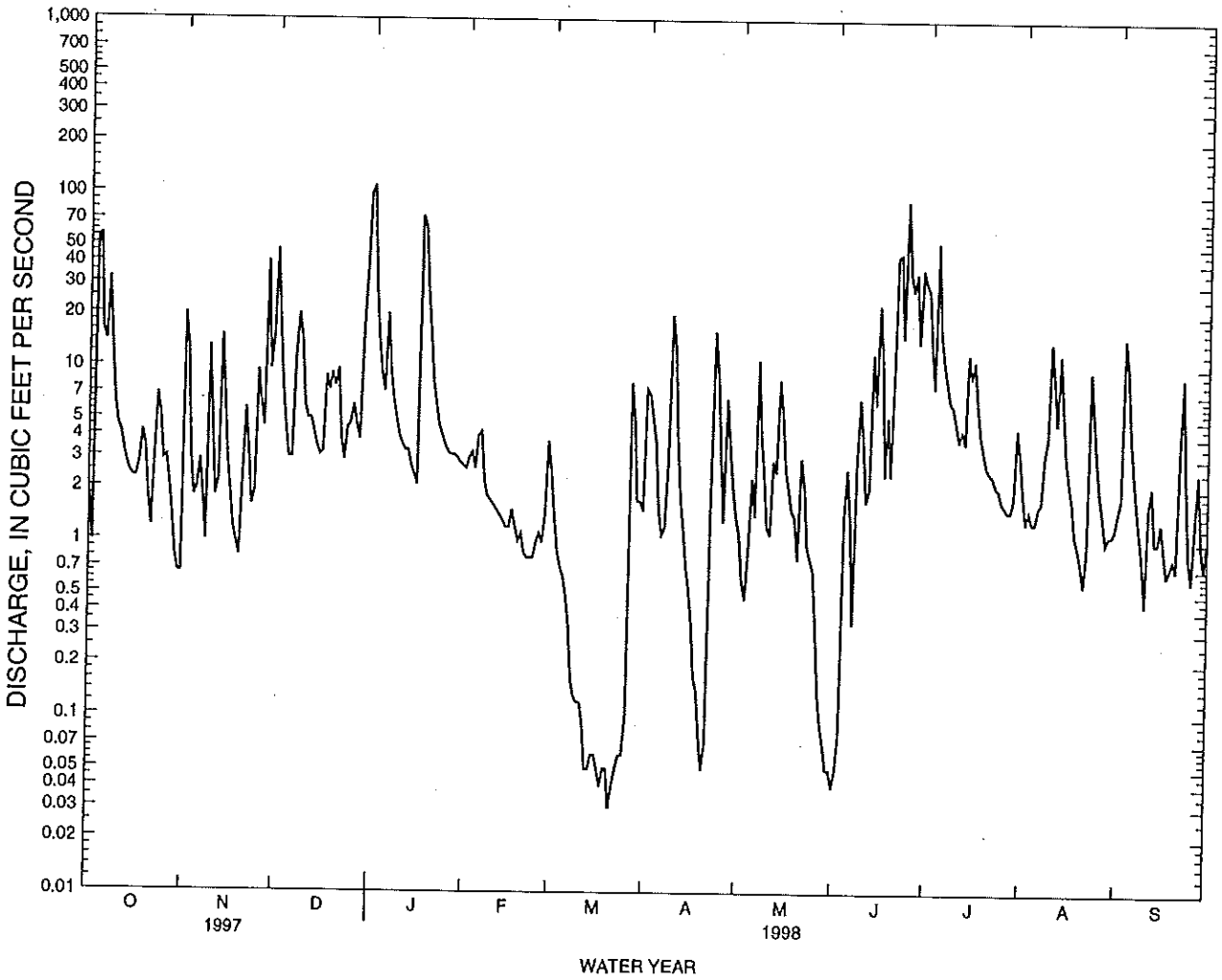
MEAN	12.1	33.8	21.0	32.4	21.7	34.5	26.6	15.3	9.59	13.7	10.0	7.02
MAX	54.1	168	107	143	96.9	155	168	58.3	52.9	52.7	46.2	19.9
(WY)	1992	1991	1988	1988	1979	1982	1989	1988	1978	1989	1995	1994
MIN	.006	2.60	.67	.094	.022	.85	.64	.95	.68	.98	.58	.006
(WY)	1985	1990	1977	1986	1978	1998	1992	1984	1984	1984	1984	1984

e Estimated

HAWAII, ISLAND OF OAHU

16330000 KAMANANUI STREAM AT MAUNAWAI--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1975 - 1998	
ANNUAL TOTAL	6194.02		2420.54			
ANNUAL MEAN	17.0		6.63		19.8	
HIGHEST ANNUAL MEAN					50.3	1982
LOWEST ANNUAL MEAN					4.81	1984
HIGHEST DAILY MEAN	343	Apr 3	109	Jan 1	1940	Jan 1 1988
LOWEST DAILY MEAN	.66	Oct 30	.03	Mar 21	.00	Sep 15 1975
ANNUAL SEVEN-DAY MINIMUM	1.4	Sep 3	.04	Mar 17	.00	Sep 15 1975
ANNUAL RUNOFF (AC-FT)	12290		4800		14350	
10 PERCENT EXCEEDS	36		15		31	
50 PERCENT EXCEEDS	6.1		2.6		4.1	
90 PERCENT EXCEEDS	1.9		.40		.30	



HAWAII, ISLAND OF OAHU

16345000 OPAEULA STREAM NEAR WAHIAWA

LOCATION.--Lat 21°33′55″, long 158°00′10″, Hydrologic Unit 20060000, on left bank, 4.3 mi northeast of Leilehua High School in Wahiawa, and 8.1 mi east of Waialua School.

DRAINAGE AREA.--2.98 mi^2.

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

REVISED RECORDS.--WSP 1937: 1960.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 1,120 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Ben Shimizu. Records fair except for period of no gage-height record which is poor. No diversion upstream of station.

AVERAGE DISCHARGE.--39 years (water years 1960-98), 13.7 ft^3/s (9,930 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,540 ft^3/s, July 17, 1974, gage height, 11.94 ft from rating curve extended above 110 ft^3/s on basis of slope-area measurements at gage heights 6.74 ft and 10.12 ft; maximum gage height, 13.20 ft, November 20, 1990; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 1	0915	*345	*4.45				

Minimum discharge, 0.16ft^3/s, March 20-23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.0	33	29	83	1.2	2.8	7.7	e1.5	8.4	12	2.0	1.9
2	e1.7	9.4	9.3	14	1.3	1.3	27	e1.0	3.0	7.7	2.1	4.2
3	e60	3.0	5.5	8.3	1.8	.76	18	e.80	7.9	14	2.2	14
4	e50	1.9	3.6	6.6	1.5	.50	5.3	e1.3	5.9	28	1.8	5.1
5	e25	7.7	2.8	7.0	1.4	.34	4.3	e3.0	5.8	10	2.1	2.4
6	e20	5.7	2.7	7.6	1.3	.28	6.8	e2.3	5.5	8.5	1.6	1.9
7	e30	2.5	42	4.7	1.2	.28	5.6	e12	2.5	6.1	2.3	1.8
8	e15	2.0	16	3.7	.91	.27	20	e6.0	13	6.5	7.7	1.6
9	e8.0	41	6.8	3.3	.80	.26	22	e4.0	9.9	9.9	5.0	1.2
10	5.0	5.6	4.2	3.0	.71	1.1	11	e2.2	6.0	5.8	19	1.8
11	3.6	2.9	3.2	2.7	.68	.69	5.5	e2.0	4.3	7.3	5.8	4.6
12	3.2	8.2	2.8	2.4	.63	.45	3.5	e6.5	5.0	6.4	2.8	1.9
13	3.0	20	2.4	2.2	.57	.31	2.7	6.2	7.5	8.6	3.4	8.7
14	2.4	6.6	2.1	2.0	.59	.24	2.1	6.1	8.7	20	3.5	5.3
15	2.2	3.3	2.2	1.9	.66	.22	1.6	5.5	16	12	3.0	2.5
16	2.9	2.4	4.2	1.7	.86	.22	1.2	3.1	10	11	2.5	3.2
17	4.1	2.1	8.7	24	.75	.22	1.2	5.4	6.5	5.7	3.4	4.1
18	2.3	1.8	19	40	.58	.21	1.6	7.7	7.1	4.6	2.2	2.6
19	5.8	1.9	15	29	.39	.19	1.5	4.7	4.6	3.9	2.2	1.7
20	3.3	2.2	14	7.1	e.35	.17	e1.4	9.2	22	3.4	1.7	1.9
21	2.7	3.2	9.1	3.6	e.32	.16	e1.2	6.9	49	3.2	1.6	13
22	13	2.1	4.3	2.6	.43	.16	e4.5	3.8	15	3.0	5.4	9.5
23	10	1.7	3.2	2.2	3.8	.20	e20	4.0	18	2.7	20	3.4
24	5.4	2.5	8.4	1.9	2.4	.24	e10	3.3	53	2.6	4.1	2.6
25	2.7	31	5.0	1.6	1.4	.24	e5.5	2.7	21	2.5	2.6	8.3
26	2.1	7.0	5.6	1.5	3.5	5.7	e2.3	2.1	24	2.3	1.9	11
27	1.9	16	3.9	1.4	1.8	13	e7.0	2.2	25	4.0	1.9	4.6
28	1.6	67	8.0	1.3	5.6	5.2	e4.5	2.5	14	2.6	1.9	2.9
29	1.6	28	16	1.4	---	2.8	e2.8	1.9	32	5.5	3.8	3.2
30	2.7	15	64	1.3	---	7.8	e2.0	1.5	16	4.8	2.6	3.9
31	2.0	---	28	1.2	---	14	---	1.6	---	2.3	2.5	---
TOTAL	295.2	336.7	351.0	274.2	37.43	60.31	209.8	123.00	426.6	226.9	124.6	134.8
MEAN	9.52	11.2	11.3	8.85	1.34	1.95	6.99	3.97	14.2	7.32	4.02	4.49
MAX	60	67	64	83	5.6	14	27	12	53	28	20	14
MIN	1.6	1.7	2.1	1.2	.32	.16	1.2	.80	2.5	2.3	1.6	1.2
AC-FT	586	668	696	544	74	120	416	244	846	450	247	267

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1998, BY WATER YEAR (WY)

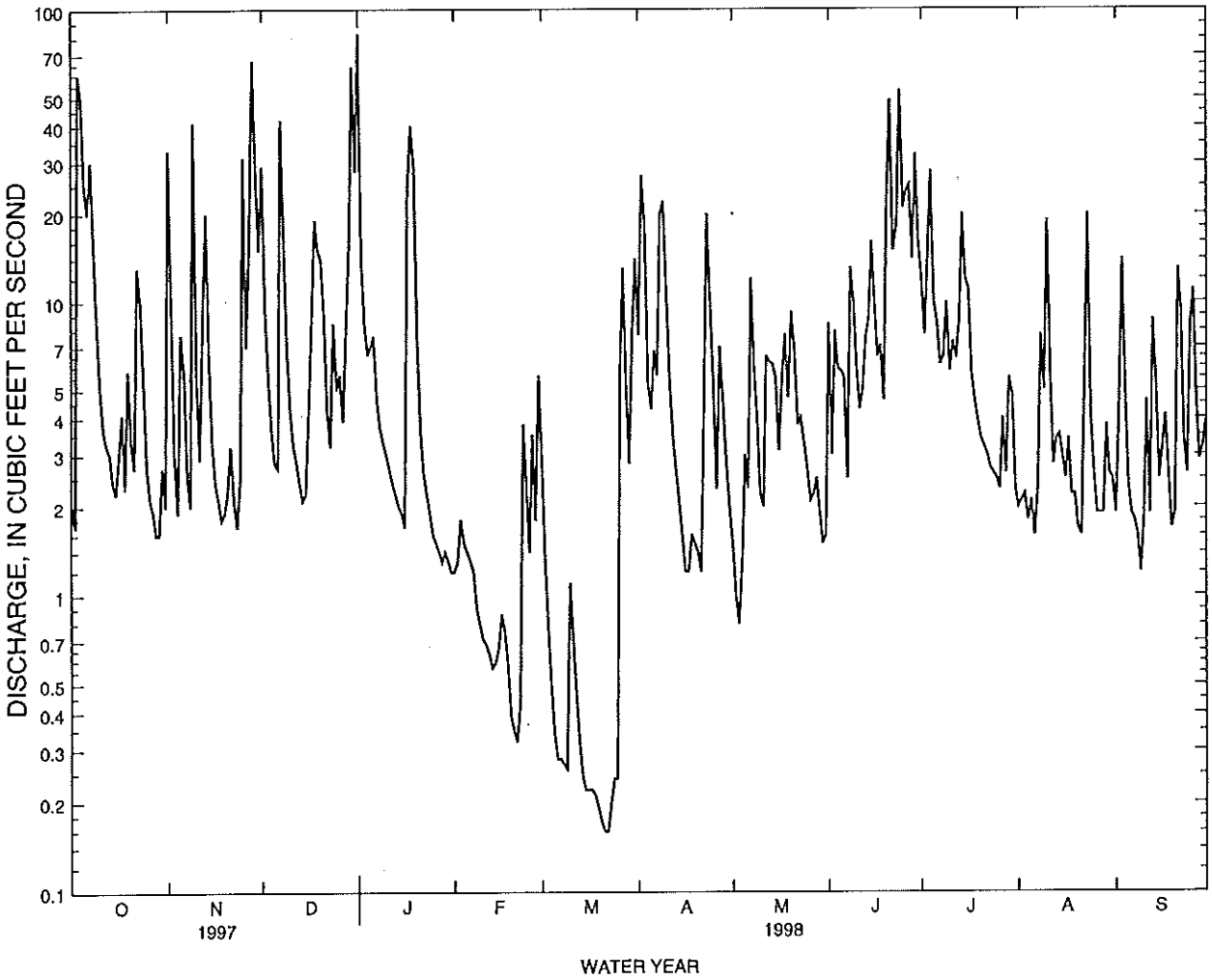
MEAN	11.1	18.7	15.6	16.2	13.6	20.7	20.8	12.2	7.64	11.8	8.56	7.64
MAX	30.7	71.9	52.6	54.1	66.9	90.0	75.7	43.7	24.9	29.3	31.0	24.9
(WY)	1982	1991	1988	1988	1969	1982	1989	1965	1978	1989	1982	1994
MIN	.057	2.90	1.29	.37	.32	.35	1.57	1.75	2.02	.95	1.51	.52
(WY)	1985	1963	1977	1977	1978	1983	1966	1966	1975	1971	1984	1975

e Estimated

HAWAII, ISLAND OF OAHU

16345000 OPAEULA STREAM NEAR WAHIAWA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1959 - 1998	
ANNUAL TOTAL	4686.8		2600.54			
ANNUAL MEAN	12.8		7.12		13.7	
HIGHEST ANNUAL MEAN					29.7	1982
LOWEST ANNUAL MEAN					7.12	1998
HIGHEST DAILY MEAN	180	Apr 3	83	Jan 1	825	Feb 1 1969
LOWEST DAILY MEAN	1.1	Feb 22	.16	Mar 21	.00	Jan 24 1977
ANNUAL SEVEN-DAY MINIMUM	1.4	Feb 16	.19	Mar 17	.00	Oct 24 1984
ANNUAL RUNOFF (AC-FT)	9300		5160		9930	
10 PERCENT EXCEEDS	30		18		28	
50 PERCENT EXCEEDS	5.6		3.3		4.5	
90 PERCENT EXCEEDS	2.2		.84		.93	



Surface-Water Station Records for Molokai

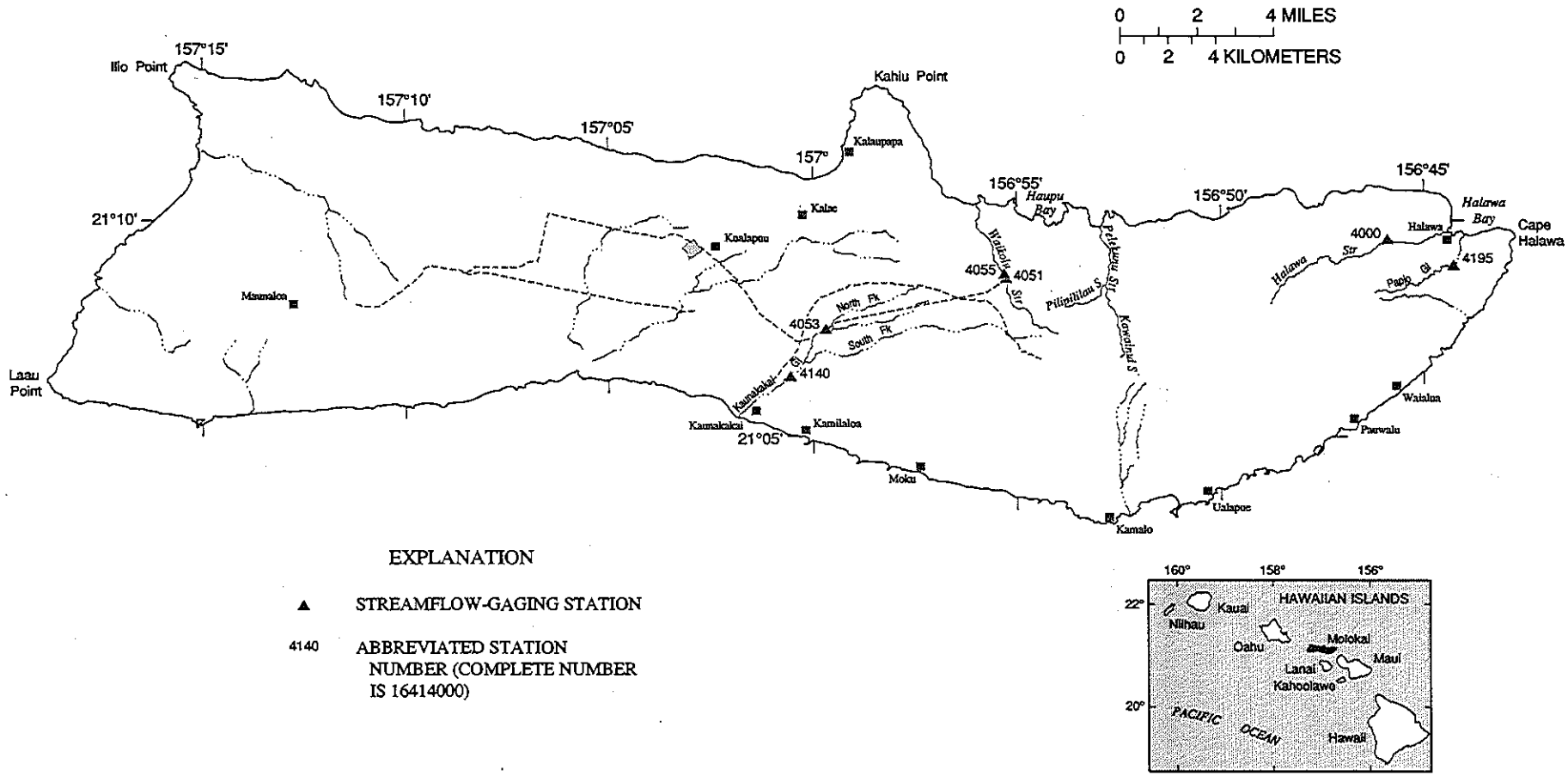


Figure 7. Locations of gaging, water-quality, and partial-record stations on Molokai.

HAWAII, ISLAND OF MOLOKAI

16400000 HALAWA STREAM NEAR HALAWA

LOCATION.--Lat 21°09′31″, long 156°45′53″, Hydrologic Unit 20050000, on right bank 600 ft downstream from Hipuapua Stream, and 1.5 mi west of Halawa.

DRAINAGE AREA.--4.62 mi^2.

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. Elevation of gage is 210 ft above mean sea level (from topographic map). Prior to June 25, 1923, at site 350 ft upstream of gage at different datum. June 25, 1923 to July 18, 1932, and November 17, 1937 to February 3, 1965, at present site at datum 2.00 ft higher.

REMARKS.--Records computed by Phillip Teeters. Records fair. No diversion upstream.

AVERAGE DISCHARGE.--74 years (water years 1918-31, 1939-98), 29.8 ft^3/s (21,560 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,900 ft^3/s, February 4, 1965, gage height, 19.91 ft, from floodmarks, from rating curve extended above 163 ft^3/s on basis of slope-area measurement of peak flow; minimum, 0.76 ft^3/s, about November 23, 1962.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 1	0600	*619	*5.79				

Minimum discharge, 3.6 ft^3/s, February 16-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	140	53	261	30	7.5	34	38	14	15	7.7	13
2	10	50	76	71	8.2	63	72	11	12	11	7.0	101
3	42	12	28	28	5.3	8.7	28	12	24	15	6.9	56
4	75	9.6	14	21	27	12	12	15	53	58	6.2	13
5	15	44	12	67	8.3	57	20	9.1	33	30	7.2	9.6
6	24	12	40	23	5.3	9.4	12	37	12	16	29	12
7	18	8.9	41	15	4.8	6.2	20	45	11	47	36	8.8
8	72	54	12	12	4.6	8.2	23	11	56	31	12	8.1
9	25	104	12	11	4.4	6.5	63	10	14	18	33	30
10	12	12	11	10	4.3	5.0	31	13	13	11	41	17
11	13	27	56	9.3	4.2	4.5	20	19	40	12	12	9.6
12	10	62	11	8.8	4.1	4.3	18	12	42	12	8.1	21
13	8.8	42	8.8	8.2	4.0	4.1	20	11	15	8.4	7.1	16
14	8.9	14	7.9	7.7	3.9	4.0	14	15	71	11	7.7	23
15	7.7	10	7.6	7.4	3.8	7.5	9.9	16	68	88	7.3	20
16	7.0	8.8	16	6.9	3.7	7.4	8.0	14	62	14	11	30
17	6.5	7.9	27	6.6	3.6	4.5	7.5	10	45	11	12	31
18	6.7	25	161	7.7	3.6	4.0	14	9.5	22	12	11	10
19	7.0	19	18	13	3.7	3.8	49	42	18	9.4	6.6	11
20	6.3	59	21	8.3	3.7	3.7	107	20	33	8.5	6.0	32
21	37	13	13	6.4	3.6	3.7	48	10	94	9.3	11	85
22	19	8.8	17	6.0	25	6.1	20	9.1	39	7.5	26	14
23	15	12	23	5.8	9.7	22	18	8.2	21	7.0	11	14
24	8.1	11	20	5.5	5.1	7.4	46	7.2	125	7.0	8.5	64
25	7.2	80	42	5.7	10	11	58	7.4	41	7.9	18	37
26	38	13	13	5.5	23	30	85	7.5	73	21	16	28
27	12	78	18	5.1	11	23	21	6.8	34	8.6	26	12
28	8.9	75	35	7.2	8.0	22	40	6.6	36	54	45	14
29	8.6	72	20	5.4	---	32	13	6.1	36	23	33	10
30	6.5	102	251	4.9	---	30	11	6.5	35	16	13	12
31	78	---	207	4.6	---	29	---	42	---	10	8.9	---
TOTAL	625.2	1186.0	1292.3	664.0	235.9	447.5	942.4	487.0	1192	609.6	491.2	762.1
MEAN	20.2	39.5	41.7	21.4	8.43	14.4	31.4	15.7	39.7	19.7	15.8	25.4
MAX	78	140	251	261	30	63	107	45	125	88	45	101
MIN	6.3	7.9	7.6	4.6	3.6	3.7	7.5	6.1	11	7.0	6.0	8.1
AC-FT	1240	2350	2560	1320	468	888	1870	966	2360	1210	974	1510

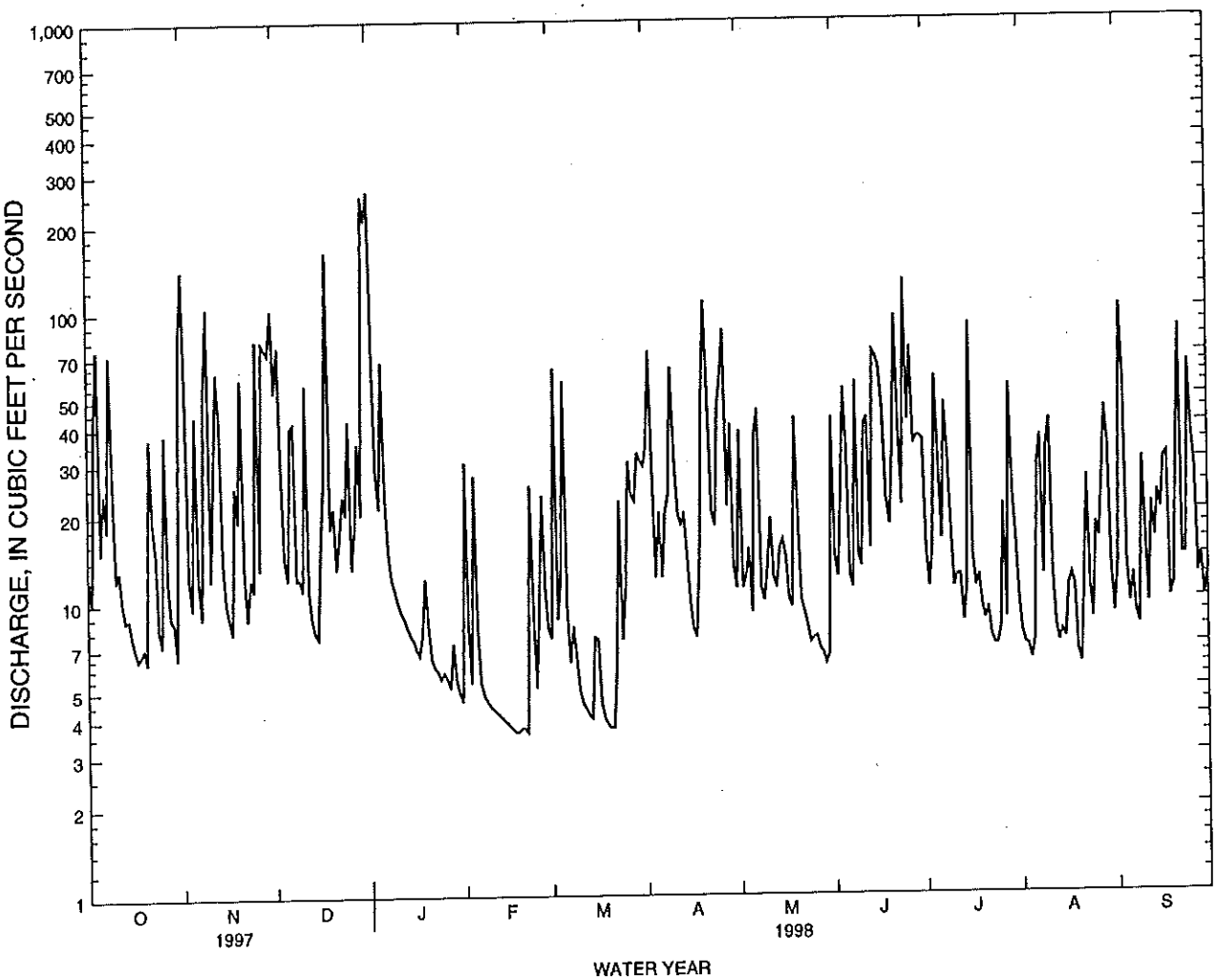
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 1998, BY WATER YEAR (WY)

MEAN	26.4	36.6	36.2	33.7	29.5	37.5	40.2	27.3	19.1	25.7	24.7	20.7
MAX	100	97.8	84.7	118	114	134	157	85.2	59.2	58.2	69.8	58.2
(WY)	1942	1951	1947	1921	1932	1942	1989	1963	1961	1954	1938	1992
MIN	2.04	5.80	8.56	5.31	2.98	5.48	11.7	4.26	4.93	6.00	1.19	2.85
(WY)	1918	1920	1977	1977	1978	1970	1990	1920	1966	1917	1971	1975

HAWAII, ISLAND OF MOLOKAI

16400000 HALAWA STREAM NEAR HALAWA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1917 - 1998	
ANNUAL TOTAL	12141.0		8935.2			
ANNUAL MEAN	33.3		24.5		29.8	
HIGHEST ANNUAL MEAN					47.4	1965
LOWEST ANNUAL MEAN					17.4	1975
HIGHEST DAILY MEAN	367	May 14	261	Jan 1	1240	Feb 4 1965
LOWEST DAILY MEAN	4.7	Apr 23	3.6	Feb 17	.86	Sep 1 1971
ANNUAL SEVEN-DAY MINIMUM	5.5	Apr 17	3.7	Feb 15	.90	Aug 26 1971
ANNUAL RUNOFF (AC-FT)	24080		17720		21560	
10 PERCENT EXCEEDS	76		57		65	
50 PERCENT EXCEEDS	16		13		13	
90 PERCENT EXCEEDS	7.0		5.9		4.8	



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 downstream from the east portal, 5.3 mi southeast of Kalaupapa, and 7.5 mi northeast of Kaunakakai.

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 989 ft above mean sea level, from tunnel plans.

REMARKS.--Records computed by Roy Taogoshi. Records fair except for periods of estimated discharge, which are poor. Tunnel diverts water from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells and from the stream at elevation 728 ft in Waikolu Valley near the east portal. Water is used for irrigation in west-central Molokai.

AVERAGE DISCHARGE.--32 years (water years 1967-98), 4.70 ft^3/s (3,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 41 ft^3/s, March 19, 1986; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 28 ft^3/s, December 2 (estimated); minimum daily, 1.7 ft^3/s, October 14 (estimated).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e5.0	e16	e10	14	8.4	4.4	11	11	4.3	6.0	4.1	3.3
2	e4.5	e19	e28	9.5	5.4	5.1	22	7.4	4.3	5.1	4.1	13
3	e4.8	e6.0	e18	5.4	3.7	5.2	13	6.5	4.3	5.0	4.0	7.8
4	e10	e4.0	e7.0	4.6	4.8	4.4	7.5	8.4	4.4	7.6	4.0	4.3
5	e6.0	e4.1	e4.5	11	4.6	4.2	6.0	5.9	4.7	13	4.0	3.6
6	e5.5	e3.5	e9.0	8.1	4.0	4.1	5.4	12	4.5	6.8	4.0	3.8
7	e6.0	e3.0	e10	5.5	5.7	4.1	10	9.4	4.4	13	5.4	3.5
8	e5.4	e7.0	e5.0	4.6	5.6	4.3	9.8	6.3	5.7	16	4.8	3.3
9	e5.1	e16	e5.0	4.2	5.5	4.7	20	6.3	6.5	8.4	5.1	3.3
10	e5.0	e5.5	4.4	3.9	5.4	4.2	14	9.0	8.3	5.8	5.3	3.3
11	e5.2	e4.0	6.4	3.7	5.4	4.0	12	11	9.6	5.4	4.5	3.2
12	e5.0	e6.0	4.8	3.6	5.4	4.0	14	11	11	6.0	4.2	3.2
13	e4.0	e9.0	4.2	3.4	5.4	3.9	12	7.3	6.4	5.0	4.1	3.2
14	e1.7	e5.0	3.8	3.3	5.4	3.9	9.2	11	18	5.1	4.3	3.2
15	e2.0	e3.5	3.6	3.3	5.4	3.9	6.3	8.1	12	8.3	4.2	3.3
16	e1.9	e3.2	4.0	3.3	5.4	3.8	4.9	8.9	7.5	5.8	4.1	3.7
17	e1.9	e3.0	6.8	6.1	5.3	3.9	4.4	5.8	6.9	4.8	3.3	5.1
18	e1.9	e3.2	8.0	6.1	5.2	3.7	4.4	5.1	7.0	4.6	3.2	3.8
19	e2.0	e4.5	5.8	4.3	5.3	3.6	5.5	6.0	9.0	4.5	3.2	3.3
20	e2.0	e14	6.4	3.8	5.3	3.7	8.1	9.6	14	4.5	3.2	3.2
21	e2.5	e6.5	4.7	3.6	5.2	3.9	9.2	6.1	21	4.4	3.2	6.0
22	e4.0	e4.0	4.0	3.9	18	5.1	6.6	5.2	16	4.2	3.2	4.3
23	e3.0	e8.0	3.7	3.8	11	9.3	7.8	4.9	11	4.3	3.2	3.9
24	e2.5	e15	4.0	3.6	5.6	5.2	4.9	4.7	18	4.3	3.5	3.4
25	e2.1	e24	8.2	3.5	5.0	8.1	4.8	4.7	10	4.2	5.6	3.3
26	e3.7	e11	5.0	3.3	5.6	12	6.8	4.6	14	4.2	10	3.2
27	e4.0	e10	5.9	3.1	5.1	13	6.4	4.5	13	4.2	9.1	3.1
28	e2.8	e21	5.6	3.9	4.7	12	16	4.4	9.2	4.3	5.5	3.0
29	e2.4	e24	5.0	3.4	---	11	6.5	4.3	11	4.3	4.8	3.0
30	e2.2	e9.0	23	3.1	---	15	5.8	4.3	8.8	4.2	3.9	3.2
31	e6.0	---	15	3.1	---	14	---	4.3	---	4.2	3.4	---
TOTAL	120.1	272.0	238.8	150.0	166.8	191.7	274.3	218.0	284.8	187.5	138.5	120.8
MEAN	3.87	9.07	7.70	4.84	5.96	6.18	9.14	7.03	9.49	6.05	4.47	4.03
MAX	10	24	28	14	18	15	22	12	21	16	10	13
MIN	1.7	3.0	3.6	3.1	3.7	3.6	4.4	4.3	4.3	4.2	3.2	3.0
AC-FT	238	540	474	298	331	380	544	432	565	372	275	240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

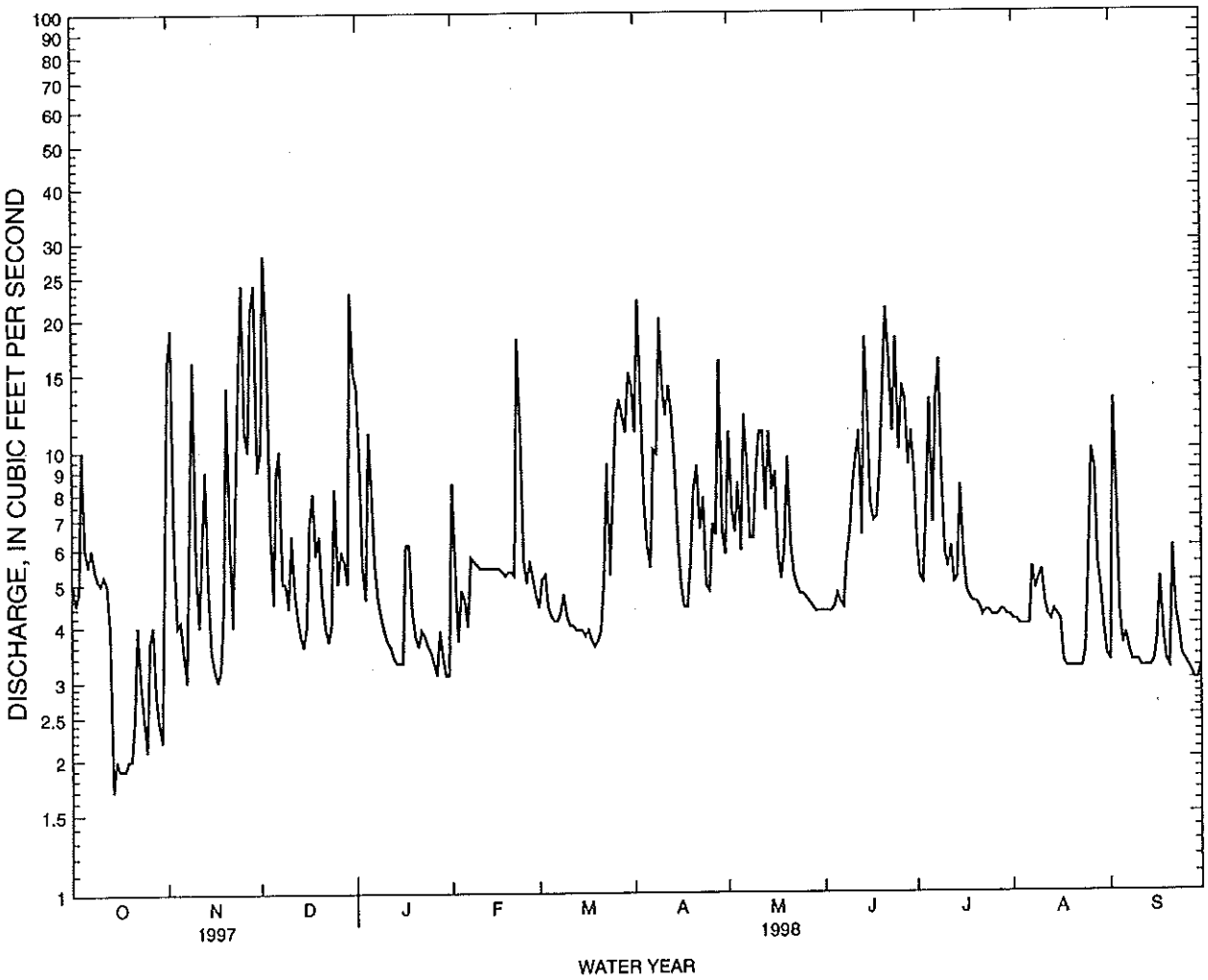
MEAN	3.96	5.61	5.47	5.02	4.83	5.56	5.54	4.54	4.19	4.43	3.75	3.30
MAX	8.05	10.2	10.8	12.5	12.5	13.8	12.8	12.3	9.49	9.89	7.22	5.81
(WY)	1996	1988	1997	1987	1990	1986	1986	1987	1998	1986	1985	1994
MIN	1.80	1.86	.41	.086	.010	.009	.001	.037	.016	.055	.004	.24
(WY)	1972	1992	1968	1968	1968	1968	1967	1967	1974	1974	1974	1974

e Estimated

HAWAII, ISLAND OF MOLOKAI

16405100 MOLOKAI TUNNEL AT EAST PORTAL--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1966 - 1998	
ANNUAL TOTAL	2141.1		2363.3			
ANNUAL MEAN	5.87		6.47		4.70	
HIGHEST ANNUAL MEAN					8.19	1987
LOWEST ANNUAL MEAN					1.31	1974
HIGHEST DAILY MEAN	28	Dec 2	28	Dec 2	41	Mar 19 1986
LOWEST DAILY MEAN	1.3	Apr 16	1.7	Oct 14	.00	Mar 30 1967
ANNUAL SEVEN-DAY MINIMUM	1.3	Apr 15	1.9	Oct 14	.00	Mar 30 1967
ANNUAL RUNOFF (AC-FT)	4250		4690		3400	
10 PERCENT EXCEEDS	11		12		9.7	
50 PERCENT EXCEEDS	4.5		5.0		3.4	
90 PERCENT EXCEEDS	2.0		3.2		.99	



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 upstream from the west portal, 2.5 mi northeast of Kaunakakai, and 4.7 mi south of Kalaupapa.

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 970 ft above mean sea level, from tunnel plans.

REMARKS.--Records computed by Roy Taogoshi. Records good. Tunnel diverts water from Waikolu Stream and two tributaries; diversion is augmented by water pumped from two wells and from the stream at elevation 728 ft in Waikolu Valley near the east portal and one well in the tunnel near east portal. Water is used for irrigation in west-central Molokai.

AVERAGE DISCHARGE.--33 years (water years 1966-98), 7.25 ft^3/s (5,250 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 39 ft^3/s, April 8, 9, 1986, January 2, 26, 1988, and March 3, 1989; minimum daily, 1.8 ft^3/s, October 15, 1967, August 27, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 31 ft^3/s, December 2; minimum daily, 4.4 ft^3/s, October 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	19	13	17	11	6.7	13	13	7.0	10	7.9	6.5
2	7.5	22	31	13	8.5	7.2	25	10	6.9	8.7	7.9	15
3	7.8	9.0	21	8.2	6.6	7.6	17	8.7	6.9	8.5	7.6	12
4	13	7.1	9.7	7.3	7.2	6.8	10	11	7.0	11	7.5	7.8
5	8.9	7.2	7.6	13	7.4	6.6	8.6	8.7	7.2	18	7.3	6.9
6	8.6	6.3	12	12	6.3	6.5	8.1	14	7.1	11	7.1	7.1
7	8.9	5.9	13	8.2	8.4	6.5	13	13	7.0	16	8.1	6.9
8	8.3	11	7.8	7.4	8.2	6.6	12	9.0	8.0	22	7.6	6.8
9	8.0	19	7.9	6.8	8.2	7.1	23	8.9	8.2	13	7.4	6.8
10	8.0	8.3	7.5	6.6	8.1	6.6	17	11	11	9.8	7.8	6.8
11	8.3	7.0	9.5	6.3	8.1	6.4	16	14	12	9.1	6.9	6.8
12	7.9	9.1	7.8	6.3	8.1	6.4	16	14	14	9.9	6.7	6.7
13	7.0	12	7.1	6.2	7.9	6.2	17	10	8.8	8.9	6.7	6.8
14	4.4	7.7	6.7	6.1	8.0	6.2	12	13	21	8.8	7.0	6.9
15	5.0	6.6	6.6	6.0	7.9	6.2	9.3	11	15	12	7.0	6.9
16	4.9	6.3	6.8	6.1	7.9	6.2	7.8	12	10	10	6.9	7.2
17	4.9	6.0	9.5	8.4	7.9	6.2	7.4	8.9	9.2	8.7	6.1	8.7
18	4.9	6.3	11	9.2	7.8	6.2	7.3	8.0	10	8.5	6.0	7.7
19	5.1	7.4	8.7	7.2	7.8	5.9	8.3	8.6	12	8.3	6.0	7.1
20	5.1	17	8.8	6.7	7.8	5.9	11	12	17	8.2	6.0	7.1
21	5.6	9.6	7.6	6.4	7.8	6.2	12	9.0	25	8.2	6.0	9.7
22	6.8	7.1	6.7	6.6	19	6.7	9.6	7.9	22	8.1	6.0	8.5
23	6.0	11	6.4	6.7	14	11	10	7.6	16	8.1	6.1	7.8
24	5.4	18	6.4	6.3	7.9	7.5	7.6	7.3	23	8.1	6.4	7.4
25	5.2	27	11	6.3	7.2	9.7	7.5	7.2	15	8.1	8.2	7.3
26	6.8	14	7.8	6.2	7.8	14	9.2	7.2	17	8.0	13	7.2
27	7.2	13	7.8	6.1	7.4	16	9.3	7.1	19	7.9	13	7.2
28	5.9	24	8.3	6.6	7.0	14	19	7.0	12	8.0	8.8	7.1
29	5.5	27	7.6	6.3	---	14	9.4	6.9	16	8.1	7.9	7.1
30	5.3	12	26	6.1	---	17	8.5	6.9	13	8.1	7.1	7.0
31	9.2	---	20	6.1	---	18	---	6.9	---	8.1	6.7	---
TOTAL	213.3	362.9	328.6	237.7	237.2	264.1	360.9	299.8	383.3	309.2	230.7	230.8
MEAN	6.88	12.1	10.6	7.67	8.47	8.52	12.0	9.67	12.8	9.97	7.44	7.69
MAX	13	27	31	17	19	18	25	14	25	22	13	15
MIN	4.4	5.9	6.4	6.0	6.3	5.9	7.3	6.9	6.9	7.9	6.0	6.5
AC-FT	423	720	652	471	470	524	716	595	760	613	458	458

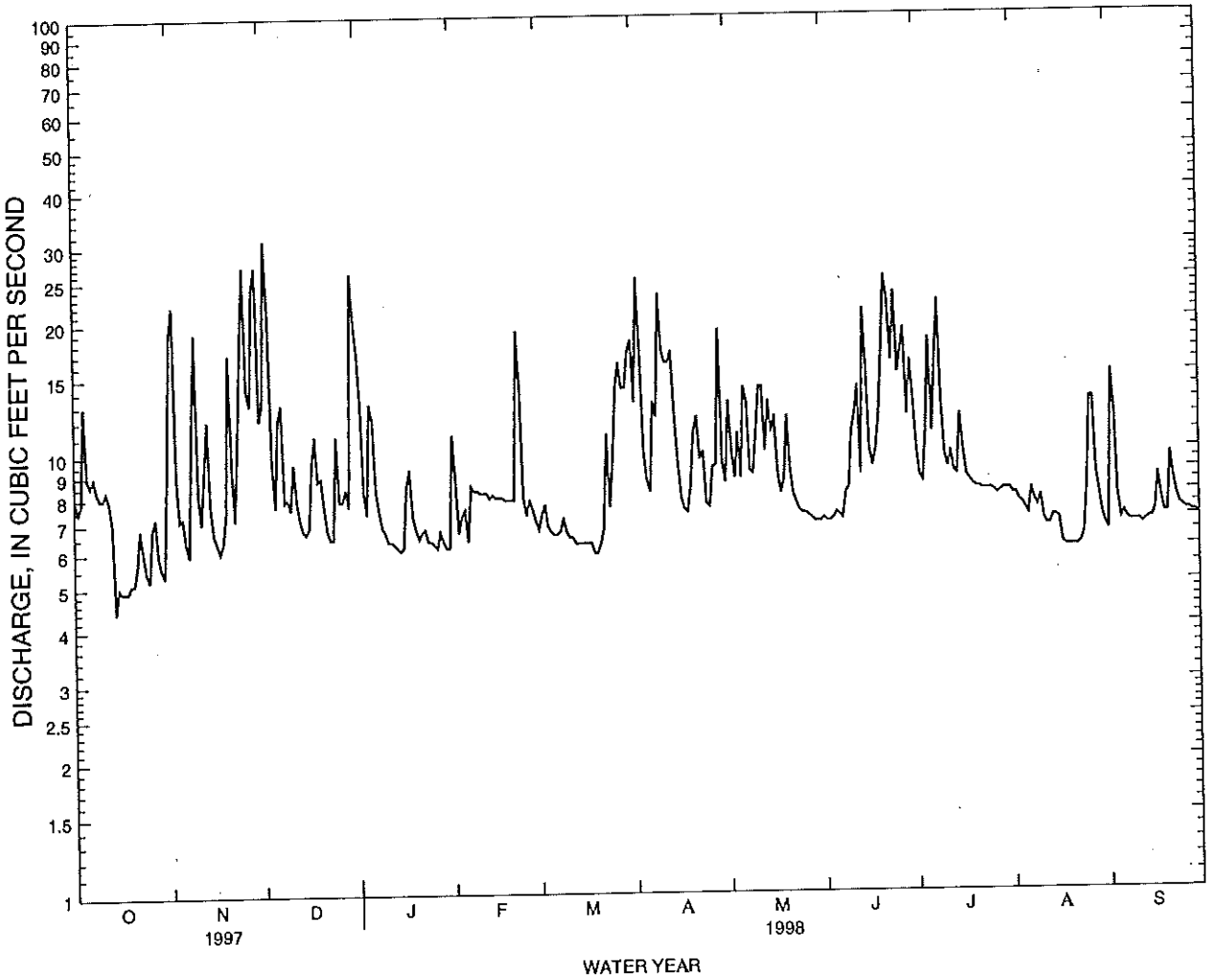
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

MEAN	6.39	8.03	7.83	7.34	7.34	8.13	8.17	7.21	6.88	7.13	6.32	5.91
MAX	10.6	13.4	13.8	14.4	15.9	15.5	15.6	15.8	12.8	13.2	10.2	9.21
(WY)	1996	1988	1991	1988	1990	1986	1986	1987	1998	1986	1985	1987
MIN	2.60	2.60	2.83	2.61	2.25	2.55	2.61	2.69	2.32	2.30	2.21	2.33
(WY)	1966	1966	1966	1966	1974	1967	1974	1974	1974	1974	1974	1974

HAWAII, ISLAND OF MOLOKAI

16405300 MOLOKAI TUNNEL AT WEST PORTAL--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1965 - 1998	
ANNUAL TOTAL	3213.4		3458.5			
ANNUAL MEAN	8.80		9.48		7.25	
HIGHEST ANNUAL MEAN					11.4	1987
LOWEST ANNUAL MEAN					3.46	1974
HIGHEST DAILY MEAN	31	Dec 2	31	Dec 2	39	Apr 8 1986
LOWEST DAILY MEAN	3.8	May 28	4.4	Oct 14	1.8	Oct 15 1967
ANNUAL SEVEN-DAY MINIMUM	3.9	May 26	4.9	Oct 14	1.9	May 3 1976
ANNUAL RUNOFF (AC-FT)	6370		6860		5250	
10 PERCENT EXCEEDS	15		16		12	
50 PERCENT EXCEEDS	7.7		7.9		6.0	
90 PERCENT EXCEEDS	4.4		6.2		3.1	



HAWAII, ISLAND OF MOLOKAI

16405500 WAIKOLU STREAM AT ALTITUDE 900 FT, NEAR KALAUPAPA

LOCATION.--Lat 21°08′43″, long 156°55′18″, Hydrologic Unit 20050000, on right bank 1.8 mi southwest of Haupu Bay, 2.3 mi upstream from mouth, and 5.2 mi southeast of Kalaupapa.

DRAINAGE AREA.--1.99 mi^2.

PERIOD OF RECORD.--May 1956 to October 1961, July 1962 to current year.

REVISED RECORDS.--WSP 1719: 1959. WSP 2137: 1965(P).

GAGE.--Water-stage recorder. Elevation of gage is 900 ft above mean sea level (from topographic map). Prior to July 1, 1962, at site 200 ft upstream of gage at datum 6.14 ft higher.

REMARKS.--Records computed by Phillip Teeters. Records good up to 50 ft^3/s and fair above that. Since November 16, 1960, water diverted upstream at times, either into or from Molokai tunnel.

AVERAGE DISCHARGE (since Molokai tunnel diversion began).--37 years (water years 1961, 1963-98), 6.14 ft^3/s (4,450 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,570 ft^3/s, January 25, 1982, gage height, 6.64 ft, from rating curve extended above 43 ft^3/s on basis of slope-area measurement at gage height 5.25 ft; no flow at times since 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of October 31, 1961, reached a stage of 13.62 ft, from floodmarks, former site and datum, discharge, 6,220 ft^3/s, by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 590 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 5	1630	*490	*3.52				

Minimum discharge, 0.25 ft^3/s, November 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.43	35	9.6	9.1	6.0	1.0	4.9	5.3	.77	.80	.76	.76
2	.43	59	144	4.4	1.4	1.0	64	1.0	.85	.77	.76	9.5
3	.53	.89	17	1.5	1.0	1.0	10	.89	.89	.76	.76	1.3
4	1.5	.43	1.9	1.2	1.2	1.0	1.4	1.2	.89	1.1	.76	.69
5	.43	.43	1.4	31	1.2	1.0	1.0	.89	.89	5.6	.76	.66
6	.43	.43	6.3	3.0	1.0	1.0	1.0	5.7	.89	.96	.76	.75
7	.43	.55	4.5	1.5	1.0	1.0	3.0	1.6	.88	4.6	.78	.75
8	.43	15	1.4	1.4	.89	1.0	2.2	.89	.88	11	.77	.76
9	.43	27	1.2	1.2	.89	1.0	52	.89	.88	1.5	.79	.77
10	.53	.53	1.0	1.2	.89	.89	10	1.5	.92	.98	.81	.76
11	10	.43	1.7	1.0	.89	.89	8.3	3.7	1.1	.91	.78	.66
12	1.4	1.7	1.2	1.0	.89	.89	11	2.3	1.9	.96	.76	.64
13	.80	1.9	1.0	1.0	.89	.89	11	.89	.85	.92	.76	.64
14	.43	.53	1.0	1.0	.89	.89	2.7	1.4	9.5	.92	.77	.73
15	.43	.34	1.0	1.0	.89	.89	1.0	1.3	2.7	1.2	.76	.66
16	.43	.34	1.0	1.0	.89	.89	1.0	1.5	.88	.97	.76	.71
17	.43	.34	1.9	8.2	.76	.89	.89	1.0	.76	.91	.76	.76
18	.43	.34	3.5	3.2	.76	1.0	1.0	1.0	.94	.89	.69	.76
19	.43	.43	1.4	1.2	.76	1.0	1.0	1.0	1.1	.89	.68	.75
20	.43	14	1.7	1.2	.64	1.0	1.0	1.5	5.2	.85	.75	.64
21	.53	.64	1.4	1.2	.89	1.0	1.7	1.0	16	.78	.70	.74
22	.53	.43	1.0	1.2	26	1.4	1.2	.77	7.1	.77	.64	.76
23	.34	9.4	1.0	1.2	6.8	2.8	1.4	.77	1.8	.76	.64	.75
24	.34	10	1.0	1.2	1.0	1.2	1.0	.76	8.4	.76	.66	.76
25	.34	60	3.5	1.2	1.0	1.2	1.0	.77	1.7	.75	.80	.74
26	.53	3.1	1.4	1.2	1.0	3.1	1.2	.76	6.9	.74	2.1	.70
27	.53	19	1.7	1.2	1.0	7.0	1.2	.76	5.0	.72	1.5	.66
28	.43	35	1.4	1.2	1.0	3.8	21	.76	.99	.73	.69	.76
29	.34	31	1.2	1.2	---	3.9	1.0	.76	1.4	.74	.68	.73
30	.34	4.3	58	1.2	---	14	.89	.76	1.0	.74	.73	.68
31	14	---	16	1.2	---	12	---	.77	---	.76	.76	---
TOTAL	39.03	332.48	291.3	88.5	62.42	70.52	219.98	44.09	83.96	45.74	25.08	30.93
MEAN	1.26	11.1	9.40	2.85	2.23	2.27	7.33	1.42	2.80	1.48	.81	1.03
MAX	14	60	144	31	26	14	64	5.7	16	11	2.1	9.5
MIN	.34	.34	1.0	1.0	.64	.89	.89	.76	.76	.72	.64	.64
AC-FT	77	659	578	176	124	140	436	87	167	91	50	61

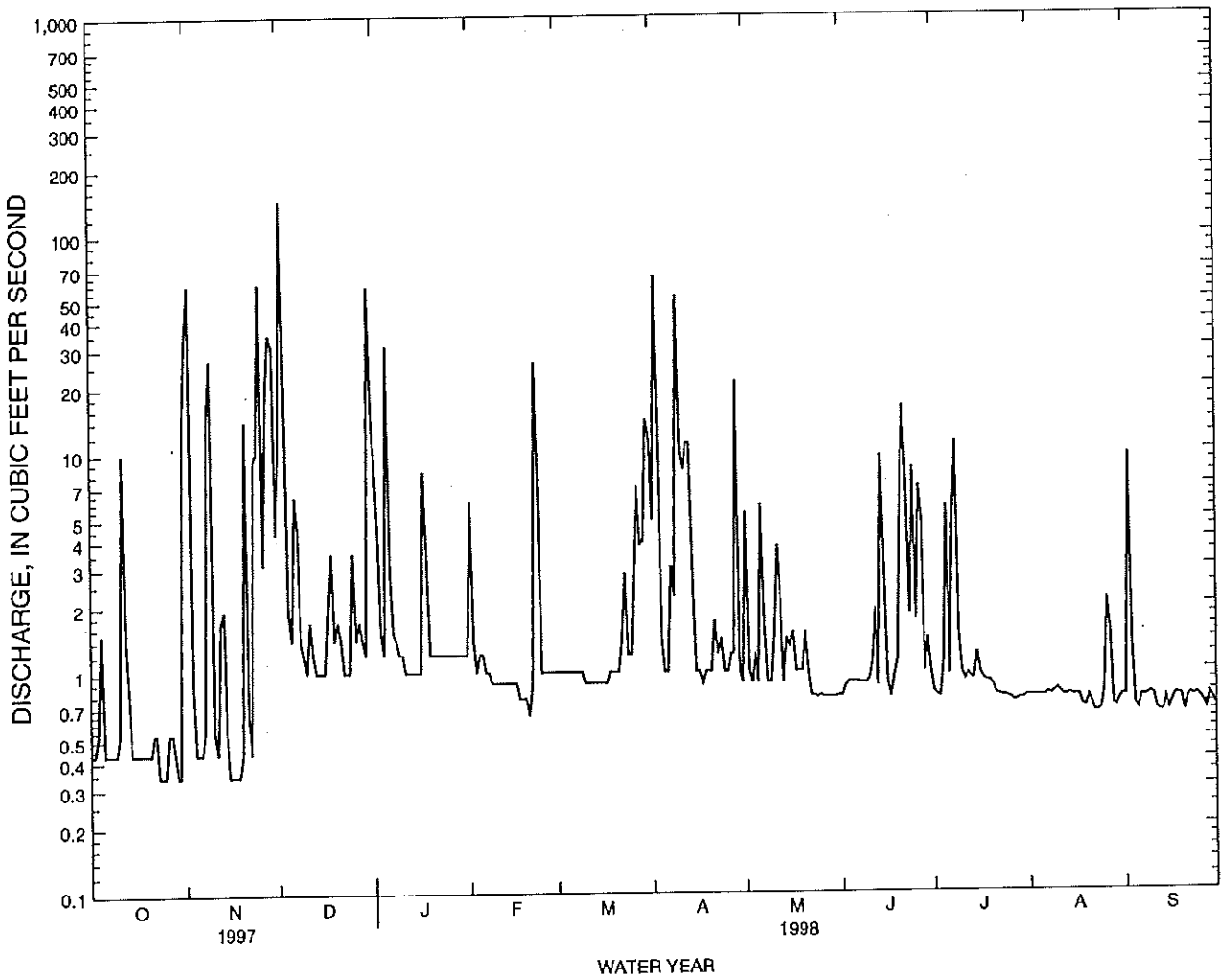
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1998, BY WATER YEAR (WY)

MEAN	3.23	8.88	9.43	11.1	8.96	8.97	9.70	4.76	2.49	2.91	2.04	1.46
MAX	16.7	30.5	31.0	40.5	30.6	22.6	64.8	23.6	10.5	11.0	7.52	6.81
(WY)	1966	1971	1966	1982	1979	1968	1989	1987	1961	1964	1961	1963
MIN	.000	.77	.37	.78	.81	1.31	.71	.19	.000	.23	.010	.000
(WY)	1985	1985	1976	1996	1978	1983	1996	1996	1985	1984	1996	1996

HAWAII, ISLAND OF MOLOKAI

16405500 WAIKOLU STREAM AT ALTITUDE 900 FT, NEAR KALAUPAPA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1961 - 1998	
ANNUAL TOTAL	1834.62		1334.03			
ANNUAL MEAN	5.03		3.65		6.14	
HIGHEST ANNUAL MEAN					11.8	1965
LOWEST ANNUAL MEAN					1.26	1985
HIGHEST DAILY MEAN	221	Apr 25	144	Dec 2	847	Apr 8 1989
LOWEST DAILY MEAN	.00	Jan 7	.34	Oct 23	.00	Sep 12 1984
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 7	.41	Oct 23	.00	Sep 12 1984
ANNUAL RUNOFF (AC-FT)	3640		2650		4450	
10 PERCENT EXCEEDS	10		8.2		11	
50 PERCENT EXCEEDS	.89		1.0		1.3	
90 PERCENT EXCEEDS	.02		.53		.21	



HAWAII, ISLAND OF MOLOKAI

16414000 KAUNAKAKAI GULCH AT KAUNAKAKAI

LOCATION.--Lat 21°06′21″, long 157°00′34″, Hydrologic Unit 20050000, on left bank 0.6 mi upstream from Molokai Ranch pipeline crossing, 1.3 mi northeast of Kaunakakai Post Office, and 1.7 mi upstream from mouth.

DRAINAGE AREA.--6.57 mi^2.

PERIOD OF RECORD.--December 1949 to September 1998 (destroyed by fire of August 1998, converted to annual maximum gage). Prior to July 1958, published as Kaunakakai Stream at Kaunakakai.

REVISED RECORDS.--WSP 1289: 1950-51. WSP 1569: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 240 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Phillip Teeters. Records fair. Flow has been augmented by occasional spillage from Molokai tunnel since May 1965.

AVERAGE DISCHARGE.--48 years (water years 1951-98), 1.87 ft^3/s (1,350 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,060 ft^3/s, October 31, 1961, gage height, 9.30 ft, from rating curve extended above 620 ft^3/s on basis of slope-area measurements at gage heights 7.22 ft and 9.30 ft; no flow most of the time each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 280 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 2	1100	*320	*4.75	No other peaks greater than base discharge.			

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.02	.15	.00	.00	.00	.00	.00	.00	.00	e.00
2	.00	30	125	2.2	.00	.00	27	.00	.00	.00	.00	e.00
3	.00	.96	47	.00	.00	.00	19	.00	.00	.00	.00	e.00
4	.00	.00	6.0	.00	.00	.00	1.6	.00	.00	.00	.00	e.00
5	.00	.00	.48	15	.00	.00	.00	.00	.00	.00	.00	e.00
6	.00	.00	.00	12	.00	.00	.00	.00	.00	.00	.00	e.00
7	.00	.00	.00	.18	.00	.00	.00	.00	.00	.00	.00	e.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00
9	.00	6.7	.00	.00	.00	.00	21	.00	.00	.00	.00	e.00
10	.00	.00	.00	.00	.00	.00	20	.00	.00	.00	.00	e.00
11	.00	.00	.00	.00	.00	.00	7.4	.00	.00	.00	e.00	e.00
12	.00	.00	.00	.00	.00	.00	.77	.00	.00	.00	e.00	e.00
13	.00	.00	.00	.00	.00	.00	20	.00	.00	.00	e.00	e.00
14	.00	.00	.00	.00	.00	.00	.58	.00	.00	.00	e.00	e.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
25	.00	14	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
26	.00	3.5	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
28	.00	19	.00	.00	.00	.00	.00	.00	.00	.00	e.00	e.00
29	.00	18	.00	.00	---	.00	.00	.00	.00	.00	e.00	e.00
30	.00	4.0	.00	.00	---	.00	.00	.00	.00	.00	e.00	e.00
31	.00	---	11	.00	---	3.2	---	.00	---	.00	e.00	---
TOTAL	0.00	96.16	189.50	29.53	0.00	3.20	117.35	0.00	0.00	0.00	0.00	0.00
MEAN	.000	3.21	6.11	.95	.000	.10	3.91	.000	.000	.000	.000	.000
MAX	.00	30	125	15	.00	3.2	27	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	191	376	59	.00	6.3	233	.00	.00	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1998, BY WATER YEAR (WY)

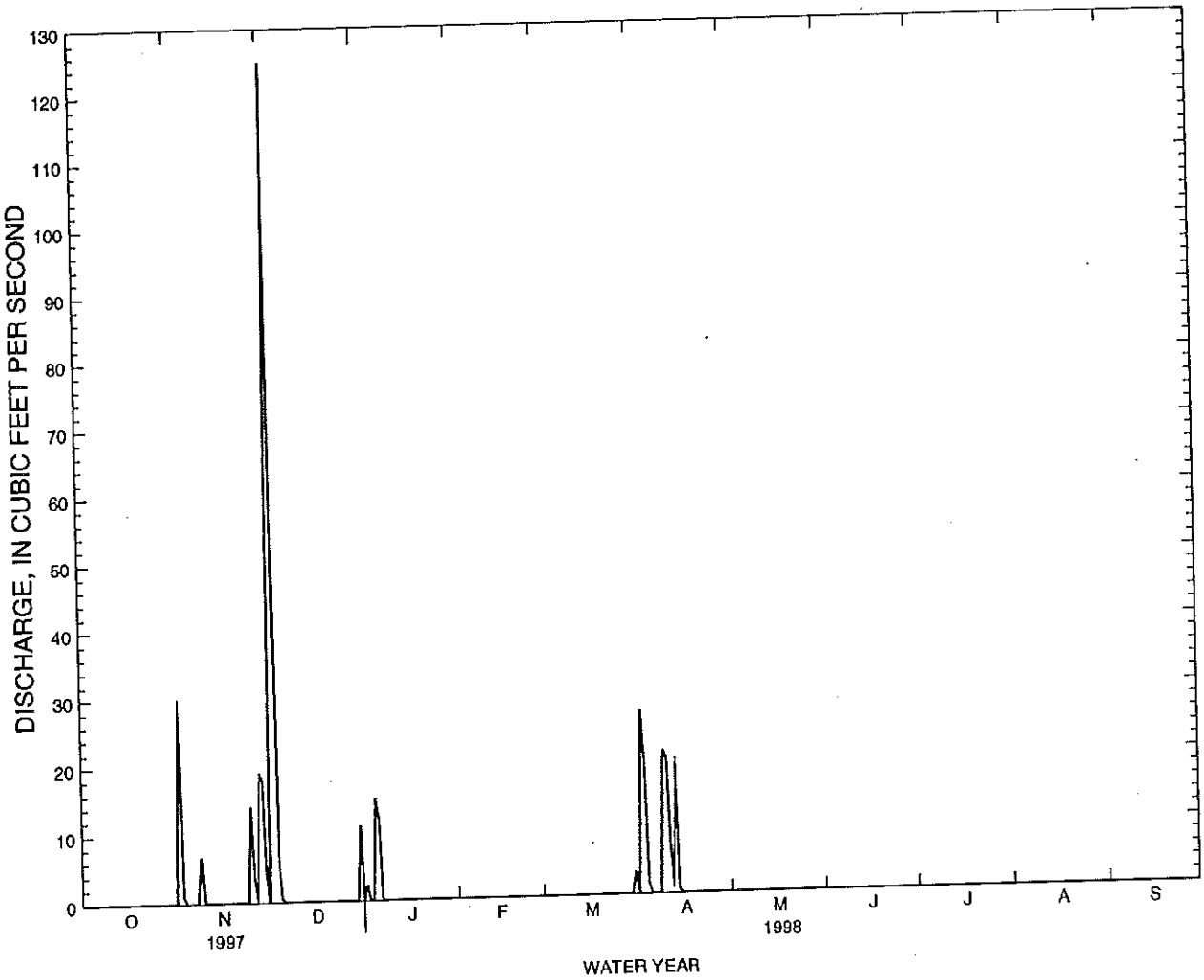
MEAN	.55	3.37	4.08	5.20	2.54	3.12	2.55	.64	.029	.067	.28	.054
MAX	7.09	25.4	16.5	29.7	15.5	26.8	46.2	17.5	.74	1.39	6.56	1.02
(WY)	1962	1951	1956	1982	1979	1951	1989	1987	1966	1966	1950	1966
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1951	1952	1953	1953	1953	1952	1952	1950	1950	1950	1951	1950

e Estimated

HAWAII, ISLAND OF MOLOKAI

16414000 KAUNAKAKAI GULCH AT KAUNAKAKAI--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR			FOR 1998 WATER YEAR			WATER YEARS 1950 - 1998		
ANNUAL TOTAL	1028.40			435.74					
ANNUAL MEAN	2.82			1.19			1.87		
HIGHEST ANNUAL MEAN							6.01		1989
LOWEST ANNUAL MEAN							.002		1953
HIGHEST DAILY MEAN	168	Jan	4	125	Dec	2	643	Apr 8	1989
LOWEST DAILY MEAN	.00	Jan	9	.00	Oct	1	.00	Jan 1	1950
ANNUAL SEVEN-DAY MINIMUM	.00	Jan	9	.00	Oct	1	.00	Jan 1	1950
ANNUAL RUNOFF (AC-FT)	2040			864			1350		
10 PERCENT EXCEEDS	1.3			.00			.29		
50 PERCENT EXCEEDS	.00			.00			.00		
90 PERCENT EXCEEDS	.00			.00			.00		



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 downstream from wooden bridge on Highway 45, and 0.8 mi south of Halawa.

DRAINAGE AREA.--0.94 mi^2.

PERIOD OF RECORD.--July 1963 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records fair except for estimated daily discharges which are poor. Diversion upstream of station for domestic use at Puu O Hoku Ranch.

AVERAGE DISCHARGE.--35 years (water years 1964-98), 0.85 ft^3/s (618 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,720 ft^3/s, April 13, 1965, gage height, 11.25 ft, from rating curve extended above 37 ft^3/s on basis of slope-area measurements at gage heights 4.60 ft, 7.15 ft, and 11.25 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 210 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 1	0800	*28	*2.08				

Minimum discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.18	e2.2	e.88	12	.31	.07	.15	.09	.00	.26	.00	.00
2	e.15	e1.0	e1.1	1.5	.28	1.5	.46	.12	.00	.37	.00	.00
3	e.60	e.24	e.48	.79	.21	.14	.47	.07	.00	.34	.00	.32
4	e1.0	e.19	e.27	.60	.23	.06	.19	.07	.00	.51	.00	.13
5	e.19	e.86	e.23	1.2	.21	.04	.13	.06	.00	.31	.00	.01
6	e.25	e.24	e.79	1.0	.17	.02	.15	.08	.00	.19	.00	.00
7	.22	e.16	e.86	.48	.15	.00	.08	.08	.00	.19	.00	.00
8	.29	e1.1	e.21	.44	.15	.11	.10	.13	.00	.31	.00	.00
9	.25	e1.9	e.23	.40	.15	.21	.13	.07	.00	.21	.00	.00
10	.22	e.21	e.19	.37	.15	.12	.23	.03	.00	.13	.00	.00
11	.22	e.47	1.1	.34	.15	.07	.21	.02	.00	.07	.00	.00
12	.20	e1.1	.34	.34	.15	.05	.17	.01	.00	.12	.00	.00
13	.18	e.97	.19	.31	.13	.03	.21	.00	.11	.06	.00	.00
14	.16	e.29	.15	.28	.13	.01	.17	.00	.12	.01	.00	.00
15	.15	e.21	.15	.28	.13	.00	.13	.00	.60	.47	.00	.00
16	.15	e.17	.13	.25	.13	.11	.09	.00	.27	.24	.00	.00
17	.13	e.15	.19	.25	.13	.12	.06	.00	.25	.10	.00	.00
18	.16	e.43	2.8	.25	.12	.10	.01	.00	.27	.09	.00	.00
19	.18	e.38	.55	.34	.12	.08	.34	.00	.12	.06	.00	.00
20	.16	e1.0	.28	.31	.13	.07	.99	.00	.07	.01	.00	.00
21	e.61	e.27	.23	.25	.10	.07	.43	.00	.48	.00	.00	.00
22	e.41	e.19	.21	.21	.09	.06	.30	.00	.65	.00	.00	.00
23	e.34	e.25	.23	.23	.07	.04	.13	.00	.23	.00	.00	.00
24	e.17	e.20	.44	.23	.07	.03	.08	.00	1.1	.00	.00	.00
25	e.14	e1.5	.37	.23	.07	.03	.60	.00	.40	.00	.00	.00
26	e.64	e.25	.28	.23	.07	.03	1.5	.00	.37	.00	.00	.00
27	e.25	e1.1	.21	.21	.04	.03	.47	.00	.48	.00	.00	.00
28	e.19	e.97	.21	.21	.04	.11	.17	.00	.23	.00	.00	.00
29	e.18	e.90	.21	.21	---	.23	.15	.00	.21	.00	.00	.00
30	e.15	e1.3	3.1	.21	---	.28	.09	.00	.30	.00	.00	.00
31	e14	---	7.2	.21	---	.13	---	.00	---	.00	.00	---
TOTAL	22.12	20.20	23.81	24.16	3.88	3.95	8.39	0.83	6.26	4.05	0.00	0.46
MEAN	.71	.67	.77	.78	.14	.13	.28	.027	.21	.13	.000	.015
MAX	14	2.2	7.2	12	.31	1.5	1.5	.13	1.1	.51	.00	.32
MIN	.13	.15	.13	.21	.04	.00	.01	.00	.00	.00	.00	.00
AC-FT	44	40	47	48	7.7	7.8	17	1.6	12	8.0	.00	.9

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1998, BY WATER YEAR (WY)

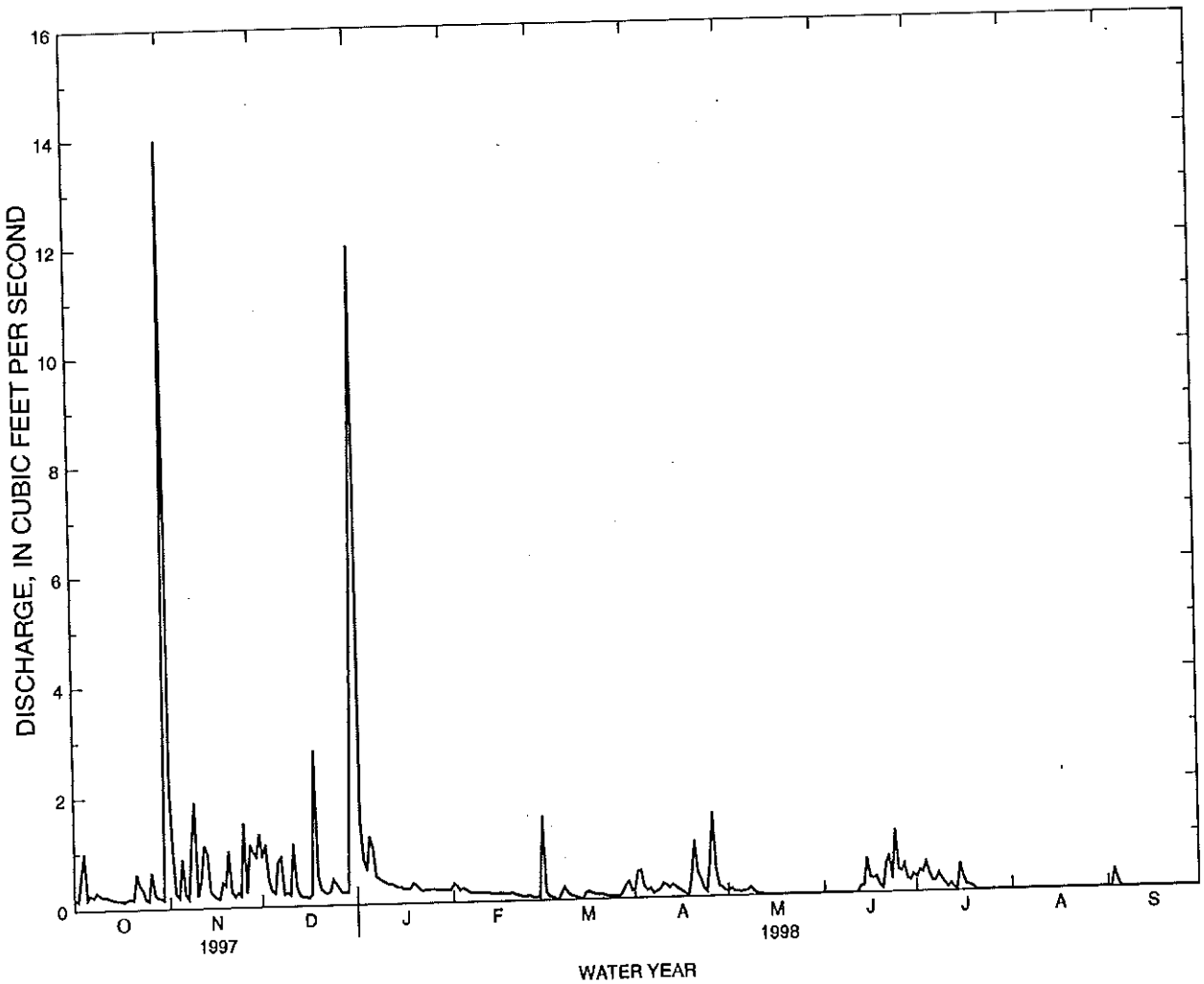
MEAN	.52	1.20	1.10	1.30	1.20	1.43	1.42	.70	.34	.45	.30	.31
MAX	2.63	7.56	6.12	4.84	5.88	6.42	10.3	3.99	1.43	1.56	1.21	2.24
(WY)	1986	1971	1965	1988	1965	1968	1989	1987	1982	1993	1980	1992
MIN	.000	.000	.000	.000	.000	.007	.003	.000	.000	.000	.000	.000
(WY)	1972	1972	1972	1977	1973	1973	1975	1975	1964	1972	1964	1964

e Estimated

HAWAII, ISLAND OF MOLOKAI

16419500 PAPIO GULCH AT HALAWA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1963 - 1998		
ANNUAL TOTAL	361.05		118.11				
ANNUAL MEAN	.99		.32		.85		
HIGHEST ANNUAL MEAN					2.32		1989
LOWEST ANNUAL MEAN					.063		1973
HIGHEST DAILY MEAN	34	Jan 4	14	Oct 31	164	Apr 13	1965
LOWEST DAILY MEAN	.13	Aug 13	.00	Mar 7	.00	Jul 5	1963
ANNUAL SEVEN-DAY MINIMUM	.15	Aug 9	.00	May 13	.00	Aug 3	1963
ANNUAL RUNOFF (AC-FT)	716		234		618		
10 PERCENT EXCEEDS	1.9		.60		1.5		
50 PERCENT EXCEEDS	.49		.14		.23		
90 PERCENT EXCEEDS	.19		.00		.00		



Surface-Water Station Records for Maui

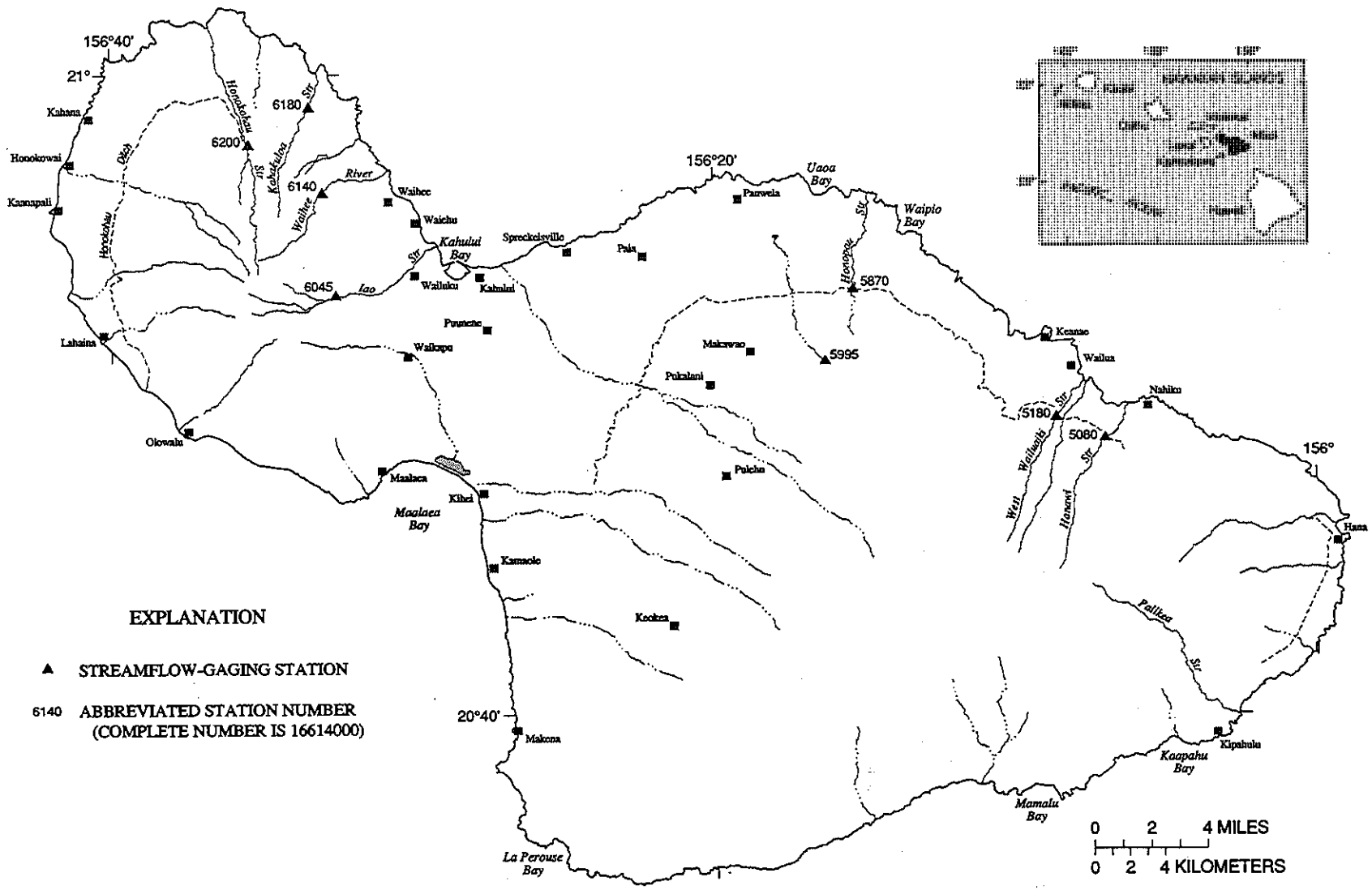


Figure 8. Locations of gaging, water-quality, and partial-record stations on Maui.

HAWAII, ISLAND OF MAUI

16508000 HANAWI STREAM NEAR NAHIKU

LOCATION.--Lat 20°48′37″, long 156°07′00″, Hydrologic Unit 20020000, on left bank 200 ft upstream from Koolau Ditch intake and trail, 1.9 mi southwest of Nahiku, and 4.5 mi southeast of Keanae.

DRAINAGE AREA.--3.49 mi^2.

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 above mean sea level (by vertical angles). Prior to November 1, 1921, at site 50 ft downstream of gage at datum 0.12 ft lower.

REMARKS.--Records computed by Matt Wong. Records good. No diversion upstream of station.

AVERAGE DISCHARGE.--76 years (water years 1923-98), 24.0 ft^3/s (17,370 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 5,570 ft^3/s, January 18, 1916, gage height, 11.6 ft, present site and datum, from rating curve extended above 814 ft^3/s by physical model of station site; minimum, 0.90 ft^3/s, October 28 to November 1, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 2	0730	1,300	5.87				

Minimum discharge, 1.8 ft^3/s, March 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	28	59	30	3.2	3.1	58	84	12	8.0	4.3	11
2	3.9	257	362	12	3.0	2.9	104	31	13	6.9	4.1	56
3	3.8	12	122	9.0	2.9	2.7	43	13	14	6.7	4.0	15
4	5.8	31	17	7.6	2.9	2.7	11	13	12	19	8.2	8.5
5	4.3	14	11	33	2.9	2.6	5.0	11	12	16	20	6.4
6	7.7	7.1	26	11	2.8	2.5	13	20	10	11	17	5.5
7	10	5.2	29	6.2	2.8	2.5	18	19	9.3	21	6.3	4.9
8	4.5	4.8	17	5.9	2.7	2.4	15	19	9.9	28	5.0	4.8
9	3.8	49	17	5.8	2.6	2.4	155	37	12	16	6.5	5.5
10	3.4	6.4	15	5.3	2.5	2.3	117	41	11	12	7.3	4.7
11	3.3	5.9	13	5.1	2.5	2.3	122	44	12	12	4.8	4.4
12	3.2	43	12	4.9	2.5	2.2	48	39	16	12	4.4	4.8
13	3.0	33	11	4.7	2.4	2.2	35	53	14	8.0	4.3	7.7
14	2.9	11	10	4.4	2.4	2.1	50	44	31	6.9	5.1	5.6
15	2.9	6.2	9.8	4.4	2.4	2.1	20	21	34	7.9	5.2	11
16	2.8	5.0	9.3	4.2	2.4	2.0	10	20	22	6.0	4.3	18
17	2.7	4.4	20	4.1	2.3	2.0	31	14	15	5.5	3.9	10
18	2.8	4.0	27	4.0	2.2	2.0	20	13	11	5.1	3.6	6.4
19	2.6	3.8	11	3.9	2.2	2.0	19	79	10	4.8	3.4	5.3
20	2.6	3.6	15	3.8	2.2	1.9	18	190	17	4.6	3.6	10
21	3.0	4.9	11	3.7	2.2	1.9	12	57	40	4.4	32	79
22	4.6	3.8	9.0	3.7	64	2.0	20	16	38	4.3	20	10
23	4.3	88	10	3.6	18	2.1	56	14	21	4.2	46	8.5
24	3.1	70	14	3.5	10	1.9	62	13	49	4.7	19	11
25	3.6	392	13	3.4	7.2	2.1	25	33	16	7.6	18	18
26	4.5	36	8.9	3.4	4.0	3.2	15	35	16	5.3	50	9.7
27	8.1	61	8.5	3.3	3.4	24	25	14	21	4.7	47	7.6
28	10	162	7.5	3.3	3.1	16	51	12	11	7.8	40	7.3
29	5.0	264	6.8	3.2	---	91	14	12	11	5.6	24	7.2
30	5.0	32	196	3.1	---	91	12	22	12	5.1	10	9.3
31	27	---	135	3.1	---	25	---	15	---	4.9	7.0	---
TOTAL	158.6	1648.1	1232.8	206.6	163.7	307.1	1204.0	1048	532.2	276.0	438.3	373.1
MEAN	5.12	54.9	39.8	6.66	5.85	9.91	40.1	33.8	17.7	8.90	14.1	12.4
MAX	27	392	362	33	64	91	155	190	49	28	50	79
MIN	2.6	3.6	6.8	3.1	2.2	1.9	5.0	11	9.3	4.2	3.4	4.4
AC-FT	315	3270	2450	410	325	609	2390	2080	1060	547	869	740

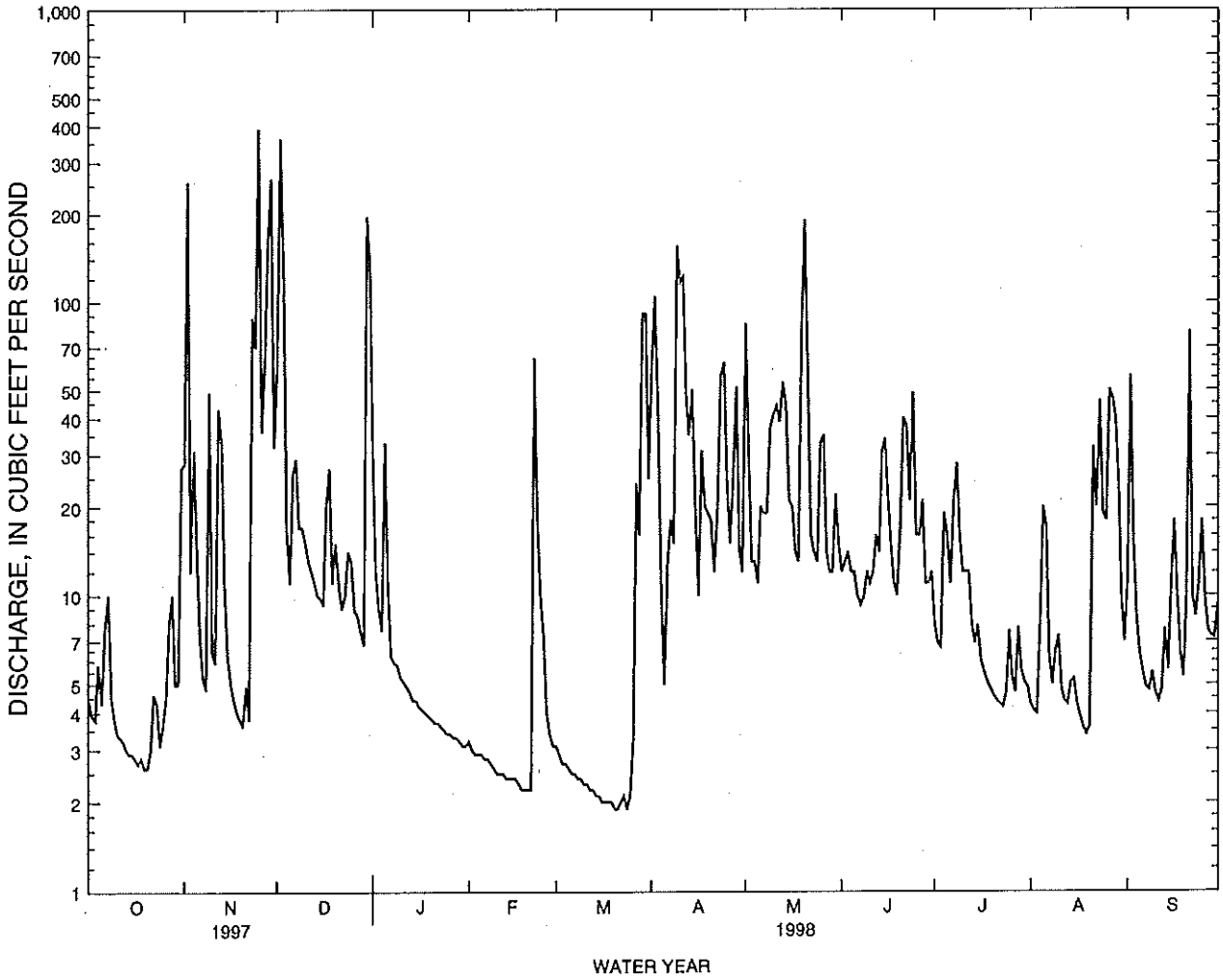
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1998, BY WATER YEAR (WY)

MEAN	14.7	29.9	32.2	30.0	30.6	41.2	36.6	20.5	11.5	16.3	17.0	11.8
MAX	101	110	129	123	182	235	161	68.2	61.2	62.0	66.2	52.3
(WY)	1942	1991	1947	1979	1969	1980	1989	1987	1997	1997	1957	1914
MIN	1.15	2.99	2.71	1.87	2.25	2.10	2.75	2.82	2.16	2.42	2.40	1.88
(WY)	1985	1990	1981	1977	1983	1983	1992	1945	1981	1926	1973	1974

HAWAII, ISLAND OF MAUI

16508000 HANAWI STREAM NEAR NAHIKU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1914 - 1998	
ANNUAL TOTAL	11484.4		7588.5			
ANNUAL MEAN	31.5		20.8		24.0	
HIGHEST ANNUAL MEAN					52.6	1969
LOWEST ANNUAL MEAN					7.59	1926
HIGHEST DAILY MEAN	747	Apr 25	392	Nov 25	1610	Jan 25 1948
LOWEST DAILY MEAN	2.4	Feb 21	1.9	Mar 20	.90	Oct 31 1984
ANNUAL SEVEN-DAY MINIMUM	2.6	Feb 15	2.0	Mar 16	.96	Oct 25 1984
ANNUAL RUNOFF (AC-FT)	22780		15050		17370	
10 PERCENT EXCEEDS	77		46		51	
50 PERCENT EXCEEDS	7.9		9.0		7.2	
90 PERCENT EXCEEDS	3.2		2.7		2.8	



HAWAII, ISLAND OF MAUI

16587000 HONOPOU STREAM NEAR HUELO

LOCATION.--Lat 20°53′20″, long 156°15′20″, Hydrologic Unit 20020000, on left bank 75 ft upstream from Wailoa Ditch intake, 2.2 mi southwest of Huelo, and 2.5 mi west of Kailua.

DRAINAGE AREA.--0.64 mi^2.

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 recorders and concrete control. Datum of gage is 1,208 ft above mean sea level (by vertical angles). Prior to June 19, 1914, nonrecording gage at same site and datum.

REMARKS.--Records computed by Matt Wong. Records good. No diversion upstream of station.

AVERAGE DISCHARGE.--87 years (water years 1912-98), 4.83 ft^3/s (3,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,710 ft^3/s, November 18, 1930, gage height, 7.28 ft from rating curve extended above 110 ft^3/s by test of physical model of station site; minimum, 0.02 ft^3/s, several days in 1933, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 270 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 30	1530	*203	*2.90				

Minimum discharge, 0.43 ft^3/s, February 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	7.8	16	11	1.3	1.4	5.2	15	4.8	4.5	1.3	7.2
2	.90	6.9	40	6.7	.94	1.0	7.1	8.6	5.5	4.1	1.2	21
3	.91	3.5	17	5.3	.84	.85	5.1	6.1	5.8	3.9	1.2	6.9
4	1.2	2.2	11	4.6	1.3	.89	3.5	5.6	4.4	5.5	2.2	5.1
5	.99	2.2	8.7	5.5	.87	.81	3.0	5.0	4.1	4.3	2.4	4.5
6	2.1	1.5	11	4.3	.80	.76	5.3	8.1	3.8	3.6	2.5	4.0
7	1.1	1.4	8.4	3.3	.75	.70	5.4	6.6	3.6	6.0	1.3	3.7
8	.94	1.6	7.0	3.0	.70	.70	4.8	8.2	3.5	5.7	1.2	3.4
9	.87	8.8	5.8	2.7	.70	.67	10	8.9	3.5	3.7	1.8	3.4
10	.80	2.1	4.9	2.4	.67	.66	11	11	3.2	3.7	1.9	3.0
11	.80	2.2	4.5	2.2	.60	.63	12	9.7	3.9	3.8	1.2	2.8
12	.80	6.9	3.9	2.1	.60	.60	7.3	11	5.0	3.6	1.1	2.7
13	.80	5.0	3.5	1.9	.60	.60	6.5	15	4.1	2.9	1.1	2.7
14	.76	2.9	3.2	2.0	.57	.60	5.8	13	8.4	2.8	1.3	2.3
15	.70	2.5	3.0	2.2	.54	.68	5.6	9.7	14	3.3	1.1	2.3
16	.70	2.5	2.8	2.0	.55	.60	5.4	8.5	10	2.6	1.0	2.7
17	.70	2.2	5.0	2.0	.51	.57	7.2	7.2	6.3	2.5	1.0	2.3
18	.70	2.4	4.9	1.8	.51	.52	7.2	6.3	5.3	2.4	.90	1.9
19	.68	2.4	2.9	1.8	.51	.51	23	8.8	4.8	2.2	.86	1.8
20	.60	2.2	2.7	1.7	.51	.51	13	19	6.4	2.1	1.1	3.1
21	.69	2.1	2.4	1.5	.50	.60	8.2	8.6	9.8	2.0	12	11
22	.70	2.0	2.2	1.5	15	.82	7.2	6.6	9.5	1.9	5.3	2.5
23	.65	3.3	2.2	1.4	3.3	.96	12	5.9	7.9	1.8	5.6	2.2
24	.60	4.9	2.3	1.3	1.9	.55	19	5.4	19	1.8	5.3	2.4
25	.68	64	2.7	1.3	1.7	.70	11	7.8	7.6	1.9	4.5	3.6
26	.72	11	2.0	1.3	1.2	1.3	8.1	7.3	8.5	1.6	6.9	2.3
27	.84	s11	2.3	1.1	1.0	4.5	7.0	4.8	9.2	1.5	9.1	2.1
28	1.2	17	2.1	1.2	.98	2.8	9.5	4.3	6.0	2.5	5.8	2.2
29	.71	35	1.8	1.0	---	6.8	6.0	4.4	5.6	1.5	7.5	1.9
30	1.3	14	57	.98	---	7.0	5.4	11	5.3	1.4	4.2	1.9
31	2.4	---	36	.90	---	4.1	---	5.8	---	1.3	3.7	---
TOTAL	28.64	233.5	279.2	81.98	39.95	44.39	246.8	263.2	198.8	92.4	97.56	118.9
MEAN	.92	7.78	9.01	2.64	1.43	1.43	8.23	8.49	6.63	2.98	3.15	3.96
MAX	2.4	64	57	11	15	7.0	23	19	19	6.0	12	21
MIN	.60	1.4	1.8	.90	.50	.51	3.0	4.3	3.2	1.3	.86	1.8
AC-FT	57	463	554	163	79	88	490	522	394	183	194	236

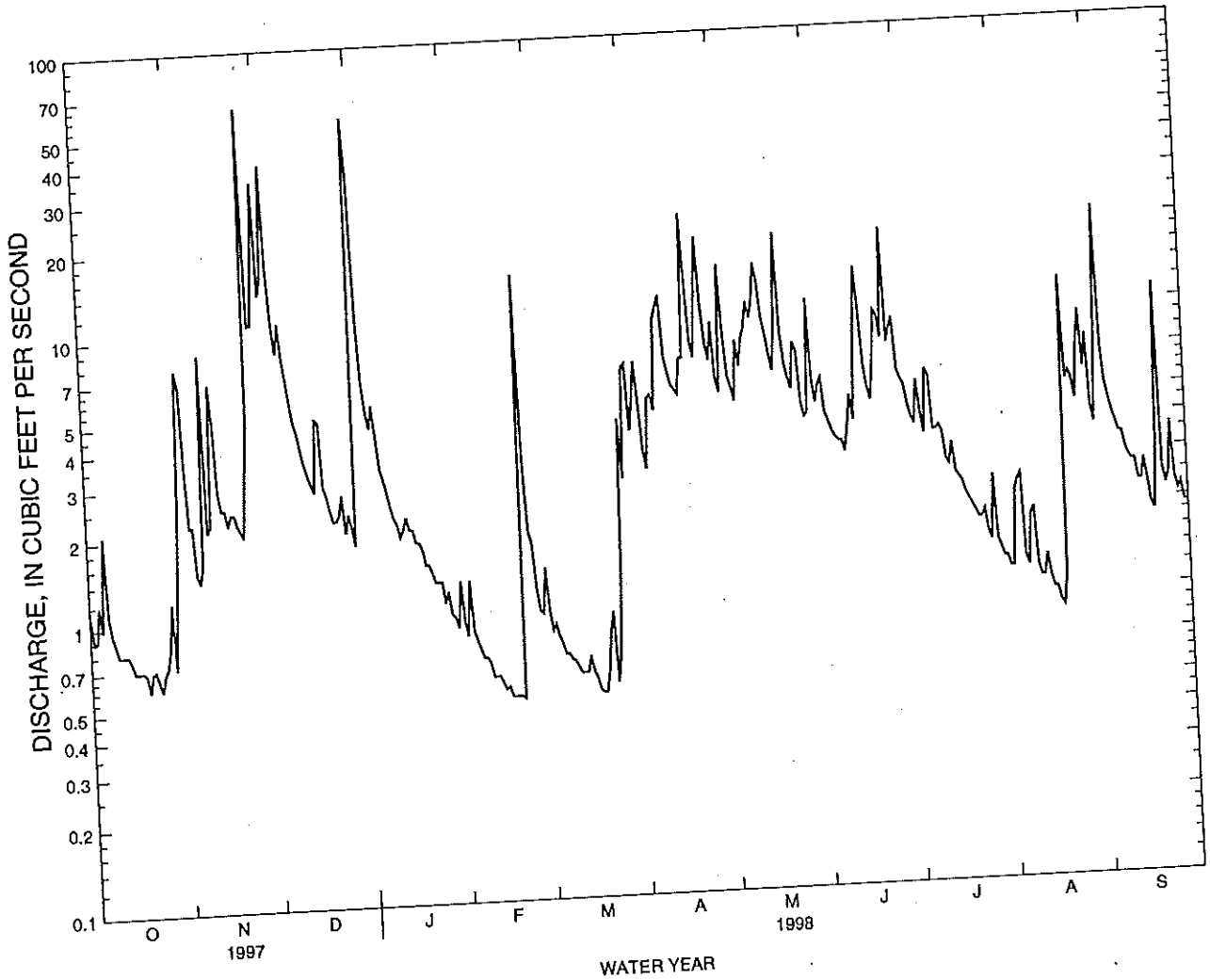
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1998, BY WATER YEAR (WY)

MEAN	2.70	5.47	6.09	5.44	5.18	7.23	7.64	5.12	2.83	3.65	3.98	2.61
MAX	15.9	21.4	20.0	20.9	24.5	33.0	43.4	24.3	9.97	14.6	18.1	14.6
(WY)	1942	1991	1947	1921	1969	1942	1989	1916	1914	1997	1982	1992
MIN	.15	.25	1.04	.61	.62	.79	.58	.84	.52	.41	.40	.25
(WY)	1985	1963	1981	1977	1983	1992	1992	1933	1962	1981	1973	1984

HAWAII, ISLAND OF MAUI

16587000 HONOPOU STREAM NEAR HUELO--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1912 - 1998	
ANNUAL TOTAL	2141.24		1725.32		4.83	
ANNUAL MEAN	5.87		4.73		9.88	1914
HIGHEST ANNUAL MEAN					1.73	1981
LOWEST ANNUAL MEAN					305	Apr 7 1989
HIGHEST DAILY MEAN	142	Jul 30	64	Nov 25	.11	Oct 27 1984
LOWEST DAILY MEAN	.60	Oct 20	.50	Feb 21	.11	Oct 26 1984
ANNUAL SEVEN-DAY MINIMUM	.66	Oct 19	.52	Feb 15		
ANNUAL RUNOFF (AC-FT)	4250		3420		3500	
10 PERCENT EXCEEDS	11		9.9		10	
50 PERCENT EXCEEDS	2.9		2.7		2.4	
90 PERCENT EXCEEDS	1.0		.70		.74	



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 north of Kailiili, and 2.7 mi east of Makawao.

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

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,340 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records fair except for period of no gage height record which is poor. Tunnel diverts water from Opana Gulch for agricultural and domestic use in the Kokomo, Makawao, and Pukalani areas.

AVERAGE DISCHARGE.--33 years (water years 1966-98), 3.22 ft^3/s (2,330 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 18 ft^3/s, March 31, 1982, April 12, 1986, March 23, 1994; minimum daily, 0.11 ft^3/s, November 5-10, 1973, October 5, 6, 25, 26, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 13 ft^3/s, December 2; minimum daily, 0.30 ft^3/s, March 19, 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.89	5.0	9.4	8.5	1.4	1.3	9.5	e10	e5.2	e3.6	e1.3	2.7
2	.78	12	13	6.8	1.3	1.1	11	e8.0	e5.1	e3.4	e1.3	9.9
3	.71	6.8	12	5.0	1.1	.89	10	e6.0	e4.8	e3.2	e1.3	6.6
4	1.3	3.2	9.5	4.3	1.4	.78	8.6	e5.8	e4.4	e4.7	e1.7	4.0
5	.96	2.3	8.6	5.1	1.4	.72	e5.6	e6.0	e4.1	e3.5	e1.8	3.2
6	1.1	1.7	8.2	9.1	1.0	.63	e6.6	e6.4	e3.9	e3.1	e1.9	2.8
7	.98	1.6	8.2	5.8	.92	.56	e6.8	e6.0	e3.7	e5.2	1.6	2.4
8	3.2	1.8	7.5	4.2	.87	.52	e5.4	e6.6	e3.6	e4.0	1.6	2.3
9	2.8	7.5	7.2	3.8	.83	.49	e9.0	e7.4	e3.4	e3.3	1.6	2.4
10	1.3	3.5	6.5	3.5	.79	.45	e10	e8.4	e3.2	e3.2	1.6	2.5
11	.97	2.6	6.1	3.2	.73	.44	e12	e8.0	e4.4	e3.3	1.6	2.1
12	.80	5.1	5.6	3.0	.68	.39	e9.6	e8.8	e5.6	e3.0	1.5	2.0
13	.72	7.7	5.1	2.8	.62	.38	e8.0	e12	e4.7	e2.6	1.5	2.1
14	.63	3.9	4.7	2.7	.62	.34	e7.4	e11	e8.4	e2.5	1.5	1.7
15	.55	2.8	4.4	2.6	.58	.44	e6.8	e10	e12	e2.8	1.4	1.9
16	.50	2.4	4.1	2.5	.65	.44	e6.4	e7.2	e8.0	e2.3	1.4	4.1
17	.50	2.0	4.6	2.4	.56	.37	e6.6	e6.4	e5.0	e2.2	1.3	3.3
18	.48	2.1	4.3	2.3	.53	.34	e7.0	e5.5	e4.5	e2.1	1.3	2.3
19	.44	2.8	3.9	2.2	.50	.30	e12	e6.0	e4.1	e2.0	1.2	1.9
20	.39	1.9	3.6	2.0	.50	.30	e10	e12	e6.0	e1.9	1.3	1.8
21	.39	2.3	3.4	1.9	.48	.37	e8.0	e7.4	e9.4	e1.8	1.5	8.6
22	.42	1.9	3.2	1.7	6.7	.65	e6.2	e6.0	e8.2	e1.7	2.1	4.7
23	.44	4.4	3.0	1.6	6.4	2.6	e8.0	e5.6	e7.0	e1.6	1.9	3.3
24	.39	9.1	3.0	1.6	3.3	1.4	e12	e5.2	e12	e1.5	3.0	2.8
25	.44	12	3.1	1.5	2.4	.97	e8.2	e7.0	e6.0	e1.7	3.6	2.7
26	.45	9.2	2.8	1.4	2.0	.89	e7.0	e6.0	e6.5	e1.5	6.8	2.3
27	.65	7.7	2.6	1.4	2.2	4.3	e6.6	e5.6	e7.1	e1.4	9.4	1.8
28	1.1	11	2.4	1.3	1.7	3.4	e9.4	e5.0	e5.2	e1.8	7.6	1.6
29	.81	12	2.3	1.3	---	9.9	e7.4	e5.4	e4.7	e1.5	5.2	1.5
30	.57	9.7	7.2	1.2	---	11	e6.6	e7.2	e4.1	e1.4	3.7	1.6
31	.59	---	11	1.1	---	9.3	---	e6.0	---	e1.4	2.8	---
TOTAL	26.25	158.0	180.5	97.8	42.16	55.96	247.7	223.9	174.3	79.2	77.3	92.9
MEAN	.85	5.27	5.82	3.15	1.51	1.81	8.26	7.22	5.81	2.55	2.49	3.10
MAX	3.2	12	13	9.1	6.7	11	12	12	12	5.2	9.4	9.9
MIN	.39	1.6	2.3	1.1	.48	.30	5.4	5.0	3.2	1.4	1.2	1.5
AC-FT	52	313	358	194	84	111	491	444	346	157	153	184

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1998, BY WATER YEAR (WY)

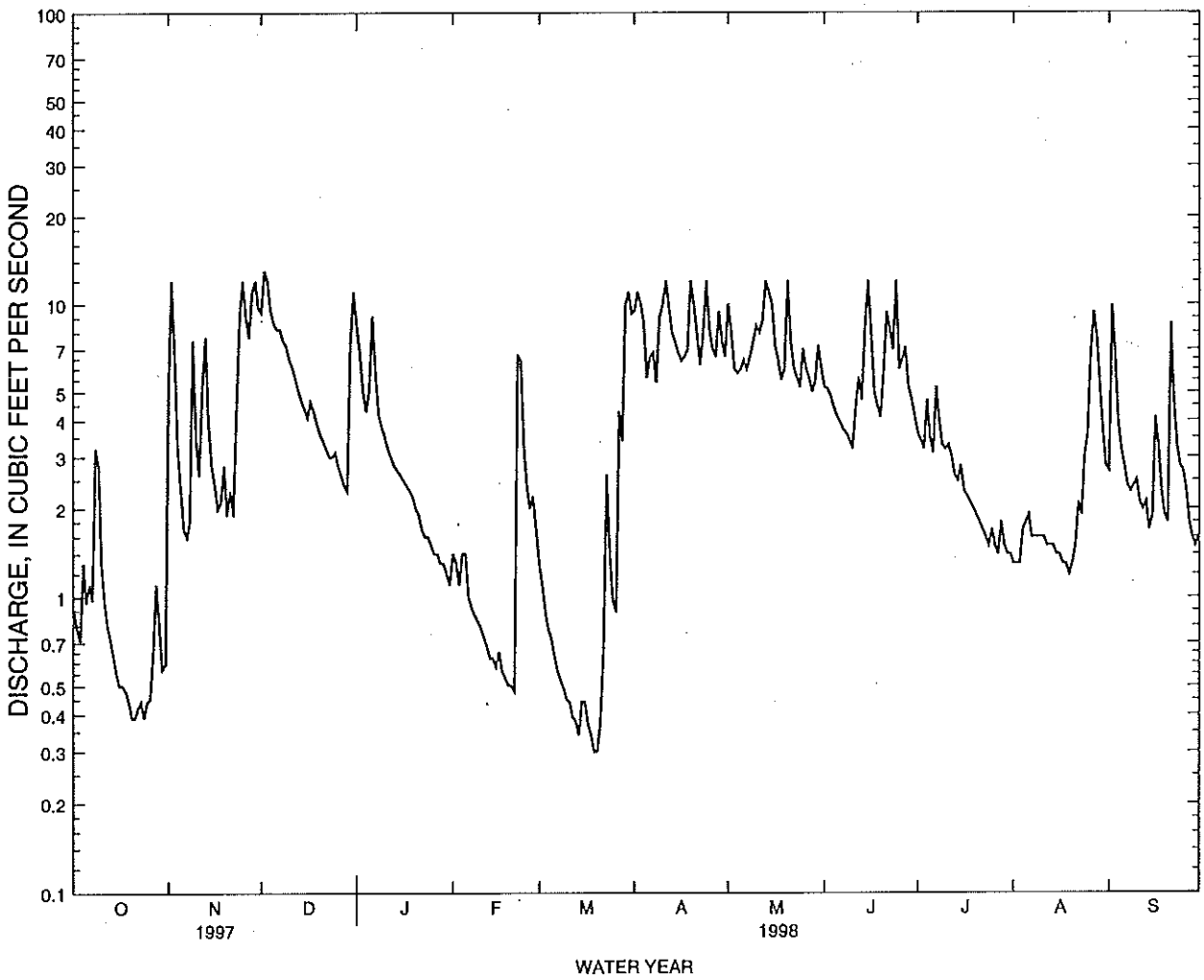
MEAN	1.80	3.31	3.94	3.70	3.60	4.70	5.18	3.64	2.31	2.75	2.17	1.59
MAX	5.40	7.97	9.19	7.55	9.04	11.1	9.35	7.42	6.38	8.17	4.98	5.69
(WY)	1984	1968	1971	1989	1969	1982	1968	1987	1997	1997	1969	1992
MIN	.14	.25	.65	.22	.36	.51	.27	1.28	.54	.40	.19	.15
(WY)	1985	1992	1977	1977	1978	1983	1992	1992	1981	1981	1974	1984

e Estimated

HAWAII, ISLAND OF MAUI

16599500 OPANA TUNNEL AT KAILIILI--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1965 - 1998	
ANNUAL TOTAL	1546.42		1455.97			
ANNUAL MEAN	4.24		3.99		3.22	
HIGHEST ANNUAL MEAN					5.34	1969
LOWEST ANNUAL MEAN					1.45	1981
HIGHEST DAILY MEAN	15	Apr 25	13	Dec 2	18	Mar 31 1982
LOWEST DAILY MEAN	.39	Oct 20	.30	Mar 19	.11	Nov 5 1973
ANNUAL SEVEN-DAY MINIMUM	.42	Oct 19	.36	Mar 14	.11	Nov 4 1973
ANNUAL RUNOFF (AC-FT)	3070		2890		2330	
10 PERCENT EXCEEDS	9.1		9.0		7.8	
50 PERCENT EXCEEDS	3.2		3.0		2.2	
90 PERCENT EXCEEDS	.97		.62		.40	



HAWAII, ISLAND OF MAUI

16604500 IAO STREAM AT KEPANIWAI PARK, NEAR WAILUKU

LOCATION.--Lat 20°53′08″, long 156°32′32″, Hydrologic Unit 20020000, on left bank of Maniania and Waikapu Ditch intake, 0.3 mi upstream from Kepaniwai Park, 0.5 mi downstream from Iao Valley State Park, and 2.3 mi west of Wailuku Post Office.

DRAINAGE AREA.--5.98 mi^2.

PERIOD OF RECORD.--May 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 780 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records fair. No appreciable diversion upstream of station.

AVERAGE DISCHARGE.--15 years (water years 1984-98), 66.9 ft^3/s (48,460 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 6,260 ft^3/s, January 28, 1988, gage height, 9.0 ft, from rating curve extended above 181 ft^3/s on basis of slope-area measurements at gage heights 6.48 ft and 9.0 ft; minimum, 11 ft^3/s for several days in October and November 1984, May 1996, several days in October and November 1996.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge known, 7,540 ft^3/s, December 3, 1950, from rating curve based on model study of site 2.3 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 9	0300	*602	*3.06				

Minimum discharge, 13 ft^3/s, February 20, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e40	77	173	212	24	25	89	150	44	e46	e30	e85
2	e35	307	287	101	20	21	112	70	105	e45	e31	e450
3	e85	75	216	68	20	19	78	51	146	e80	e35	194
4	e50	127	111	51	23	18	39	49	e120	e110	e38	96
5	e30	116	83	79	19	17	28	40	e100	e65	e40	63
6	e50	50	166	61	19	17	73	134	e80	e80	e41	46
7	e32	55	114	40	18	17	77	81	e100	e110	e32	42
8	e42	89	90	34	18	17	127	69	e90	e85	e30	39
9	e30	255	66	30	17	17	194	100	e100	e78	e32	65
10	e33	66	55	28	17	17	138	134	e70	e77	e36	46
11	e36	116	42	29	16	16	124	66	e100	73	e33	37
12	e30	361	37	29	17	15	91	157	e150	57	e30	43
13	e28	296	33	27	18	16	65	200	e100	42	e28	45
14	e26	102	31	24	17	16	53	140	e150	36	e31	34
15	e25	59	30	21	17	15	45	95	e220	98	e28	59
16	25	46	32	21	18	16	40	70	e250	39	e27	56
17	24	38	56	21	18	15	103	57	e150	34	e27	47
18	27	36	32	21	16	15	182	54	e75	33	e26	34
19	26	34	27	21	15	15	203	98	e100	32	e28	36
20	23	29	25	21	14	15	270	199	e160	32	e30	40
21	25	28	26	20	14	15	183	73	e150	31	e180	135
22	24	28	26	20	98	15	124	42	e100	30	e75	46
23	23	120	51	19	61	16	202	35	e80	30	e55	38
24	22	133	58	19	39	16	209	32	e150	33	e60	49
25	25	254	70	19	32	19	148	51	e75	29	e56	74
26	29	166	30	19	22	32	92	45	e100	29	e58	45
27	36	141	32	19	36	54	64	32	e80	33	e100	36
28	34	268	26	21	25	26	64	28	e60	104	e97	39
29	25	293	24	19	---	94	45	38	e48	36	e90	36
30	28	206	223	18	---	69	45	89	e52	37	e50	38
31	70	---	244	18	---	36	---	72	---	e32	e40	---
TOTAL	1038	3971	2516	1150	688	731	3307	2551	3305	1676	1494	2093
MEAN	33.5	132	81.2	37.1	24.6	23.6	110	82.3	110	54.1	48.2	69.8
MAX	85	361	287	212	98	94	270	200	250	110	180	450
MIN	22	28	24	18	14	15	28	28	44	29	26	34
AC-FT	2060	7880	4990	2280	1360	1450	6560	5060	6560	3320	2960	4150

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1998, BY WATER YEAR (WY)

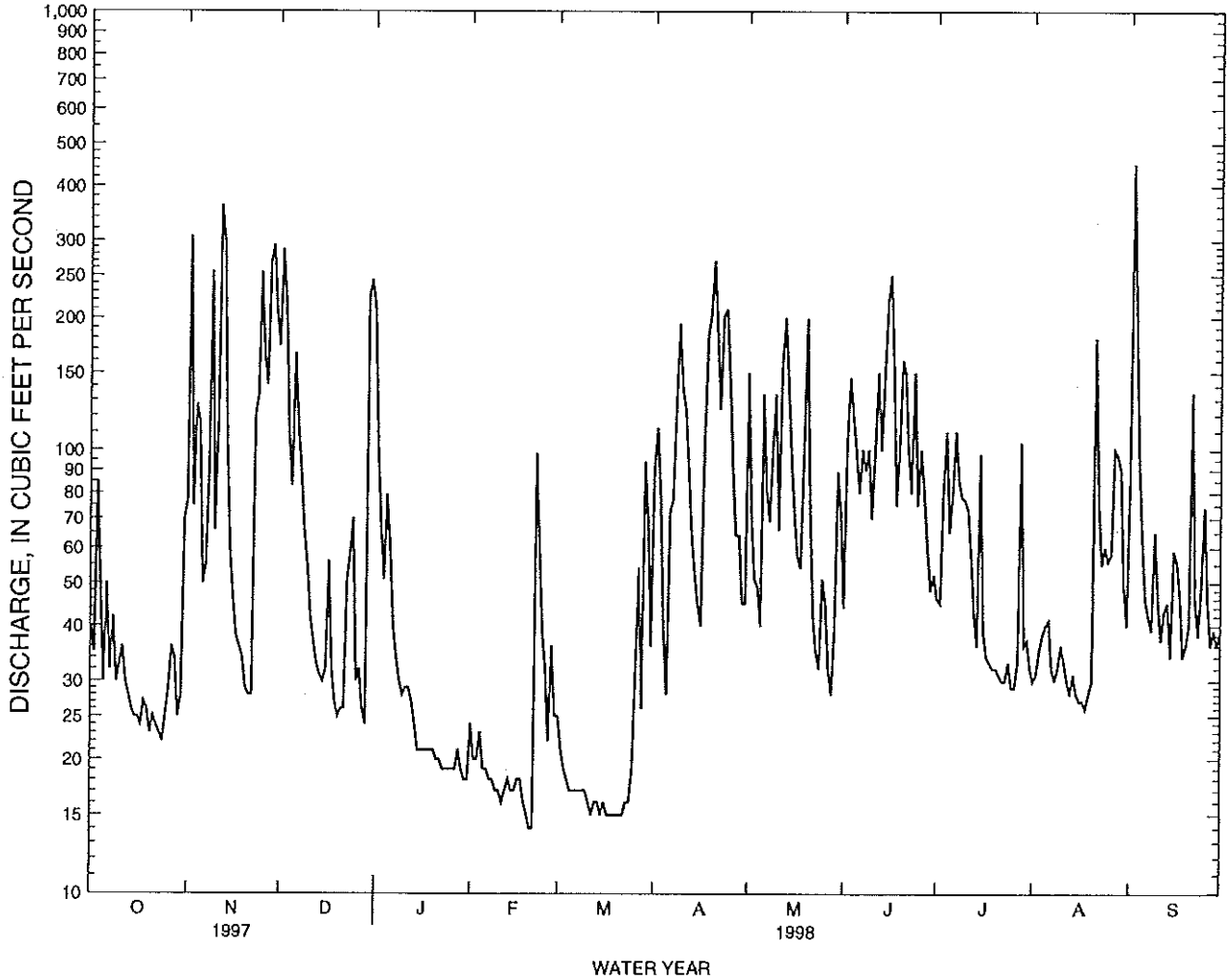
MEAN	51.6	70.3	66.7	68.2	56.4	80.5	88.9	68.0	62.3	73.5	60.6	49.6
MAX	103	132	103	149	108	176	230	136	110	137	97.0	133
(WY)	1984	1998	1997	1988	1994	1994	1989	1987	1998	1994	1993	1992
MIN	11.9	20.5	18.3	25.4	24.6	23.6	20.8	27.9	24.4	25.2	26.0	15.8
(WY)	1985	1985	1985	1985	1998	1998	1992	1984	1985	1984	1984	1984

e Estimated

HAWAII, ISLAND OF MAUI

16604500 IAO STREAM AT KEPANIWAI PARK, NEAR WAILUKU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1983 - 1998	
ANNUAL TOTAL	26166		24520			
ANNUAL MEAN	71.7		67.2		66.9	
HIGHEST ANNUAL MEAN					93.4	1994
LOWEST ANNUAL MEAN					41.4	1985
HIGHEST DAILY MEAN	361	Nov 12	450	Sep 2	913	Apr 10 1986
LOWEST DAILY MEAN	19	Feb 17	14	Feb 20	11	Oct 7 1984
ANNUAL SEVEN-DAY MINIMUM	22	Feb 11	15	Mar 15	11	Oct 16 1984
ANNUAL RUNOFF (AC-FT)	51900		48640		48460	
10 PERCENT EXCEEDS	151		150		137	
50 PERCENT EXCEEDS	46		42		42	
90 PERCENT EXCEEDS	25		18		21	



HAWAII, ISLAND OF MAUI

16614000 WAIHEE RIVER AT DAM NEAR WAIHEE

LOCATION.--Lat 20°56′21″, long 156°32′59″, Hydrologic Unit 20020000, on right bank at dam 8 ft upstream from the abandoned Waihee canal intake, 2.6 mi southwest from Waihee Point, and 4.4 mi northwest from Wailuku Post Office.

DRAINAGE AREA.--4.20 mi^2.

PERIOD OF RECORD.--November 1910 to December 1913, November 1983 to current year. Low-flow records not equivalent prior to December 31, 1913, due to Waihee canal diverted water upstream.

GAGE.--Water-stage recorder. Elevation of gage is 605 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Matt Wong. Records good, except for periods of no gage height record, which are poor. No diversion upstream of station.

AVERAGE DISCHARGE.--14 years (water years 1985-98), 80.6 ft^3/s (58,380 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,660 ft^3/s, January 28, 1988, gage height, 8.95 ft, from rating curve extended above 280 ft^3/s on basis of slope-area measurements at gage heights 6.70 ft and 8.95 ft; minimum, 14 ft^3/s, July 13, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 25	0600	*1,200	*4.00				

Minimum discharge, 35 ft^3/s, March 19-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e41	112	132	203	57	57	89	152	72	61	54	75
2	e40	127	257	71	46	49	74	63	158	61	55	416
3	e80	49	97	63	45	43	69	59	123	78	56	122
4	e75	114	70	61	51	42	45	59	163	161	62	60
5	e42	87	68	90	46	41	43	54	106	78	71	51
6	e52	50	147	63	44	39	84	120	67	80	72	48
7	e45	45	89	58	43	39	67	68	88	128	56	47
8	e52	66	97	57	43	38	76	85	75	102	53	48
9	e46	131	73	56	43	38	102	97	81	73	59	92
10	e47	45	70	53	43	38	89	102	62	72	64	64
11	e49	101	63	53	42	38	79	69	92	73	50	48
12	e43	242	62	53	41	37	65	108	124	68	49	65
13	e42	113	61	52	41	37	54	96	88	61	50	79
14	e41	52	60	51	41	37	52	71	162	61	57	49
15	e41	46	59	51	41	40	50	64	178	117	50	71
16	41	44	63	51	41	37	59	58	138	62	48	72
17	41	44	85	51	40	37	92	55	89	60	47	56
18	43	45	76	54	39	37	166	56	67	59	47	47
19	42	44	61	51	40	36	182	84	78	59	46	47
20	42	44	59	49	39	35	295	161	145	61	50	53
21	44	43	59	48	39	36	96	62	122	59	213	179
22	43	45	57	48	202	45	83	54	87	58	88	50
23	41	115	111	48	69	60	177	52	70	58	70	48
24	40	97	82	48	69	41	171	51	163	59	78	75
25	42	522	85	47	58	51	102	65	74	68	73	93
26	49	76	61	47	62	53	69	74	115	69	74	51
27	48	189	65	47	83	72	61	53	73	67	120	47
28	45	197	75	47	59	51	89	50	65	132	114	53
29	41	245	60	47	---	91	57	52	64	64	108	47
30	48	151	366	45	---	80	59	109	67	64	64	48
31	142	---	330	45	---	59	---	96	---	58	53	---
TOTAL	1528	3281	3100	1808	1507	1434	2796	2399	3056	2331	2151	2301
MEAN	49.3	109	100	58.3	53.8	46.3	93.2	77.4	102	75.2	69.4	76.7
MAX	142	522	366	203	202	91	295	161	178	161	213	416
MIN	40	43	57	45	39	35	43	50	62	58	46	47
AC-FT	3030	6510	6150	3590	2990	2840	5550	4760	6060	4620	4270	4560

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

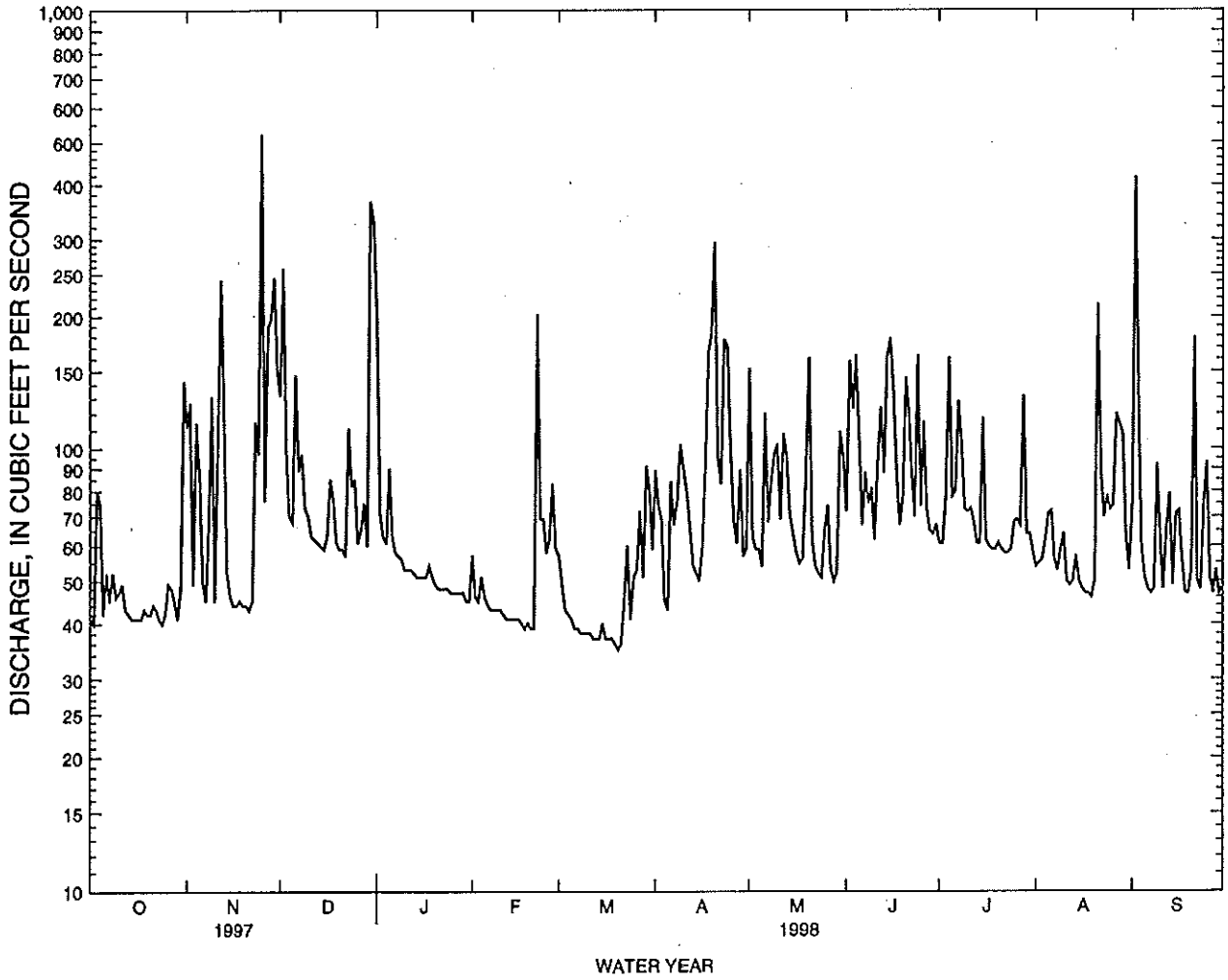
MEAN	68.0	84.6	73.6	75.1	65.9	90.7	94.8	81.0	75.6	90.9	76.6	72.6
MAX	91.7	150	109	186	106	179	276	143	118	136	99.6	160
(WY)	1986	1991	1988	1988	1988	1994	1989	1987	1987	1994	1991	1992
MIN	27.4	36.8	31.3	29.4	42.3	43.7	36.6	41.5	43.4	54.8	46.1	32.9
(WY)	1985	1985	1985	1985	1993	1992	1992	1996	1984	1984	1984	1984

e Estimated

HAWAII, ISLAND OF MAUI

16614000 WAIHEE RIVER AT DAM NEAR WAIHEE--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1984 - 1998	
ANNUAL TOTAL	27219		27692			
ANNUAL MEAN	74.6		75.9		80.6	
HIGHEST ANNUAL MEAN					106	1994
LOWEST ANNUAL MEAN					57.5	1985
HIGHEST DAILY MEAN	522	Nov 25	522	Nov 25	1160	Jan 28 1988
LOWEST DAILY MEAN	33	Feb 17	35	Mar 20	22	Jan 18 1985
ANNUAL SEVEN-DAY MINIMUM	35	Feb 11	37	Mar 15	23	Jan 18 1985
ANNUAL RUNOFF (AC-FT)	53990		54930		58380	
10 PERCENT EXCEEDS	131		125		135	
50 PERCENT EXCEEDS	54		60		56	
90 PERCENT EXCEEDS	38		41		38	



HAWAII, ISLAND OF MAUI

16618000 KAHAKULOA STREAM NEAR HONOKOHAU

(Hydrologic Benchmark Network Station)

LOCATION.--Lat 20°58′54″, long 156°33′26″, Hydrologic Unit 20020000, on right bank 0.5 mi downstream from Kapuna Stream, 1.3 mi south of Kahakuloa, 2.0 mi west of Puu Makawana, and 4.3 mi southeast of Honokohau.

DRAINAGE AREA.--3.47 mi^2.

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 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. Elevation of gage is 330 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records good except for estimated discharges which are fair. No diversion upstream of station.

AVERAGE DISCHARGE.--49 years (water years 1940-42, 1948-70, 1976-98), 17.9 ft^3/s (12,940 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,220 ft^3/s, January 28, 1988, gage height, 9.93 ft from floodmarks, from rating curve extended above 510 ft^3/s, on basis of slope-area measurements at gage heights 6.70 ft, 8.48 ft, and 9.93 ft; minimum, 2.7 ft^3/s, January 22, 28, 29, February 10, 12, 13, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 30	1530	*554	*5.30				

Minimum discharge, 4.6ft^3/s, March 9-14, August 19, 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	64	31	115	6.1	13	18	e32	14	6.6	5.5	21
2	7.1	43	85	22	5.9	8.5	15	e7.6	40	6.4	5.7	169
3	8.2	11	26	13	5.5	6.0	11	e6.5	41	7.5	6.1	41
4	24	22	12	11	6.7	6.0	8.3	e6.7	49	30	5.4	13
5	7.6	27	10	29	6.2	5.8	6.6	e6.0	22	10	9.9	8.9
6	7.3	10	27	14	5.5	5.0	16	e14	10	11	9.0	7.8
7	6.8	7.6	27	9.6	5.4	4.8	8.1	e8.0	7.8	22	5.7	6.9
8	15	9.2	15	8.6	5.4	4.8	11	e13	9.5	22	5.3	6.8
9	10	77	13	8.1	5.2	4.6	19	e19	11	11	9.0	15
10	6.8	10	15	7.7	5.2	4.6	15	e26	8.0	9.0	23	12
11	7.0	29	9.8	7.4	5.2	4.6	14	e17	14	7.8	6.6	7.0
12	6.3	93	8.3	7.2	5.2	4.6	11	e27	40	7.8	5.5	14
13	6.1	46	7.6	6.9	5.2	4.6	9.3	e30	9.6	6.5	5.2	30
14	6.0	12	7.1	6.7	5.2	4.6	7.3	e9.0	44	6.1	6.3	8.2
15	5.8	9.2	6.9	6.6	5.2	5.2	7.3	7.6	41	20	5.2	10
16	5.9	8.0	6.8	6.4	5.0	5.4	7.8	7.3	46	7.2	4.9	13
17	5.8	7.3	14	6.3	5.0	4.8	11	6.4	15	6.2	5.2	9.1
18	6.8	7.2	20	6.2	5.0	4.8	29	6.0	9.4	6.0	4.8	6.7
19	7.0	9.8	9.5	6.3	5.0	4.8	50	13	12	5.9	4.7	6.0
20	6.0	10	7.2	6.1	4.8	4.8	63	45	30	6.1	4.8	6.6
21	7.9	8.4	6.8	5.9	4.8	4.8	22	9.3	27	6.3	14	55
22	6.9	6.9	6.4	5.8	56	8.3	23	7.0	15	5.6	12	8.5
23	6.4	16	21	5.8	16	17	e50	6.3	11	5.9	6.1	6.7
24	5.7	23	15	5.8	8.3	7.7	e42	6.0	56	6.0	20	14
25	5.9	196	25	5.6	9.7	7.1	e18	6.6	11	8.8	7.4	19
26	8.0	18	8.6	5.7	12	6.8	e7.3	8.1	13	11	9.0	8.5
27	7.3	44	7.8	5.8	12	14	e6.4	7.1	13	6.8	28	7.0
28	6.2	94	14	5.8	7.6	8.9	e18	5.7	8.0	35	39	8.6
29	5.7	71	9.8	5.7	---	20	e6.0	5.3	7.5	8.4	27	7.0
30	5.7	58	204	5.6	---	16	e6.3	22	7.4	6.8	11	8.4
31	55	---	221	5.6	---	13	---	22	---	5.9	7.6	---
TOTAL	284.2	1047.6	897.6	367.2	234.3	234.9	536.7	412.5	642.2	321.6	318.9	554.7
MEAN	9.17	34.9	29.0	11.8	8.37	7.58	17.9	13.3	21.4	10.4	10.3	18.5
MAX	55	196	221	115	56	20	63	45	56	35	39	169
MIN	5.7	6.9	6.4	5.6	4.8	4.6	6.0	5.3	7.4	5.6	4.7	6.0
AC-FT	564	2080	1780	728	465	466	1060	818	1270	638	633	1100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1998, BY WATER YEAR (WY)

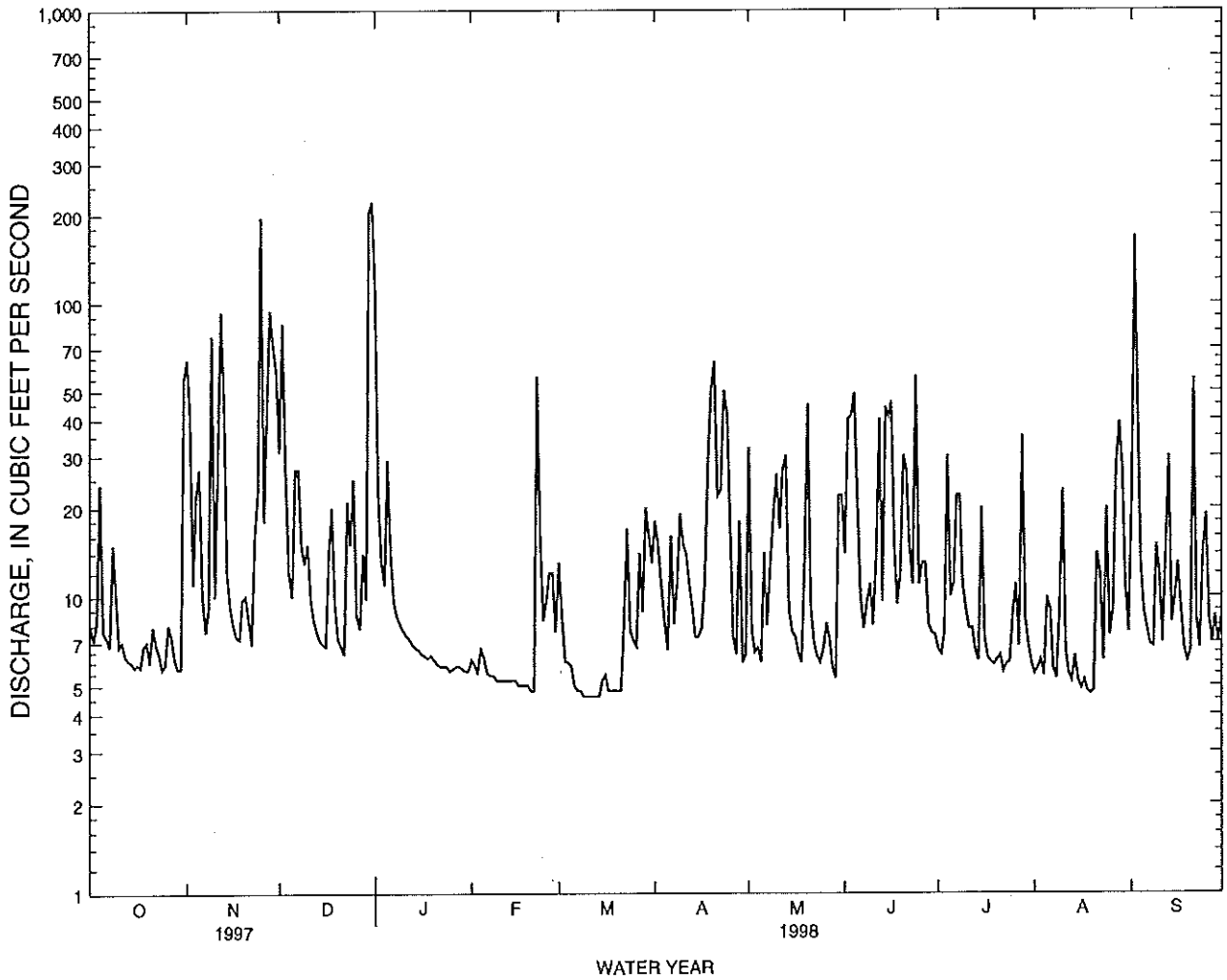
MEAN	15.1	20.7	18.9	17.9	17.4	25.0	24.0	17.4	12.3	16.3	16.5	12.0
MAX	49.6	51.2	37.5	71.2	50.2	133	121	54.5	28.1	34.4	37.2	40.4
(WY)	1942	1979	1955	1988	1969	1942	1989	1987	1987	1989	1957	1992
MIN	3.20	4.41	4.88	4.82	5.09	5.78	7.02	5.21	4.99	6.32	6.09	4.18
(WY)	1985	1963	1985	1977	1978	1961	1992	1975	1962	1975	1976	1984

e Estimated

HAWAII, ISLAND OF MAUI

16618000 KAHAKULOA STREAM NEAR HONOKOHAU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1939 - 1998	
ANNUAL TOTAL	6896.4		5852.4			
ANNUAL MEAN	18.9		16.0		17.9	
HIGHEST ANNUAL MEAN					30.8	1942
LOWEST ANNUAL MEAN					11.0	1981
HIGHEST DAILY MEAN	221	Dec 31	221	Dec 31	696	Mar 10 1942
LOWEST DAILY MEAN	4.3	May 10	4.6	Mar 9	2.7	Jan 28 1985
ANNUAL SEVEN-DAY MINIMUM	4.6	Apr 18	4.6	Mar 8	2.8	Feb 6 1985
ANNUAL RUNOFF (AC-FT)	13680		11610		12940	
10 PERCENT EXCEEDS	44		30		35	
50 PERCENT EXCEEDS	8.8		8.1		9.0	
90 PERCENT EXCEEDS	5.5		5.3		5.2	



HAWAII, ISLAND OF MAUI

16620000 HONOKOHAU STREAM NEAR HONOKOHAU

LOCATION.--Lat 20°57′45″, long 156°35′22″, Hydrologic Unit 20020000, on left bank 1,250 ft upstream from intake of Honokohau Ditch, and 4.1 mi southeast of Honokohau.

DRAINAGE AREA.--4.11 mi^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 November 1988, October 1990 to current year. Record since October 1990 equivalent to earlier records.

REVISED RECORDS.--WSP 1937: Drainage area. WDR HI-79-1: 1927-48(M), 1949-78(P).

GAGE.--Water-stage recorders. Elevation of gage is 870 ft above mean sea level (from topographic map). Prior to March 7, 1913, nonrecording gage at site just below Honokohau Ditch intake at different datum. Prior to October 1, 1990, at site 250 ft downstream of gage at datum 26.67 ft lower.

REMARKS.--Records computed by Matt Wong. Records fair. No diversion upstream of station. All medium and low flow, together with the inflow from two development tunnels downstream of station, is diverted into Honokohau Ditch.

AVERAGE DISCHARGE.--80 years (water years 1914-19, 1923-88, 1991-98), 39.2 ft^3/s (28,370 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,260 ft^3/s, January 28, 1988 (gage-height, 8.38 ft for datum and site then in use) from rating curve extended above 3,200 ft^3/s, on basis of slope-area measurement at gage height 8.38 ft; minimum, 8.4 ft^3/s, May 1, 1945, January 5, 1946.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 25	0430	*542	*3.71				

Minimum discharge, 15.0 ft^3/s, October 24, November 22, March 17-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	56	68	73	20	25	48	82	25	22	21	50
2	18	95	168	27	19	19	45	27	82	22	21	196
3	43	22	50	23	18	18	36	20	71	28	21	47
4	43	36	26	22	22	17	20	21	49	81	32	23
5	19	27	23	35	19	17	19	19	39	40	37	21
6	24	19	66	26	18	16	48	60	26	34	41	21
7	19	16	44	22	18	16	45	30	49	70	21	17
8	23	19	40	20	18	16	57	35	33	56	21	17
9	19	53	27	20	18	16	72	48	38	30	21	33
10	20	18	22	20	18	16	54	64	26	32	22	25
11	21	37	21	20	18	16	48	34	51	32	20	18
12	17	109	20	20	17	16	33	66	60	29	19	36
13	16	61	20	19	17	16	25	78	43	23	19	34
14	16	21	19	19	17	16	23	42	107	22	24	21
15	16	18	19	19	17	16	24	28	121	55	21	39
16	16	17	21	19	17	16	25	23	52	23	20	34
17	16	16	40	19	16	16	50	19	40	22	19	24
18	16	16	30	19	16	15	71	20	25	22	19	18
19	17	18	21	19	17	15	94	65	32	22	19	18
20	16	18	19	19	17	15	112	131	96	22	21	23
21	19	16	19	19	17	15	45	28	80	23	89	89
22	17	15	19	19	103	18	42	20	42	21	83	22
23	17	45	31	19	35	28	99	19	30	21	69	21
24	15	59	35	19	33	19	97	19	87	22	54	32
25	19	314	41	19	31	24	36	35	33	23	35	51
26	23	34	22	19	19	33	22	45	70	24	48	22
27	25	99	25	18	41	52	20	22	38	24	66	18
28	22	117	22	18	23	28	35	19	24	80	55	22
29	17	198	20	18	---	74	19	21	24	26	56	20
30	18	66	162	18	---	60	20	62	27	26	24	22
31	58	---	123	18	---	33	---	48	---	24	21	---
TOTAL	663	1655	1283	684	659	717	1384	1250	1520	1001	1059	1034
MEAN	21.4	55.2	41.4	22.1	23.5	23.1	46.1	40.3	50.7	32.3	34.2	34.5
MAX	58	314	168	73	103	74	112	131	121	81	89	196
MIN	15	15	19	18	16	15	19	19	24	21	19	17
AC-FT	1320	3280	2540	1360	1310	1420	2750	2480	3010	1990	2100	2050

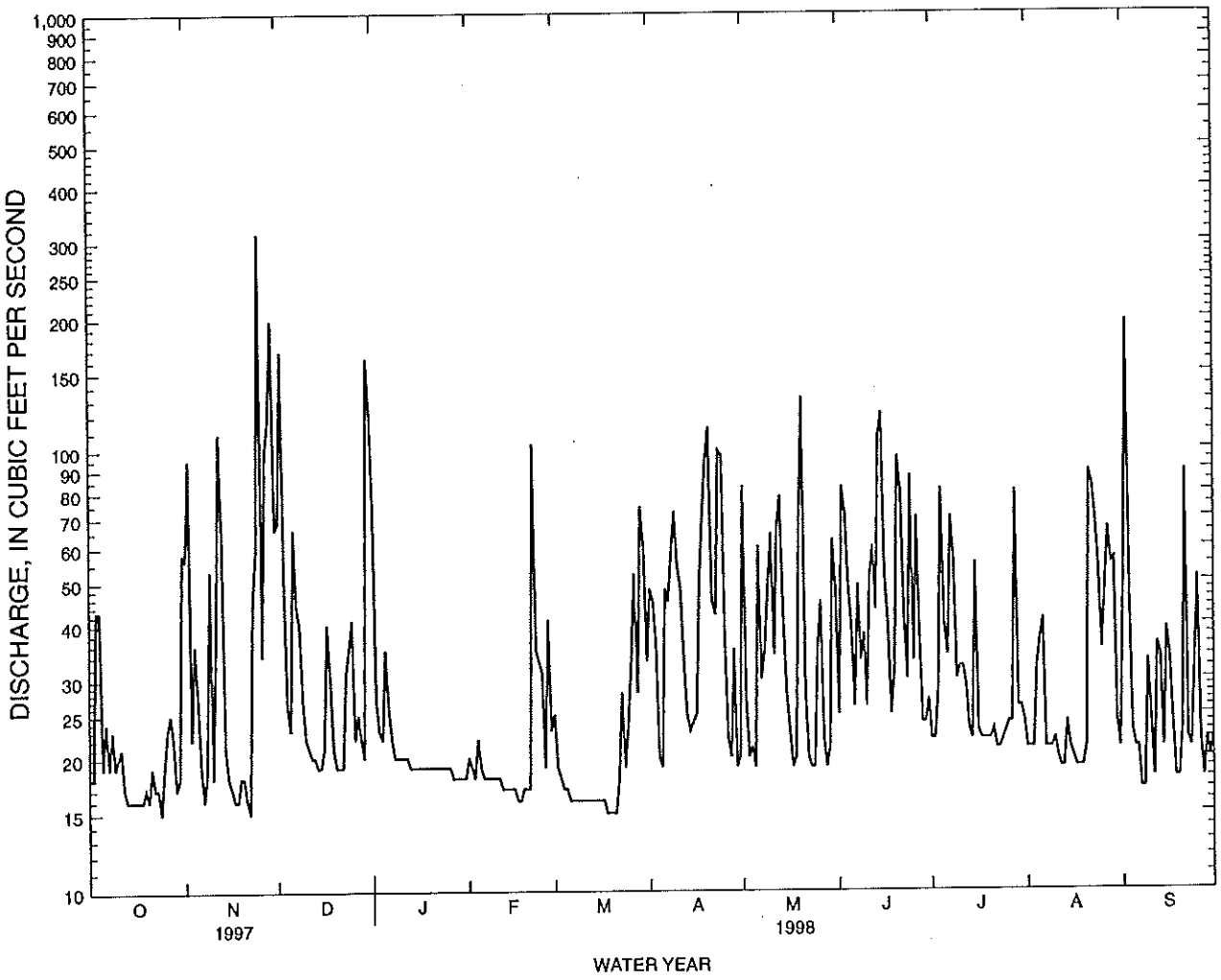
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1998, BY WATER YEAR (WY)

MEAN	31.3	41.1	41.0	35.4	36.7	44.0	48.9	41.3	34.7	40.2	41.1	30.5
MAX	94.8	110	97.5	98.6	132	144	120	130	81.1	116	103	122
(WY)	1915	1915	1955	1916	1932	1942	1980	1916	1916	1914	1914	1914
MIN	10.8	11.8	13.0	12.3	13.5	13.4	12.9	12.2	14.2	16.2	14.5	12.1
(WY)	1985	1963	1936	1944	1963	1926	1992	1945	1962	1926	1971	1984

HAWAII, ISLAND OF MAUI

16620000 HONOKOHAU STREAM NEAR HONOKOHAU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1913 - 1998	
ANNUAL TOTAL	12366		12909			
ANNUAL MEAN	33.9		35.4		39.2	
HIGHEST ANNUAL MEAN					68.3	1914
LOWEST ANNUAL MEAN					24.1	1926
HIGHEST DAILY MEAN	340	Apr 25	314	Nov 25	781	Apr 7 1938
LOWEST DAILY MEAN	12	Feb 17	15	Oct 24	8.0	Aug 10 1920
ANNUAL SEVEN-DAY MINIMUM	13	Apr 16	15	Mar 15	8.5	Feb 6 1985
ANNUAL RUNOFF (AC-FT)	24530		25610		28370	
10 PERCENT EXCEEDS	66		69		79	
50 PERCENT EXCEEDS	21		23		24	
90 PERCENT EXCEEDS	14		17		13	



Surface-Water Station Records for Hawaii

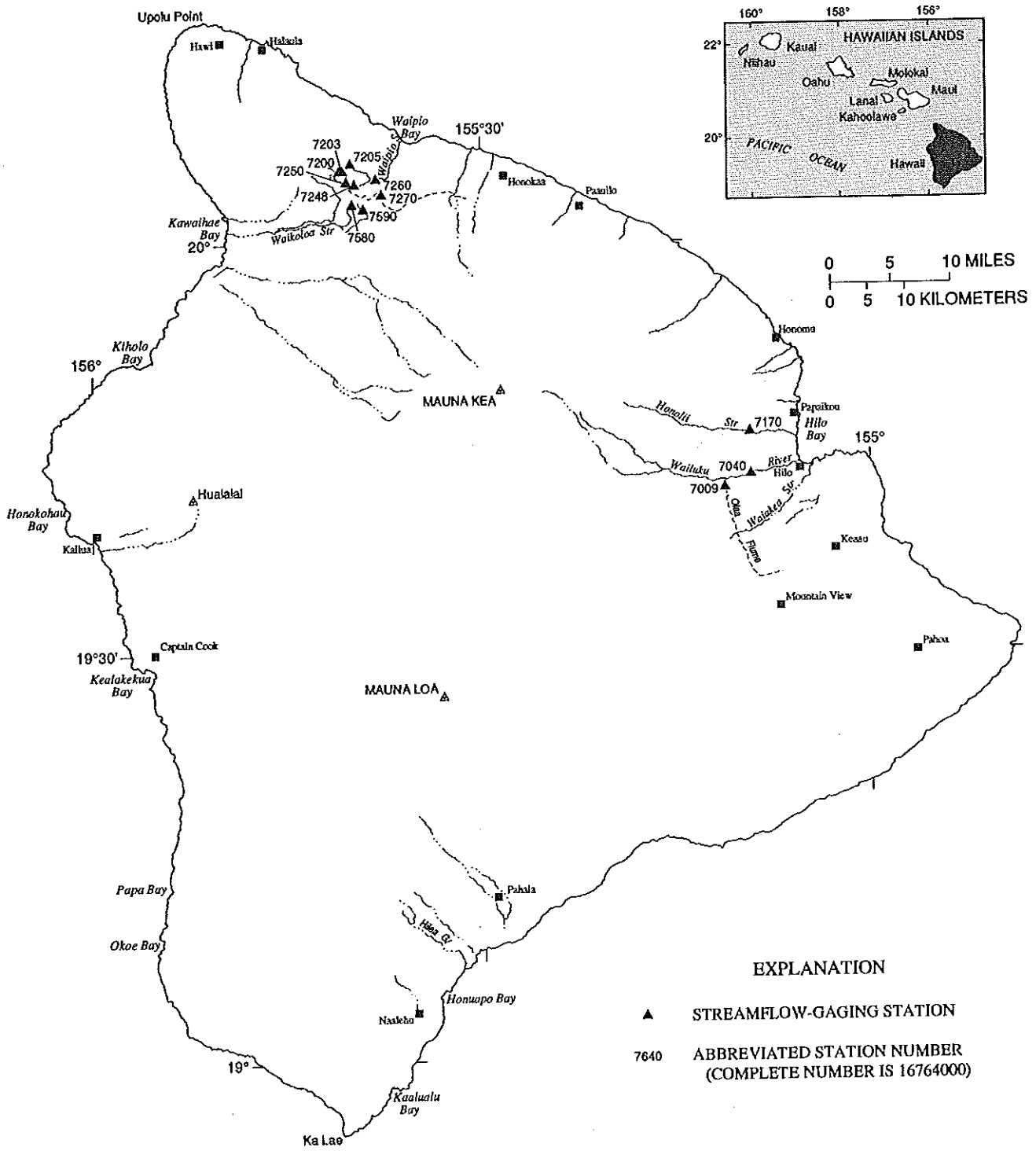


Figure 9. Locations of gaging, water-quality, and partial-record stations on Hawaii.

HAWAII, ISLAND OF HAWAII

16700000 WAIAKEA STREAM NEAR MOUNTAIN VIEW

THE RECORDS FOR WATER YEARS 1992-98 WERE NOT COMPUTED
AT THE TIME OF PUBLICATION

HAWAII, ISLAND OF HAWAII

16700900 OLAA FLUME SPRING NEAR KAUMANA

THE RECORDS FOR WATER YEARS 1992-98 WERE NOT COMPUTED
AT THE TIME OF PUBLICATION

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA

LOCATION.--Lat 19°42′56″, long 155°09′12″, Hydrologic Unit 20010000, on right bank 0.2 mi downstream from Hookelekele Stream, 0.9 mi west of Piihonua, and 4.1 mi west of Hilo Post Office. Prior to November 16, 1977, at site directly across river, on left bank.

DRAINAGE AREA.--230 mi^2, of which 81 mi^2 probably is noncontributing.

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. WDR HI-80-1: 1929-79(P). WDR HI-81-1: 1940(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,090 ft above mean sea level (from topographic map). Prior to November 16, 1977, at site directly across river, on left bank at same datum.

REMARKS.--

Water year 1992: Records fair except for periods of estimated record which are poor. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft^3/s of water upstream of gage until 1967.

Water year 1993: Records fair except for periods of estimated record which are poor. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft^3/s of water upstream of gage until 1967. In May 1993, new hydroelectric plant began diverting variable amounts of water about 1 mi upstream of gage and discharging the water about 500 ft below gage.

Water year 1994: Records fair. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft^3/s of water upstream of gage until 1967. Hydroelectric plant diverts water about 1 mi upstream of gage and discharges it about 500 ft below gage (from 1993).

Water year 1995: Records fair. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft^3/s of water upstream of gage until 1967. Hydroelectric plant diverts water about 1 mi upstream of gage and discharges it about 500 ft below gage (from 1993).

Water year 1996: Records fair except for periods of estimated record which are poor. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft^3/s of water upstream of gage until 1967. Hydroelectric plant diverts water about 1 mi upstream of gage and discharges it about 500 ft below gage (from 1993).

Water year 1997: Records fair except for periods of estimated record which are poor. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft^3/s of water upstream of gage until 1967. Hydroelectric plant diverts water about 1 mi upstream of gage and discharges it about 500 ft below gage (from 1993).

Water year 1998: Records fair except for period of estimated record which is poor. Kapehu ditch diverted water from Kapehu Stream into Wailuku River upstream 1938-63. Department of Water Supply diverted about 6 ft^3/s of water upstream of gage until 1967. Hydroelectric plant diverts water about 1 mi upstream of gage and discharges it about 500 ft below gage (from 1993).

AVERAGE DISCHARGE.--

Water Year 1992: 61 years (water years 1929-39, 1942-47, 1949-92), 288 ft^3/s (208,300 acre-ft/yr).

Water Year 1993: 62 years (water years 1929-39, 1942-47, 1949-93), 286 ft^3/s (207,100 acre-ft/yr).

Water Year 1994: 63 years (water years 1929-39, 1942-47, 1949-94), 286 ft^3/s (207,200 acre-ft/yr).

Water Year 1995: 64 years (water years 1929-39, 1942-47, 1949-95), 286 ft^3/s (206,900 acre-ft/yr).

Water Year 1996: 65 years (water years 1929-39, 1942-47, 1949-96), 283 ft^3/s (205,200 acre-ft/yr).

Water Year 1997: 66 years (water years 1929-39, 1942-47, 1949-97), 282 ft^3/s (204,400 acre-ft/yr).

Water Year 1998: 67 years (water years 1929-39, 1942-47, 1949-98), 280 ft^3/s (202,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,200 ft^3/s, revised, August 11, 1940, gage height, 28.6 ft, from floodmarks, from rating curve extended above 13,000 ft^3/s; minimum, 0.15 ft^3/s, January 20, 1981.

EXTREMES FOR CURRENT YEAR.--

Water Year 1992: Maximum discharge 6,620 ft^3/s on September 3 at 2330 hours, gage height 13.79 ft; minimum daily discharge, 2.4 ft^3/s, June 3-4.

Water Year 1993: Maximum discharge 11,200 ft^3/s on November 29 at 1900 hours, gage height 15.91 ft; minimum discharge 6.4 ft^3/s, April 19; minimum daily discharge, 6.9 ft^3/s, April 19.

Water Year 1994: Maximum discharge 34,600 ft^3/s on August 12 at 0900 hours, gage height 22.04 ft; minimum discharge 22.0 ft^3/s, January 18-19; minimum daily discharge, 22 ft^3/s, January 19.

Water Year 1995: Maximum discharge 13,700 ft^3/s on November 16 at 1330 hours, gage height 16.81 ft; minimum discharge 5.5 ft^3/s, March 20-21; minimum daily discharge, 5.8 ft^3/s, March 20.

Water Year 1996: Maximum discharge 14,300 ft^3/s on February 25 at 1030 hours, gage height 17.03 ft; minimum discharge 8.6 ft^3/s, January 16, 17; minimum daily discharge, 9.0 ft^3/s, January 16.

Water Year 1997: Maximum discharge 14,100 ft^3/s on July 30 at 0200 hours, gage height 16.96 ft; minimum daily discharge, 7.0 ft^3/s (estimated), February 4-5.

Water Year 1998: Maximum discharge 4,900 ft^3/s on September 21 at 0930 hours, gage height 12.72 ft; minimum daily discharge, 7.9 ft^3/s, February 2.

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	11	433	93	e40	e4.0	e5.0	e7.0	e2.5	e150	e400	191
2	46	12	1470	83	e13	e4.5	e6.0	e6.2	e2.5	e100	e300	372
3	45	14	607	78	e15	e5.0	e20	e5.5	e2.4	e70	e240	1240
4	40	12	457	71	e9.0	e6.0	e45	e5.0	e2.4	e60	e180	2130
5	37	11	253	e60	e9.0	e5.0	e20	e8.0	e6.0	e45	e150	1600
6	34	10	195	e43	e12	e4.0	e12	e30	e10	e30	e120	930
7	32	9.7	168	e30	e45	e3.8	e7.0	e17	e10	e21	e100	611
8	38	10	119	e23	e33	e3.7	e5.0	e10	e10	e15	e85	364
9	41	16	93	e19	e25	e3.6	e3.8	e7.0	e30	e100	e75	392
10	33	21	103	e20	e21	e3.4	e3.0	e6.0	e60	e400	e67	333
11	29	18	234	e28	e18	e3.3	e4.5	e5.0	e150	e200	216	234
12	27	12	130	e21	e15	e3.2	e7.4	e4.5	e60	e100	322	188
13	25	9.2	130	e20	e18	e3.1	e8.0	e4.5	e60	e80	180	156
14	24	7.5	157	e19	e20	e3.0	e7.2	e15	e35	e60	131	1380
15	23	5.8	159	e18	e12	e4.5	e6.6	e11	e80	e40	104	528
16	22	5.8	109	e17	e8.0	e7.0	e6.0	e8.0	e60	e30	289	418
17	21	5.6	88	e15	e7.0	e10	e5.5	e5.0	e50	e40	e246	494
18	19	5.4	75	e18	e6.0	e10	e5.0	e3.0	e40	e70	e191	306
19	19	33	65	e50	e5.6	e10	e5.0	e3.0	e90	e140	e185	232
20	19	50	e50	e35	e5.3	e7.0	e5.0	e3.0	e200	e250	e208	187
21	17	25	e37	e20	e5.0	e5.0	e4.6	e2.9	e80	e500	531	154
22	17	17	e25	e18	e4.7	e3.8	e4.3	e2.9	e42	e300	380	123
23	16	44	e28	e16	e4.4	e2.9	e4.0	e2.8	e60	e150	284	105
24	16	32	e27	e14	e4.2	e2.9	e4.0	e2.8	e50	e100	263	103
25	17	41	e23	e12	e3.9	e7.0	e4.0	e2.7	e100	e90	231	101
26	15	28	393	e11	e3.7	e15	e4.0	e2.7	e70	e400	291	324
27	16	21	126	e10	e3.5	e15	e4.0	e2.6	e50	e1200	242	199
28	16	18	154	e9.0	e3.5	e10	e4.5	e2.6	e90	e600	238	139
29	13	18	209	e8.0	e3.5	e6.5	e6.4	e2.5	e60	e300	367	110
30	12	831	129	e8.0	---	e4.5	e8.0	e2.5	e100	e700	290	90
31	12	---	99	e35	---	e5.0	---	e2.5	---	e1300	239	---
TOTAL	796	1354.0	6345	922.0	373.3	181.7	234.8	193.2	1662.8	7641	7145	13734
MEAN	25.7	45.1	205	29.7	12.9	5.86	7.83	6.23	55.4	246	230	458
MAX	55	831	1470	93	45	15	45	30	200	1300	531	2130
MIN	12	5.4	23	8.0	3.5	2.9	3.0	2.5	2.4	15	67	90
AC-FT	1580	2690	12590	1830	740	360	466	383	3300	15160	14170	27240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1992, BY WATER YEAR (WY)

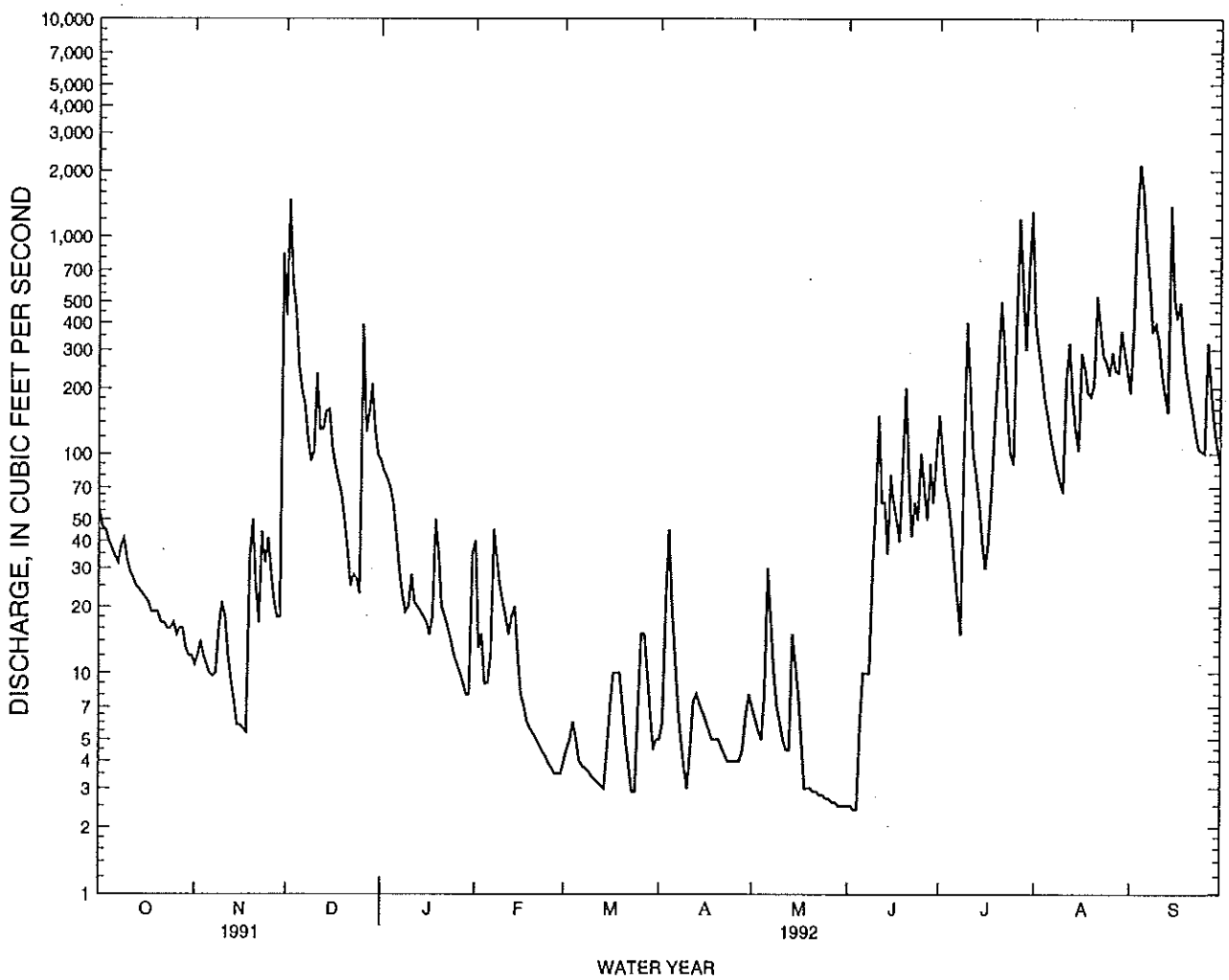
MEAN	177	381	356	305	310	433	406	236	128	210	297	167
MAX	765	2238	1368	2061	2050	2026	2262	1246	715	1140	1989	992
(WY)	1942	1991	1971	1975	1969	1991	1986	1964	1941	1989	1930	1930
MIN	2.96	19.1	7.15	1.10	.51	.26	7.83	6.23	5.48	2.79	12.8	10.2
(WY)	1985	1934	1934	1981	1983	1983	1992	1992	1981	1981	1971	1974

e Estimated

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

SUMMARY STATISTICS	FOR 1991 CALENDAR YEAR		FOR 1992 WATER YEAR		WATER YEARS 1928 - 1992	
ANNUAL TOTAL	116946.0		40582.8			
ANNUAL MEAN	320		111		288	
HIGHEST ANNUAL MEAN					588	1991
LOWEST ANNUAL MEAN					103	1981
HIGHEST DAILY MEAN	11500	Mar 13	2130	Sep 4	22200	Jan 8 1975
LOWEST DAILY MEAN	5.4	Nov 18	2.4	Jun 3	.22	Mar 20 1983
ANNUAL SEVEN-DAY MINIMUM	7.3	Nov 12	2.5	May 29	.23	Mar 17 1983
ANNUAL RUNOFF (AC-FT)	232000		80500		208300	
10 PERCENT EXCEEDS	469		294		609	
50 PERCENT EXCEEDS	110		23		82	
90 PERCENT EXCEEDS	17		4.0		12	



HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	e77	733	313	17	7.1	9.1	740	33	51	213	58
2	69	e232	613	239	16	9.6	8.6	353	28	55	189	53
3	67	e220	425	181	15	20	8.6	333	24	49	362	48
4	67	e121	363	149	14	43	8.2	217	22	75	209	45
5	70	e88	662	125	14	40	8.9	214	24	53	162	41
6	54	e83	414	105	13	34	7.8	155	26	57	131	39
7	46	e83	368	92	12	34	12	120	23	56	113	36
8	43	e71	270	78	12	73	32	221	25	50	114	35
9	39	e200	409	70	13	108	23	174	43	46	103	39
10	36	e210	704	62	23	63	20	188	31	38	122	37
11	34	e119	2000	55	26	48	18	145	35	34	899	62
12	32	e100	930	50	22	36	14	280	68	32	500	156
13	35	e70	493	45	17	30	12	267	48	192	438	98
14	57	e77	339	41	14	25	11	136	35	257	459	52
15	31	e274	258	39	13	22	9.6	102	35	118	238	46
16	24	e136	660	40	11	21	8.5	76	72	80	179	41
17	21	e192	489	38	11	25	7.7	67	109	81	141	39
18	20	e134	278	35	9.9	28	7.1	52	59	108	119	36
19	18	e334	224	32	9.5	23	6.9	47	55	475	183	34
20	17	196	189	30	9.4	23	70	45	45	798	114	40
21	16	294	220	31	9.6	20	252	41	40	2200	75	36
22	15	177	781	41	9.8	17	730	43	37	2370	72	32
23	18	144	681	40	9.1	18	428	40	34	1230	99	32
24	50	112	961	31	9.2	15	212	36	37	4580	127	45
25	34	91	724	27	8.6	13	143	37	39	960	142	60
26	164	144	383	24	8.0	12	140	32	63	508	94	55
27	e75	137	606	22	7.6	11	117	31	46	1180	80	49
28	e253	395	660	21	7.3	11	180	28	51	714	173	44
29	e204	4260	597	20	---	11	123	27	75	388	95	42
30	e102	1640	343	19	---	11	431	26	63	311	76	65
31	e72	---	266	18	---	9.8	---	25	---	251	66	---
TOTAL	1860	10411	17043	2113	361.0	861.5	3059.0	4298	1325	17397	6087	1495
MEAN	60.0	347	550	68.2	12.9	27.8	102	139	44.2	561	196	49.8
MAX	253	4260	2000	313	26	108	730	740	109	4580	899	156
MIN	15	70	189	18	7.3	7.1	6.9	25	22	32	66	32
AC-FT	3690	20650	33800	4190	716	1710	6070	8530	2630	34510	12070	2970

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1993, BY WATER YEAR (WY)

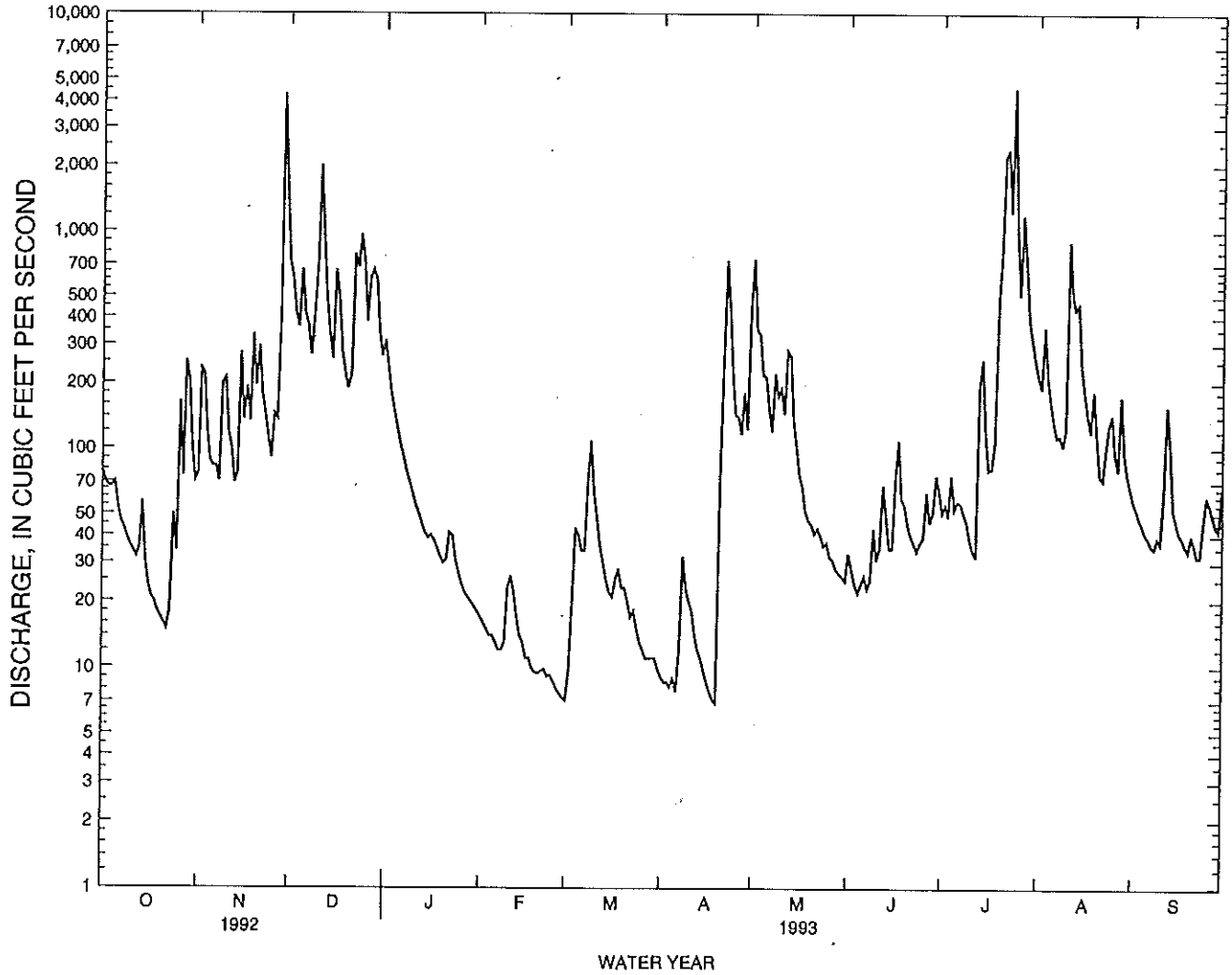
MEAN	175	380	359	301	306	426	401	235	127	215	295	165
MAX	765	2238	1368	2061	2050	2026	2262	1246	715	1140	1989	992
(WY)	1942	1991	1971	1975	1969	1991	1986	1964	1941	1989	1930	1930
MIN	2.96	19.1	7.15	1.10	.51	.26	7.83	6.23	5.48	2.79	12.8	10.2
(WY)	1985	1934	1934	1981	1983	1983	1992	1992	1981	1981	1971	1974

e Estimated

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1928 - 1993	
ANNUAL TOTAL	61401.8		66310.5			
ANNUAL MEAN	168		182		286	
HIGHEST ANNUAL MEAN					588	1991
LOWEST ANNUAL MEAN					103	1981
HIGHEST DAILY MEAN	4260	Nov 29	4580	Jul 24	22200	Jan 8 1975
LOWEST DAILY MEAN	2.4	Jun 3	6.9	Apr 19	.22	Mar 20 1983
ANNUAL SEVEN-DAY MINIMUM	2.5	May 29	8.1	Feb 23	.23	Mar 17 1983
ANNUAL RUNOFF (AC-FT)	121800		131500		207100	
10 PERCENT EXCEEDS	403		426		603	
50 PERCENT EXCEEDS	50		55		82	
90 PERCENT EXCEEDS	4.0		12		12	



HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	64	186	60	53	68	161	164	99	670	70	1610
2	38	65	131	58	50	59	120	193	101	290	69	924
3	471	54	237	54	46	55	102	160	80	179	197	1350
4	140	57	507	51	163	52	202	125	77	131	174	867
5	108	55	359	46	581	55	139	106	120	175	102	428
6	81	75	388	43	301	49	137	96	182	130	95	261
7	68	99	268	41	177	44	339	95	134	167	88	207
8	59	85	202	38	170	41	256	75	110	237	75	164
9	60	219	159	35	144	37	440	74	89	139	67	157
10	59	105	121	33	209	37	327	67	90	126	60	143
11	65	84	92	31	413	35	219	64	64	116	394	148
12	57	83	127	29	449	63	310	71	66	82	10600	685
13	81	66	193	27	286	80	271	149	62	71	1150	374
14	50	62	130	26	199	96	184	80	108	179	461	244
15	44	77	151	24	141	106	142	138	92	2780	261	186
16	38	71	172	23	129	149	114	106	67	642	193	145
17	43	244	1310	23	768	154	96	93	58	397	154	778
18	37	566	385	23	864	124	129	82	137	2200	142	2510
19	35	458	3110	22	281	132	94	75	1450	390	123	3660
20	34	180	772	43	230	437	159	73	467	238	107	1350
21	34	125	501	262	151	1550	239	96	227	437	107	518
22	35	96	312	137	114	1900	292	92	197	428	110	306
23	63	77	233	123	97	1920	327	120	256	488	1610	236
24	47	72	189	253	84	3110	239	98	147	524	1160	172
25	36	61	136	313	99	1410	181	95	204	260	305	141
26	40	56	115	158	115	604	689	86	318	180	243	122
27	43	59	98	112	83	354	433	80	377	144	341	115
28	39	70	85	79	77	255	326	85	227	120	202	108
29	35	79	76	71	---	240	186	79	311	104	163	98
30	340	124	71	62	---	175	189	87	769	85	129	111
31	76	---	64	56	---	256	---	101	---	77	777	---
TOTAL	2395	3588	10880	2356	6474	13647	7042	3105	6686	12186	19729	18118
MEAN	77.3	120	351	76.0	231	440	235	100	223	393	636	604
MAX	471	566	3110	313	864	3110	689	193	1450	2780	10600	3660
MIN	34	54	64	22	46	35	94	64	58	71	60	98
AC-FT	4750	7120	21580	4670	12840	27070	13970	6160	13260	24170	39130	35940

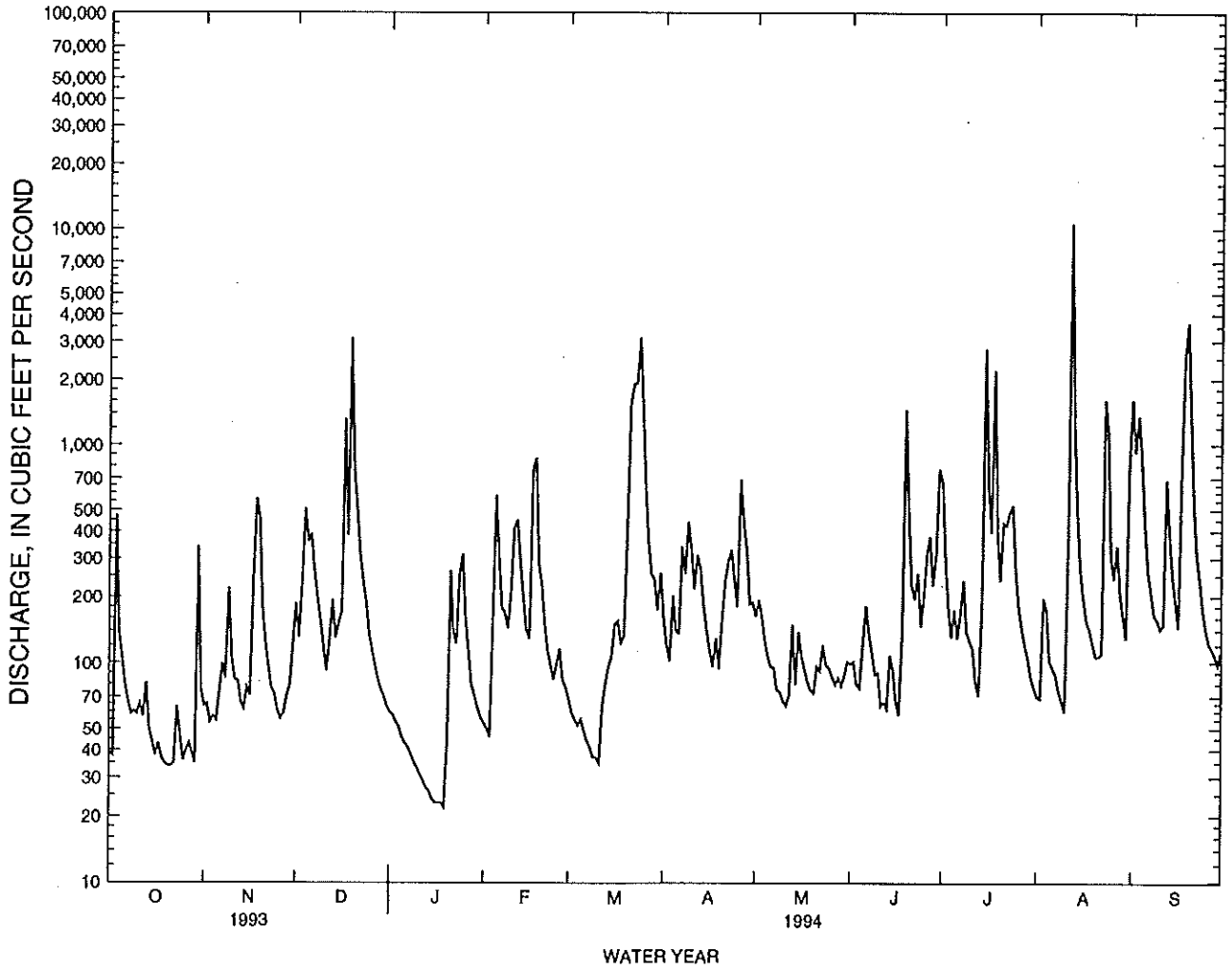
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1994, BY WATER YEAR (WY)

MEAN	173	376	358	298	305	426	398	232	129	218	300	172
MAX	765	2238	1368	2061	2050	2026	2262	1246	715	1140	1989	992
(WY)	1942	1991	1971	1975	1969	1991	1986	1964	1941	1989	1930	1930
MIN	2.96	19.1	7.15	1.10	.51	.26	7.83	6.23	5.48	2.79	12.8	10.2
(WY)	1985	1934	1934	1981	1983	1983	1992	1992	1981	1981	1971	1974

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR		FOR 1994 WATER YEAR		WATER YEARS 1928 - 1994	
ANNUAL TOTAL	53859.5		106206			
ANNUAL MEAN	148		291		286	
HIGHEST ANNUAL MEAN					588	1991
LOWEST ANNUAL MEAN					103	1981
HIGHEST DAILY MEAN	4580	Jul 24	10600	Aug 12	22200	Jan 8 1975
LOWEST DAILY MEAN	6.9	Apr 19	22	Jan 19	.22	Mar 20 1983
ANNUAL SEVEN-DAY MINIMUM	8.1	Feb 23	24	Jan 13	.23	Mar 17 1983
ANNUAL RUNOFF (AC-FT)	106800		210700		207200	
10 PERCENT EXCEEDS	311		511		603	
50 PERCENT EXCEEDS	55		125		82	
90 PERCENT EXCEEDS	12		46		12	



HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94	78	1490	38	42	11	26	56	52	27	136	304
2	77	192	556	39	42	11	21	50	53	26	301	466
3	69	191	356	38	39	10	23	61	51	25	231	234
4	64	835	298	36	36	10	33	47	53	28	154	189
5	59	1750	304	34	35	9.7	25	41	46	43	118	182
6	53	1300	279	32	33	9.4	21	38	44	39	94	207
7	48	1300	441	30	31	9.2	17	40	42	41	80	123
8	48	662	962	29	29	8.6	15	35	43	36	81	103
9	46	698	466	27	27	8.3	13	34	43	33	71	87
10	48	2530	464	25	26	7.9	11	34	43	34	70	78
11	42	2060	639	25	24	7.8	10	45	50	46	62	67
12	103	3280	316	23	21	7.6	12	228	50	96	114	62
13	70	1190	230	26	20	7.3	19	1400	57	135	515	56
14	125	1170	203	898	20	8.2	19	463	42	62	130	51
15	237	2760	278	3930	20	7.1	282	419	40	50	110	46
16	122	7040	311	4550	19	6.7	510	232	37	47	95	43
17	113	3350	163	1780	18	6.6	176	199	36	61	80	41
18	195	2410	124	690	17	6.4	352	154	37	48	68	39
19	181	1960	111	363	16	6.0	255	113	38	212	60	40
20	124	1270	97	250	15	5.8	150	95	42	197	54	37
21	96	656	87	187	15	6.0	108	93	40	801	52	35
22	191	475	78	148	14	29	104	125	36	203	58	33
23	196	438	70	125	13	46	485	99	36	164	101	31
24	134	844	66	110	13	24	315	82	32	119	177	28
25	111	1620	68	95	13	16	240	74	31	86	378	27
26	85	2180	53	83	14	15	150	67	32	111	170	25
27	164	956	50	78	12	15	106	112	29	414	622	42
28	181	757	46	69	11	15	85	75	27	406	820	70
29	110	2880	47	61	---	24	71	63	26	187	396	38
30	93	1210	44	54	---	34	61	58	27	141	279	82
31	102	---	40	47	---	36	---	53	---	109	278	---
TOTAL	3381	48042	8737	13920	635	424.6	3715	4685	1215	4027	5955	2866
MEAN	109	1601	282	449	22.7	13.7	124	151	40.5	130	192	95.5
MAX	237	7040	1490	4550	42	46	510	1400	57	801	820	466
MIN	42	78	40	23	11	5.8	10	34	26	25	52	25
AC-FT	6710	95290	17330	27610	1260	842	7370	9290	2410	7990	11810	5680

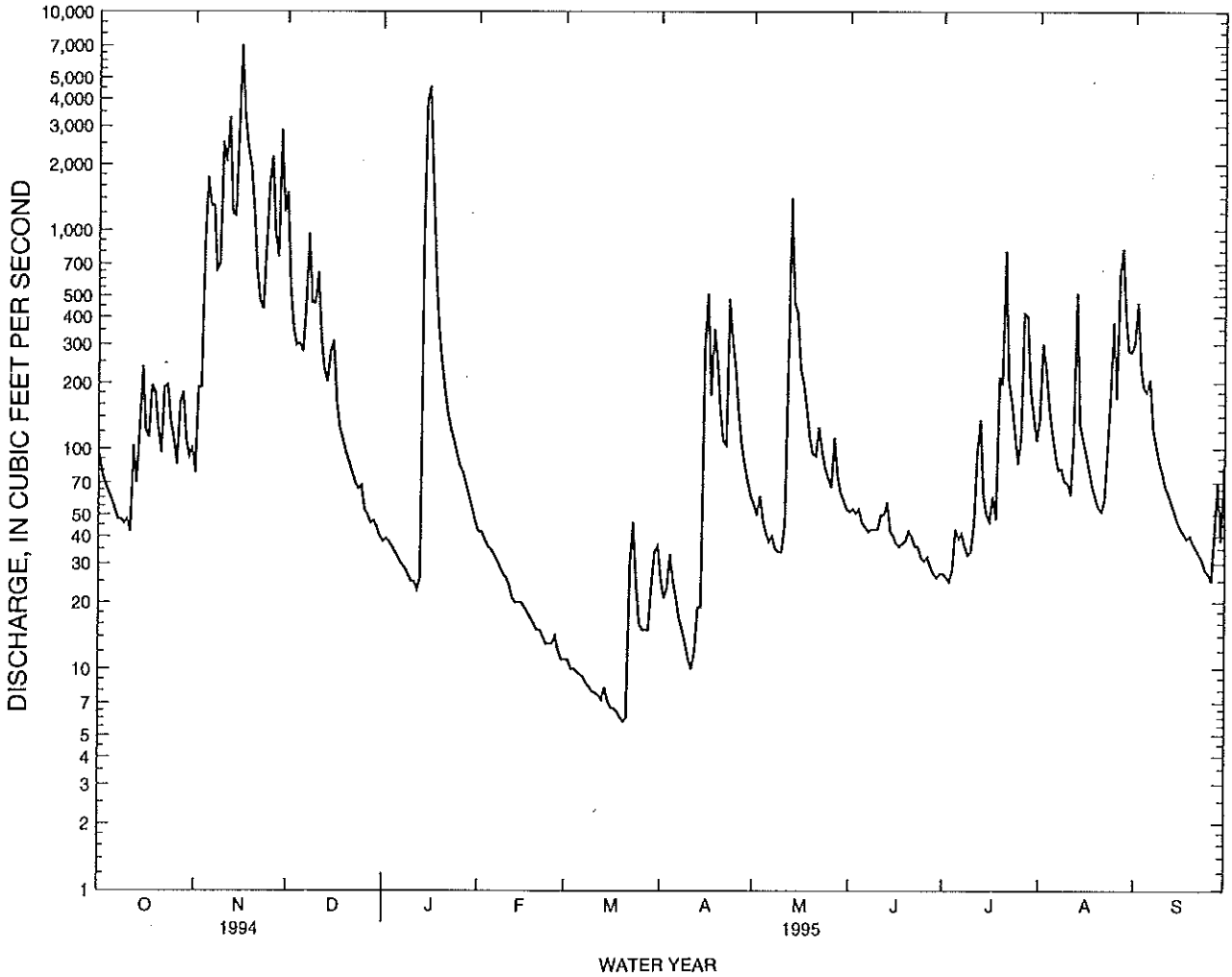
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1995, BY WATER YEAR (WY)

MEAN	172	395	357	300	300	420	394	231	127	217	299	171
MAX	765	2238	1368	2061	2050	2026	2262	1246	715	1140	1989	992
(WY)	1942	1991	1971	1975	1969	1991	1986	1964	1941	1989	1930	1930
MIN	2.96	19.1	7.15	1.10	.51	.26	7.83	6.23	5.48	2.79	12.8	10.2
(WY)	1985	1934	1934	1981	1983	1983	1992	1992	1981	1981	1971	1974

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

SUMMARY STATISTICS	FOR 1994 CALENDAR YEAR		FOR 1995 WATER YEAR		WATER YEARS 1928 - 1995		
ANNUAL TOTAL	149503		97602.6				
ANNUAL MEAN	410		267		286		
HIGHEST ANNUAL MEAN					588		1991
LOWEST ANNUAL MEAN					103		1981
HIGHEST DAILY MEAN	10600	Aug 12	7040	Nov 16	22200	Jan 8	1975
LOWEST DAILY MEAN	22	Jan 19	5.8	Mar 20	.22	Mar 20	1983
ANNUAL SEVEN-DAY MINIMUM	24	Jan 13	6.4	Mar 15	.23	Mar 17	1983
ANNUAL RUNOFF (AC-FT)	296500		193600		206900		
10 PERCENT EXCEEDS	1040		629		603		
50 PERCENT EXCEEDS	145		62		82		
90 PERCENT EXCEEDS	53		15		12		



HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	33	89	14	40	332	2820	50	27	69	49	26
2	55	38	56	14	38	1200	712	43	24	78	55	24
3	52	37	45	13	33	4130	290	38	24	77	49	27
4	46	43	40	12	31	847	190	36	23	78	49	32
5	42	37	42	12	31	438	144	34	22	144	41	25
6	37	33	39	11	30	289	114	35	22	522	42	25
7	35	32	38	10	28	219	92	34	19	164	39	e120
8	38	71	35	14	26	168	76	37	18	118	36	e170
9	77	56	34	14	24	135	65	39	23	79	33	e60
10	85	440	32	11	23	111	58	32	21	96	32	e50
11	106	467	30	12	21	93	60	31	19	114	31	e70
12	81	155	29	17	19	80	50	29	18	177	34	e180
13	68	109	28	15	18	74	41	28	16	124	451	e160
14	65	81	26	12	17	62	38	26	14	266	104	e90
15	74	66	28	10	16	55	55	24	13	138	79	e150
16	62	56	38	9.0	15	61	63	23	14	110	66	e130
17	54	50	34	9.9	16	59	60	22	18	116	59	e80
18	63	45	33	11	16	73	46	26	62	97	57	e160
19	81	42	29	46	15	82	107	43	328	103	49	e150
20	120	39	27	30	15	71	418	31	84	152	43	e70
21	79	37	26	402	38	65	216	26	56	128	40	e50
22	75	36	24	56	114	57	169	24	46	152	40	e45
23	65	34	22	87	1330	49	111	22	46	127	35	e40
24	56	33	21	62	3300	44	81	20	59	89	33	e50
25	51	36	20	201	7310	55	66	21	266	73	31	e45
26	50	35	19	129	2530	45	66	25	89	181	29	e40
27	46	32	21	73	1920	37	60	29	75	110	27	e35
28	45	60	20	67	732	37	66	24	64	82	28	e30
29	40	40	18	56	534	47	84	27	57	67	26	e27
30	37	79	16	50	---	51	72	27	56	59	24	e25
31	35	---	15	45	---	842	---	36	---	54	26	---
TOTAL	1878	2352	974	1524.9	18280	9908	6490	942	1623	3944	1737	2186
MEAN	60.6	78.4	31.4	49.2	630	320	216	30.4	54.1	127	56.0	72.9
MAX	120	467	89	402	7310	4130	2820	50	328	522	451	180
MIN	35	32	15	9.0	15	37	38	20	13	54	24	24
AC-FT	3730	4670	1930	3020	36260	19650	12870	1870	3220	7820	3450	4340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1996, BY WATER YEAR (WY)

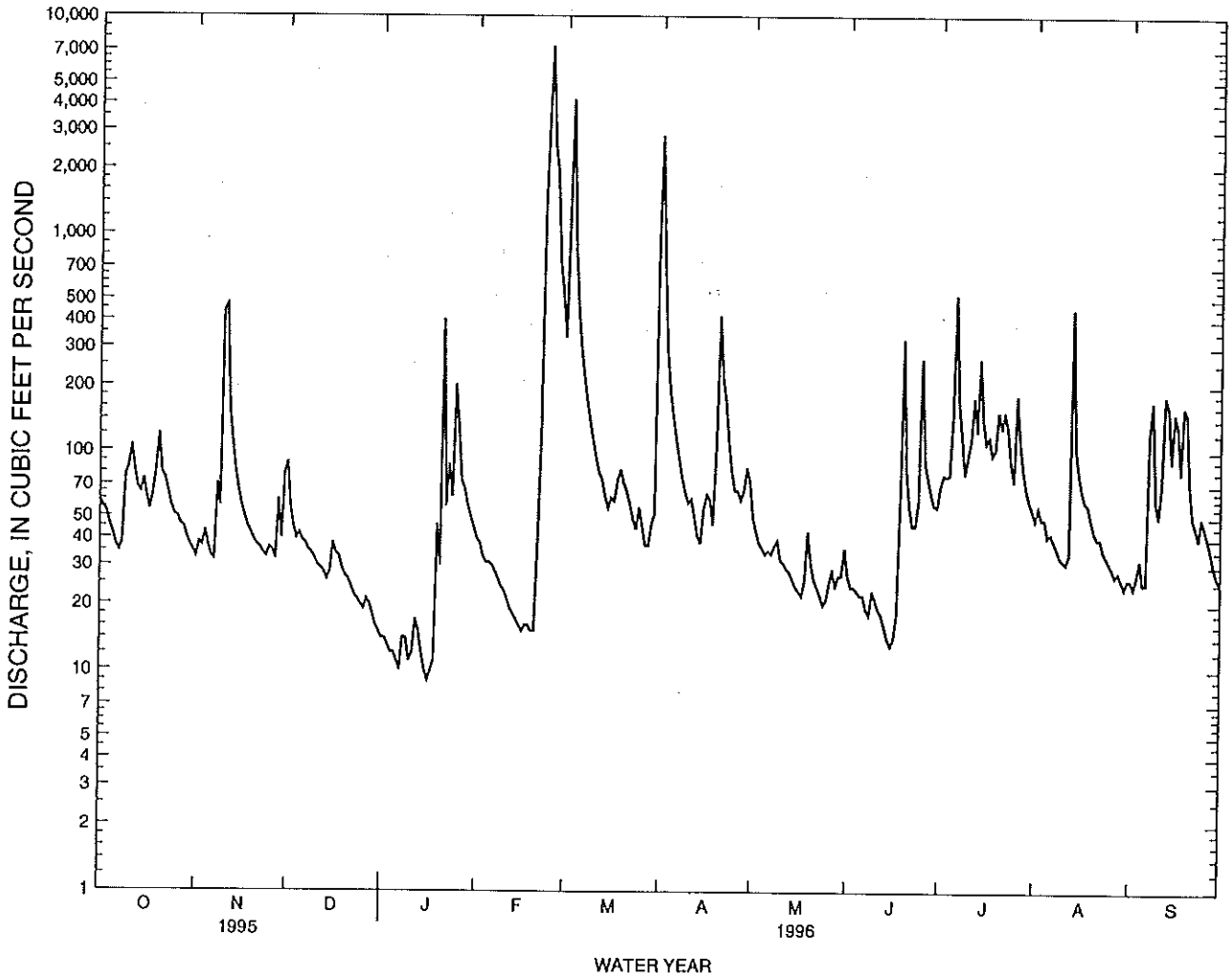
MEAN	171	390	352	297	305	419	391	228	126	215	293	169
MAX	765	2238	1368	2061	2050	2026	2262	1246	715	1140	1989	992
(WY)	1942	1991	1971	1975	1969	1991	1986	1964	1941	1989	1930	1930
MIN	2.96	19.1	7.15	1.10	.51	.26	8.19	7.09	5.48	2.79	12.8	10.2
(WY)	1985	1934	1934	1981	1983	1983	1992	1992	1981	1981	1971	1974

e Estimated

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1928 - 1996	
ANNUAL TOTAL	42646.6		51838.9			
ANNUAL MEAN	117		142		283	
HIGHEST ANNUAL MEAN					588	1991
LOWEST ANNUAL MEAN					103	1981
HIGHEST DAILY MEAN	4550	Jan 16	7310	Feb 25	22200	Jan 8 1975
LOWEST DAILY MEAN	5.8	Mar 20	9.0	Jan 16	.22	Mar 20 1983
ANNUAL SEVEN-DAY MINIMUM	6.4	Mar 15	12	Jan 12	.23	Mar 17 1983
ANNUAL RUNOFF (AC-FT)	84590		102800		205200	
10 PERCENT EXCEEDS	218		165		600	
50 PERCENT EXCEEDS	43		46		80	
90 PERCENT EXCEEDS	15		19		12	



HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e23	e60	228	e24	e8.0	e180	e180	27	31	887	423	107
2	e21	e800	890	e22	e7.5	e220	e140	27	83	407	273	82
3	e19	e480	434	e22	e7.5	e310	e120	25	63	299	224	72
4	e18	e250	312	e20	e7.0	e480	e95	28	51	222	180	57
5	e17	e350	249	e22	e7.0	e900	87	25	41	281	151	52
6	e16	e100	149	e22	e7.5	e1800	74	73	50	194	133	50
7	e15	118	120	e20	e8.0	e700	65	54	57	176	117	54
8	e14	80	105	e18	e34	e500	59	34	457	176	101	69
9	e13	71	91	e17	e22	e460	55	30	207	2100	87	55
10	e12	58	78	e15	e135	e220	55	30	117	773	77	48
11	e11	59	69	e14	e140	e630	108	27	132	481	72	43
12	e11	50	62	e13	e50	e430	122	33	128	327	73	44
13	e10	56	62	e12	e35	e160	120	44	114	236	55	37
14	e15	91	54	e11	e25	e100	88	47	93	188	53	49
15	e35	47	50	e10	e25	e80	82	131	81	157	48	207
16	e140	99	46	e9.5	e50	e65	71	104	73	138	51	103
17	e110	99	44	e9.0	e40	e60	64	104	82	128	52	171
18	e70	39	e40	e8.5	e50	e60	51	78	80	153	44	134
19	e800	36	e37	e8.0	e40	e50	46	67	275	145	41	94
20	e300	53	e35	e18	e230	e150	42	65	256	114	43	133
21	e120	61	e32	e25	e60	e80	39	52	182	99	44	166
22	e130	47	e32	e20	e40	e60	36	46	650	733	39	157
23	e280	65	e30	e16	e300	e60	35	41	242	1860	36	115
24	e190	112	e35	e14	e60	e250	33	38	156	216	35	104
25	e90	233	e50	e13	e60	e300	33	36	470	180	90	86
26	e60	138	e40	e12	e80	e400	43	34	3770	194	300	160
27	e140	166	e32	e11	e1050	e830	34	33	2450	143	174	105
28	e60	1180	e28	e10	e350	e1300	30	31	1680	119	127	100
29	e70	235	e30	e9.5	---	e1650	29	33	1890	2090	103	95
30	e65	176	e26	e9.0	---	e430	26	29	1180	5880	79	70
31	e70	---	e25	e8.5	---	e250	---	29	---	864	91	---
TOTAL	2945	5409	3515	463.0	2928.5	13165	2062	1455	15141	19960	3416	2819
MEAN	95.0	180	113	14.9	105	425	68.7	46.9	505	644	110	94.0
MAX	800	1180	890	25	1050	1800	180	131	3770	5880	423	207
MIN	10	36	25	8.0	7.0	50	26	25	31	99	35	37
AC-FT	5840	10730	6970	918	5810	26110	4090	2890	30030	39590	6780	5590

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1997, BY WATER YEAR (WY)

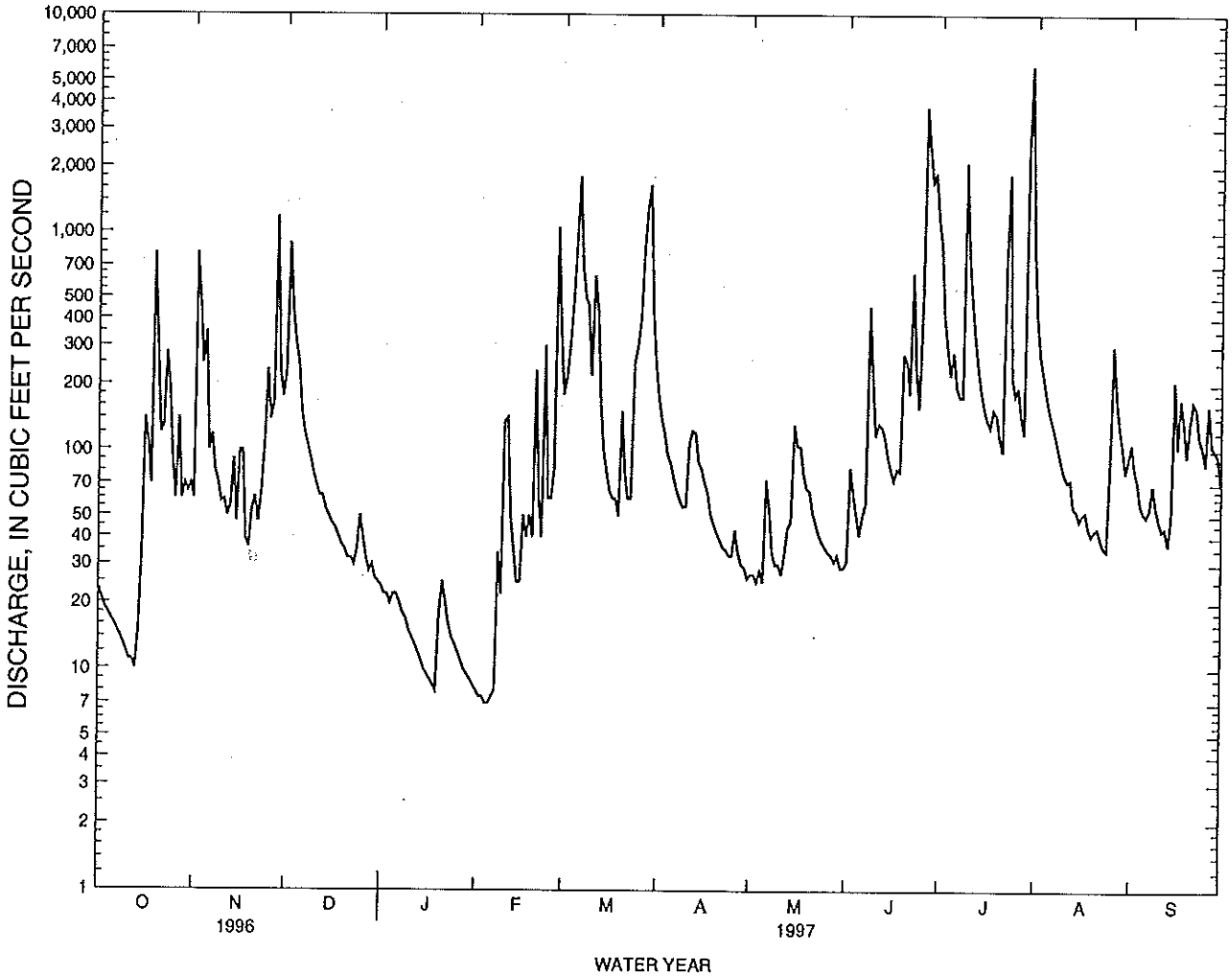
MEAN	169	387	349	292	303	419	387	226	132	222	292	168
MAX	765	2238	1368	2061	2050	2026	2262	1246	715	1140	1989	992
(WY)	1942	1991	1971	1975	1969	1991	1986	1964	1941	1989	1930	1930
MIN	2.96	19.1	7.15	1.10	.51	.26	7.83	6.23	5.48	2.79	12.8	10.2
(WY)	1985	1934	1934	1981	1983	1983	1992	1992	1981	1981	1971	1974

e Estimated

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1928 - 1997	
ANNUAL TOTAL	58503.9		73278.5			
ANNUAL MEAN	160		201		282	
HIGHEST ANNUAL MEAN					588	1991
LOWEST ANNUAL MEAN					103	1981
HIGHEST DAILY MEAN	7310	Feb 25	5880	Jul 30	22200	Jan 8 1975
LOWEST DAILY MEAN	9.0	Jan 16	7.0	Feb 4	.22	Mar 20 1983
ANNUAL SEVEN-DAY MINIMUM	12	Jan 12	7.5	Feb 1	.23	Mar 17 1983
ANNUAL RUNOFF (AC-FT)	116000		145300		204400	
10 PERCENT EXCEEDS	239		426		597	
50 PERCENT EXCEEDS	54		70		80	
90 PERCENT EXCEEDS	17		17		12	



HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	33	322	53	9.1	e30	62	80	141	97	33	96
2	53	37	555	43	7.9	e25	88	101	123	86	33	98
3	50	50	963	41	e10	e20	291	75	104	81	32	92
4	48	36	355	39	e9.9	e17	181	61	122	492	101	85
5	47	68	208	37	e9.9	e15	88	53	176	261	86	71
6	45	46	158	36	e9.8	e13	94	50	140	181	64	61
7	369	40	128	34	e9.8	e12	96	53	121	145	61	56
8	832	36	104	32	e9.7	e12	73	49	109	113	47	50
9	370	42	97	33	e9.7	e11	422	52	102	97	42	47
10	134	37	81	33	e9.6	e11	1150	161	144	86	39	53
11	100	35	74	31	e9.6	e10	1200	160	115	74	36	44
12	78	40	70	29	e9.6	e10	905	169	95	80	34	44
13	67	50	75	26	e9.5	e10	821	274	80	74	36	79
14	58	40	53	25	e9.5	e9.5	701	1080	139	59	44	61
15	52	36	49	24	e9.5	e9.5	338	461	901	60	38	52
16	48	35	46	22	e9.8	e9.4	219	301	664	52	35	55
17	48	34	54	20	e9.7	e9.4	159	320	280	48	32	49
18	44	31	210	19	e9.6	e9.3	128	542	198	44	30	48
19	38	32	80	19	e9.8	e9.3	116	679	150	43	28	40
20	37	32	116	18	e9.7	e9.2	120	1530	122	39	36	51
21	35	27	128	17	e9.6	e9.2	111	1270	140	39	56	1670
22	34	26	109	16	e10	e9.2	93	484	128	42	51	338
23	31	28	129	15	e20	e9.1	162	333	114	44	130	389
24	30	71	111	14	e65	e9.1	183	408	256	55	323	362
25	30	616	89	14	e55	e9.0	173	564	181	40	120	184
26	35	673	76	13	e40	e10	134	376	140	44	116	136
27	31	237	68	12	e30	11	111	247	137	38	125	108
28	47	203	62	12	e25	51	91	173	108	42	170	95
29	42	1260	56	12	---	159	75	143	109	40	137	83
30	39	537	51	10	---	72	65	143	105	40	119	71
31	37	---	51	9.5	---	61	---	127	---	36	104	---
TOTAL	2969	4468	4728	758.5	446.3	671.2	8450	10519	5444	2672	2338	4668
MEAN	95.8	149	153	24.5	15.9	21.7	282	339	181	86.2	75.4	156
MAX	832	1260	963	53	65	159	1200	1530	901	492	323	1670
MIN	30	26	46	9.5	7.9	9.0	62	49	80	36	28	40
AC-FT	5890	8860	9380	1500	885	1330	16760	20860	10800	5300	4640	9260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1998, BY WATER YEAR (WY)

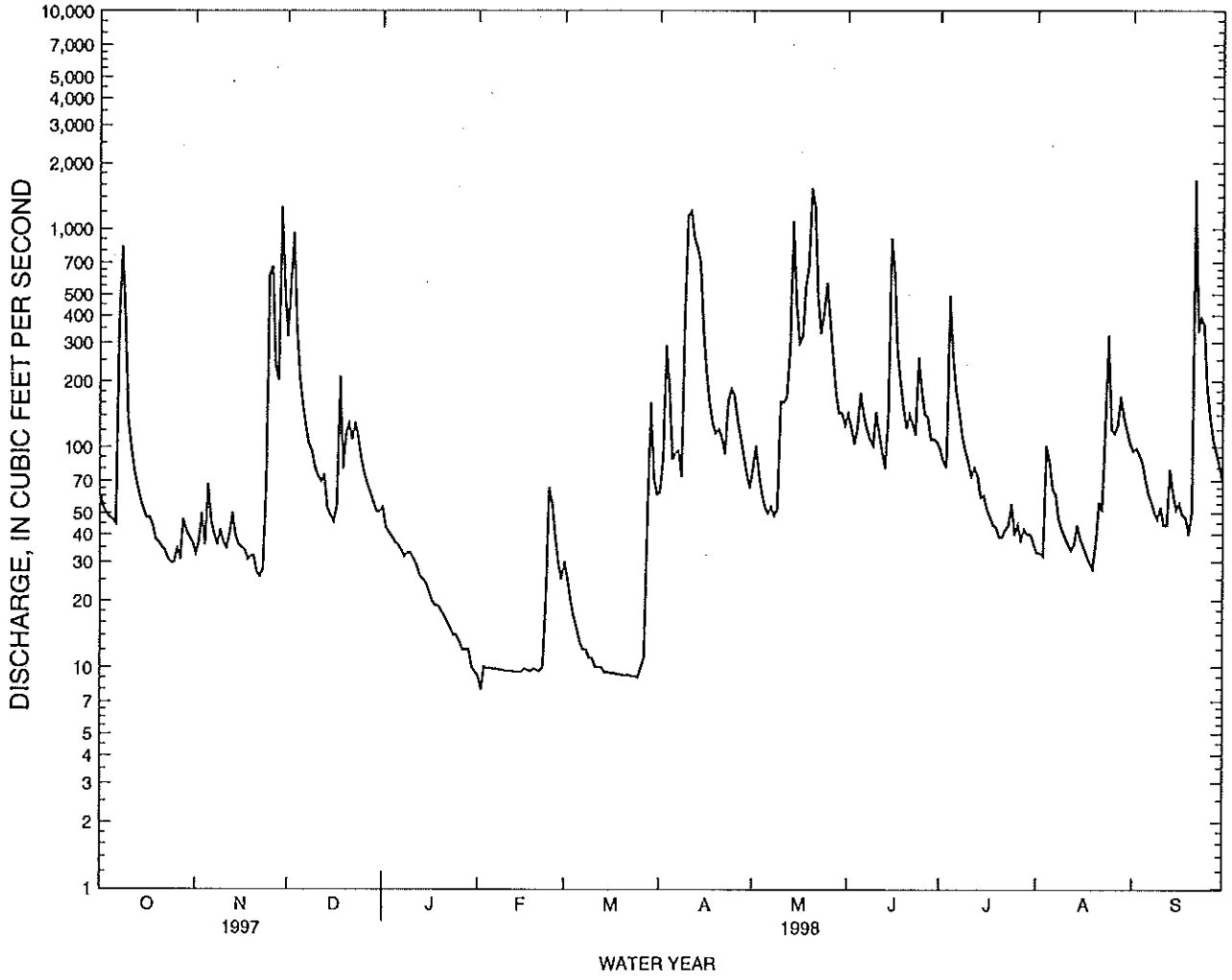
MEAN	168	384	346	288	298	413	385	227	132	220	289	168
MAX	765	2238	1368	2061	2050	2026	2262	1246	715	1140	1989	992
(WY)	1942	1991	1971	1975	1969	1991	1986	1964	1941	1989	1930	1930
MIN	2.96	19.1	7.15	1.10	.51	.26	7.83	6.23	5.48	2.79	12.8	10.2
(WY)	1985	1934	1934	1981	1983	1983	1992	1992	1981	1981	1971	1974

e Estimated

HAWAII, ISLAND OF HAWAII

16704000 WAILUKU RIVER AT PIIHONUA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1928 - 1998	
ANNUAL TOTAL	73574.5		48132.0			
ANNUAL MEAN	202		132		280	
HIGHEST ANNUAL MEAN					588	1991
LOWEST ANNUAL MEAN					103	1981
HIGHEST DAILY MEAN	5880	Jul 30	1670	Sep 21	22200	Jan 8 1975
LOWEST DAILY MEAN	7.0	Feb 4	7.9	Feb 2	.22	Mar 20 1983
ANNUAL SEVEN-DAY MINIMUM	7.5	Feb 1	9.2	Mar 19	.23	Mar 17 1983
ANNUAL RUNOFF (AC-FT)	145900		95470		202800	
10 PERCENT EXCEEDS	430		322		594	
50 PERCENT EXCEEDS	65		55		80	
90 PERCENT EXCEEDS	22		10		12	



Waiakea Stream near Mountain View, Hawaii

HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIKOU

LOCATION.--Lat 19°46′00″, long 155°09′16″, Hydrologic Unit 20010000, on left bank 0.7 mi downstream from Pohakupaa Stream, 4.1 mi west of Papaikou, and 4.8 mi northwest of Hilo Post Office.

DRAINAGE AREA.--11.6 mi^2.

PERIOD OF RECORD.--June 1911 to March 1913 (published as "at Kaiwiki, near Hilo"), February 1967 to current year.

REVISED RECORDS.--WDR HI-95-1: 1967-90 (maximum, 1988-90 (m), 1988-90).

GAGE.--Water-stage recorder. Elevation of gage is 1,540 ft above mean sea level (from topographic map). Prior to August 27, 1911, nonrecording gage and August 27, 1911 to March 24, 1913, water-stage recorder, at site 0.5 mi upstream at different datum.

REMARKS.--Record computed by Gary Sanchez. Records good. No diversion upstream. During period 1911-13, Honolii ditch diverted an average of about 3.2 ft^3/s upstream for fluming cane and domestic use.

AVERAGE DISCHARGE.--32 years (water years 1912, 1968-98), 129 ft^3/s (93,480 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft^3/s, May 23, 1978, gage height, 20.00 ft, from floodmarks and from rating curve extended above 4,610 ft^3/s on basis of slope-area measurement at gage height 20.00 ft; minimum, 0.8 ft^3/s, January 31, 1912.

EXTREMES FOR CURRENT YEAR.-- Peak discharges greater than base discharge of 4,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Sep. 21	0600	*4,350	*11.48				

Minimum discharge, 5.3 ft^3/s, March 24-26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	35	147	39	7.9	13	121	96	123	56	22	61
2	27	128	524	28	7.7	12	219	165	68	49	20	112
3	24	98	681	24	7.7	9.8	402	70	49	41	19	74
4	23	43	140	22	7.6	8.5	223	48	46	413	199	64
5	22	167	72	20	7.5	7.8	80	39	123	166	169	47
6	49	57	53	19	7.5	7.2	93	39	81	88	64	37
7	576	36	53	18	7.4	6.8	105	62	63	69	46	35
8	332	28	40	17	7.3	6.6	59	50	61	54	34	33
9	162	37	75	16	7.3	6.4	499	86	53	51	28	34
10	54	31	45	16	7.3	6.3	742	328	74	45	24	49
11	39	24	33	15	7.2	6.2	800	219	68	38	22	41
12	32	30	29	14	7.0	6.1	584	194	57	52	22	43
13	28	80	25	13	7.0	6.0	559	300	45	38	33	145
14	25	46	23	13	7.0	5.9	399	725	146	31	49	57
15	24	30	21	12	7.0	5.9	192	249	743	36	30	43
16	22	28	20	12	7.2	6.0	114	194	344	29	27	50
17	20	22	40	11	6.9	6.1	88	266	126	25	32	48
18	18	20	269	11	6.8	5.8	70	345	88	22	23	35
19	17	29	61	11	7.2	5.8	89	491	65	22	20	29
20	16	23	176	11	6.8	5.6	101	844	53	21	32	143
21	15	20	147	10	6.6	5.6	90	680	91	19	106	1500
22	16	19	68	10	7.0	5.6	63	195	123	20	56	156
23	17	27	99	9.7	13	5.4	204	173	81	24	321	344
24	15	237	94	9.4	62	5.4	193	368	292	38	359	222
25	21	888	54	9.2	51	5.3	180	324	127	26	107	95
26	29	503	47	9.0	22	5.7	103	212	78	38	94	77
27	34	161	53	8.9	14	66	72	114	87	29	107	60
28	165	185	49	8.7	11	94	53	76	53	68	209	52
29	88	886	39	8.5	---	365	41	71	47	45	127	46
30	40	264	31	8.2	---	222	36	147	58	33	113	37
31	43	---	29	8.0	---	118	---	93	---	27	90	---
TOTAL	2025	4182	3237	441.6	331.9	1041.8	6574	7263	3513	1713	2604	3769
MEAN	65.3	139	104	14.2	11.9	33.6	219	234	117	55.3	84.0	126
MAX	576	888	681	39	62	365	800	844	743	413	359	1500
MIN	15	19	20	8.0	6.6	5.3	36	39	45	19	19	29
AC-FT	4020	8290	6420	876	658	2070	13040	14410	6970	3400	5170	7480

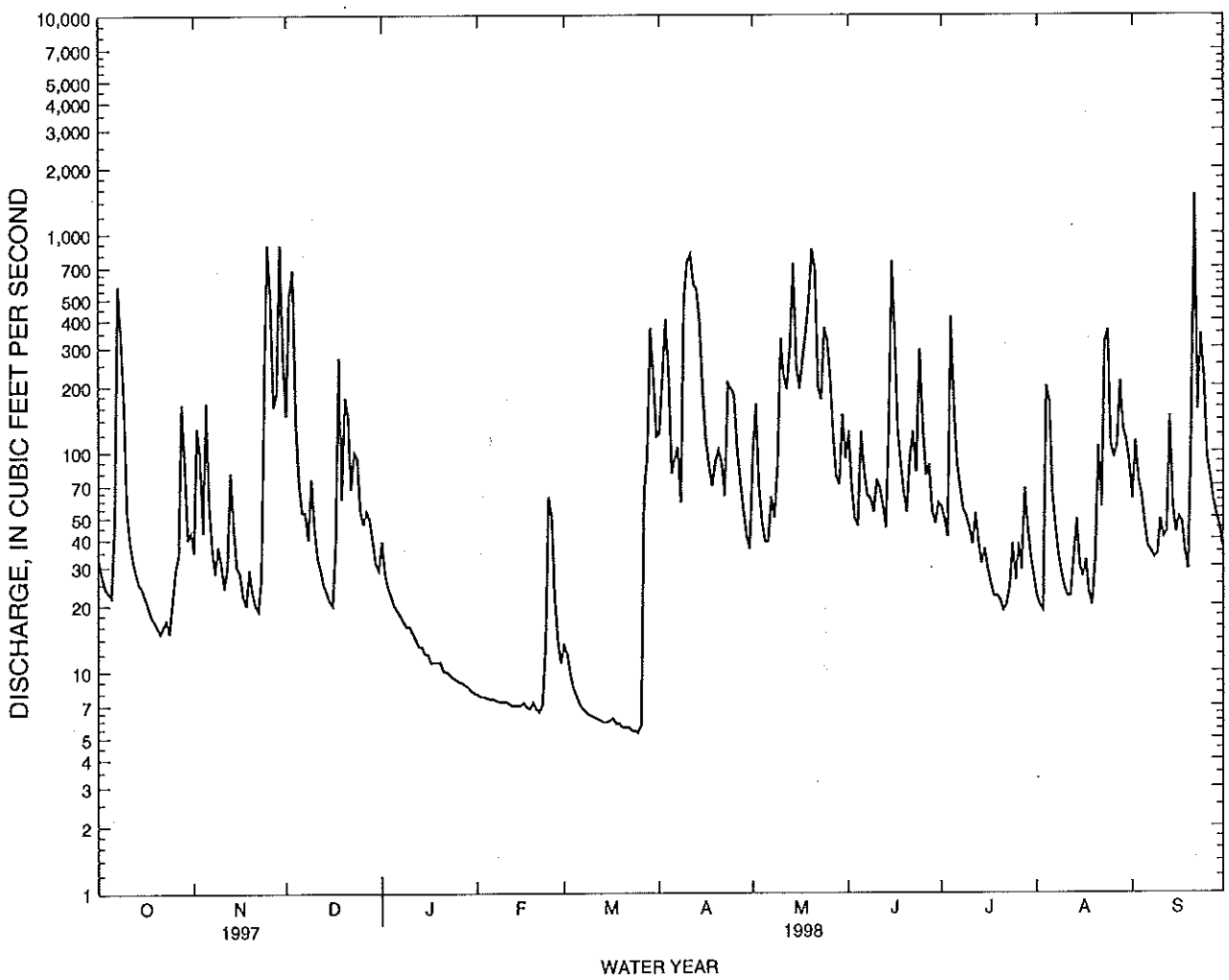
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1998, BY WATER YEAR (WY)

MEAN	78.8	194	152	126	110	209	190	97.4	78.8	122	117	84.9
MAX	222	783	625	648	752	1349	772	319	349	384	420	276
(WY)	1991	1995	1971	1975	1969	1980	1986	1989	1997	1989	1982	1994
MIN	9.70	18.7	10.5	5.64	4.80	6.71	12.5	11.4	8.61	9.66	13.9	8.81
(WY)	1985	1986	1984	1981	1980	1983	1992	1992	1981	1981	1973	1979

HAWAII, ISLAND OF HAWAII

16717000 HONOLII STREAM NEAR PAPAIKOU--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1911 - 1998	
ANNUAL TOTAL	45226.6		36695.3			
ANNUAL MEAN	124		101		129	
HIGHEST ANNUAL MEAN					220	1991
LOWEST ANNUAL MEAN					53.1	1981
HIGHEST DAILY MEAN	2900	Jul 30	1500	Sep 21	5780	Jan 8 1975
LOWEST DAILY MEAN	5.3	Feb 4	5.3	Mar 25	.80	Jan 31 1912
ANNUAL SEVEN-DAY MINIMUM	5.4	Jan 31	5.5	Mar 20	1.0	Feb 22 1980
ANNUAL RUNOFF (AC-FT)	89710		72790		93480	
10 PERCENT EXCEEDS	240		242		266	
50 PERCENT EXCEEDS	43		43		42	
90 PERCENT EXCEEDS	11		7.4		11	



HAWAII, ISLAND OF HAWAII

16720000 KAWAINUI STREAM NEAR KAMUELA

LOCATION.--Lat 20°05'18", long 155°40'58", Hydrologic Unit 20010000, on left bank 250 ft upstream from Upper Hamakua ditch intake, and 4.5 mi north of Kamuela.

DRAINAGE AREA.--1.58 mi^2.

PERIOD OF RECORD.--January 1964 to current year.

REVISED RECORDS.--WDR HI-95-1: 1965-90 (m), 1970, 1971, 1979, 1984, 1990.

GAGE.--Water-stage recorder. Elevation of gage is 4,060 ft above mean sea level (from topographic map).

REMARKS.--Record computed by Clayton Yoshida. Records fair. No diversion upstream.

AVERAGE DISCHARGE.--34 years (water years 1965-98), 15.0 ft^3/s (10,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,160 ft^3/s, November 18, 1979, gage height, 10.03 ft, from rating curve extended above 53 ft^3/s on basis of computations of peak flow over dam and slope-area measurement at gage height 10.03 ft; minimum, 0.01 ft^3/s, January 23-28, February 20-21, 1977, December 16-19, February 23, 24, 1980 (revised).

EXTREMES FOR CURRENT YEAR.-- Peak discharges greater than base discharge of 440 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 10	0545	461	5.09	Sep. 21	0530	*573	*5.50

Minimum discharge, 0.13 ft^3/s, February 13-15, March 15, 16, 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	46	42	14	.21	2.9	53	76	36	19	5.8	97
2	1.8	125	141	2.3	.41	1.7	96	45	32	10	12	75
3	1.3	22	120	1.0	.25	1.2	83	11	54	13	12	18
4	5.0	23	9.7	.57	.21	.89	52	5.9	28	70	117	22
5	1.7	25	10	28	.19	.68	19	15	20	42	37	6.6
6	40	3.5	59	43	.17	.50	84	32	9.1	33	16	3.6
7	29	1.2	31	4.8	.16	.41	43	25	36	37	8.9	6.5
8	4.4	.67	6.3	2.8	.16	.33	23	12	20	12	4.8	4.9
9	1.8	7.5	8.6	1.6	.16	.27	130	22	53	6.9	3.0	9.0
10	1.8	2.9	2.4	1.2	.15	.22	178	63	52	19	2.2	9.8
11	1.1	3.8	1.2	.88	.14	.21	174	32	44	96	1.7	9.5
12	.79	27	.88	.72	.14	.18	63	35	28	56	1.4	14
13	.60	33	.86	.59	.14	.16	94	50	44	9.4	2.5	21
14	.47	6.3	.64	.50	.13	.14	144	69	103	4.7	19	8.8
15	.42	1.6	.49	.43	.13	.13	43	41	98	14	28	14
16	.40	.73	.53	.41	.34	.24	20	28	50	4.9	5.6	16
17	.45	.44	17	.36	.35	.33	16	42	19	3.0	4.1	14
18	7.2	1.4	7.0	.33	.29	.24	26	36	14	2.1	2.7	5.8
19	2.8	12	1.5	.29	.39	.19	23	64	10	4.1	2.4	3.5
20	1.7	1.3	.74	.27	.38	.16	28	29	24	9.3	65	25
21	1.1	.59	.47	.25	.36	.13	8.9	24	73	13	71	161
22	.75	.49	.39	.22	51	.14	30	15	20	34	20	16
23	.58	11	1.7	.22	100	3.7	73	42	27	37	36	56
24	.81	77	1.1	.20	55	5.0	30	95	79	21	25	29
25	6.9	180	8.8	.20	18	8.7	18	46	20	7.8	32	6.5
26	14	69	5.1	.20	5.2	25	6.0	35	16	9.3	67	3.7
27	12	18	8.8	.20	2.6	71	3.4	13	50	8.6	56	2.5
28	9.8	95	4.2	.18	1.8	39	14	16	7.1	37	27	2.0
29	5.3	142	1.3	.18	---	123	7.1	41	33	8.0	10	1.6
30	2.5	17	2.8	.18	---	46	4.3	28	32	19	9.5	1.8
31	1.9	---	154	.16	---	70	---	27	---	18	5.9	---
TOTAL	161.77	954.42	649.50	106.24	238.46	402.75	1586.7	1114.9	1131.2	678.1	710.5	664.1
MEAN	5.22	31.8	21.0	3.43	8.52	13.0	52.9	36.0	37.7	21.9	22.9	22.1
MAX	40	180	154	43	100	123	178	95	103	96	117	161
MIN	.40	.44	.39	.16	.13	.13	3.4	5.9	7.1	2.1	1.4	1.6
AC-FT	321	1890	1290	211	473	799	3150	2210	2240	1350	1410	1320

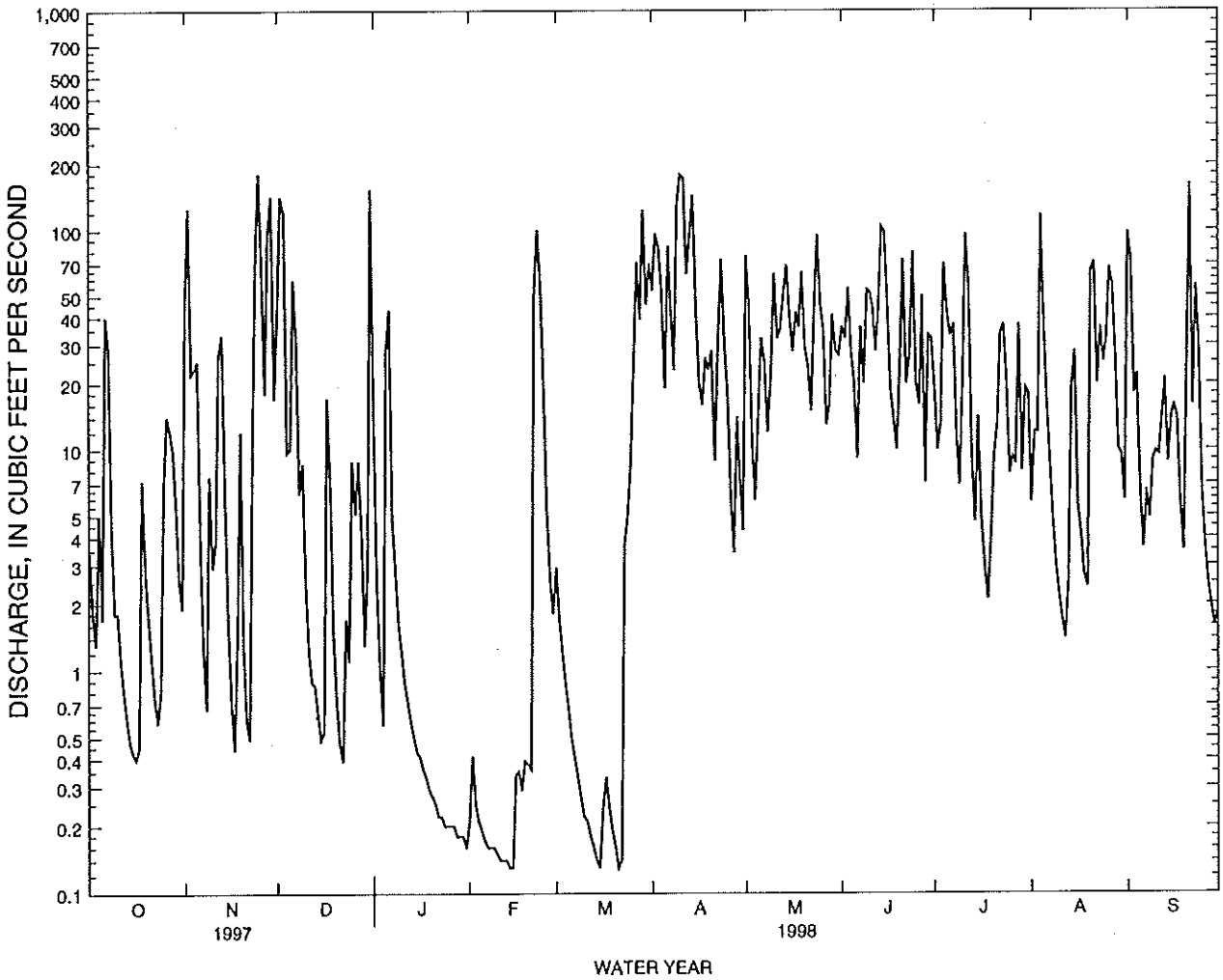
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

MEAN	8.76	16.5	15.3	14.9	12.0	20.6	23.5	12.9	14.5	19.0	14.6	8.49
MAX	27.3	55.8	41.4	62.5	40.6	98.0	67.5	36.0	37.7	37.0	31.8	27.5
(WY)	1984	1980	1971	1979	1969	1980	1986	1998	1998	1982	1982	1992
MIN	.17	1.77	.51	.34	.51	3.33	1.71	3.17	3.18	4.56	2.70	.27
(WY)	1985	1990	1981	1981	1995	1983	1992	1996	1985	1981	1971	1965

HAWAII, ISLAND OF HAWAII

16720000 KAWAINUI STREAM NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1964 - 1998	
ANNUAL TOTAL	5643.05		8398.64			
ANNUAL MEAN	15.5		23.0		15.0	
HIGHEST ANNUAL MEAN					26.3	1980
LOWEST ANNUAL MEAN					7.33	1981
HIGHEST DAILY MEAN	223	Jul 9	180	Nov 25	612	Nov 18 1979
LOWEST DAILY MEAN	.10	Feb 5	.13	Feb 14	.01	Jan 23 1977
ANNUAL SEVEN-DAY MINIMUM	.11	Feb 3	.14	Feb 9	.01	Jan 22 1977
ANNUAL RUNOFF (AC-FT)	11190		16660		10900	
10 PERCENT EXCEEDS	42		68		41	
50 PERCENT EXCEEDS	4.3		9.1		4.5	
90 PERCENT EXCEEDS	.38		.25		.49	



HAWAII, ISLAND OF HAWAII

16720300 KAWAIKI STREAM NEAR KAMUELA

LOCATION.--Lat 20°05'13", long 155°40'59", Hydrologic Unit 20010000, on right bank 0.2 mi upstream from Upper Hamakua ditch intake, and 4.4 mi north of Kamuela.

DRAINAGE AREA.--0.45 mi^2.

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WDR HI-80-1: 1969-79(P), WDR HI-95-1: 1968-90.

GAGE.--Water-stage recorder. Elevation of gage is 4,090 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Roy Taogoshi. Records good. No diversions upstream.

AVERAGE DISCHARGE.-- 30 years (water years 1969-98), 3.76 ft^3/s (2,730 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,470 ft^3/s, November 18, 1979, gage height, 8.32 ft, from rating curve extended above 33 ft^3/s on basis of slope-area measurement at gage height 8.32 ft; minimum, 0.00 ft^3/s, November 14, 1968, July 5-11, 1981, March 10-16, 1983, October 16-20, 22, 1984, November 2, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 120 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 14	0315	127	2.77	Sep. 21	0500	*200	*3.26

Minimum discharge, 0.07 ft^3/s, February 15, 16, March 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.97	6.8	12	3.5	.12	.68	12	19	9.2	5.4	1.9	27
2	.59	28	34	.86	.14	.50	25	11	8.6	3.5	4.2	20
3	.83	5.4	29	.51	.12	.34	20	3.1	14	4.6	3.9	5.0
4	2.1	6.8	2.3	.39	.11	.28	14	2.0	8.5	19	32	6.4
5	.66	7.3	2.5	8.7	.11	.22	5.4	5.1	5.6	9.6	9.9	1.9
6	12	1.4	13	11	.11	.19	19	9.3	3.1	8.6	4.1	1.1
7	6.2	.64	6.9	1.1	.11	.17	10	6.5	11	9.2	2.5	2.0
8	1.1	.48	1.8	.63	.11	.14	6.5	3.1	5.7	3.7	1.5	1.7
9	.64	3.4	2.0	.43	.09	.11	32	5.4	14	2.1	1.0	3.0
10	.52	1.5	.78	.34	.09	.11	47	15	13	5.1	.88	3.2
11	.42	2.0	.49	.29	.09	.09	50	7.9	11	25	.72	3.5
12	.33	8.5	.43	.24	.09	.09	16	9.3	7.4	14	.59	4.8
13	.28	8.3	.43	.23	.09	.09	20	13	12	2.6	1.3	5.8
14	.24	2.0	.40	.20	.09	.10	39	17	25	1.3	6.3	2.6
15	.23	.76	.37	.20	.09	.14	10	11	25	4.5	7.1	4.3
16	.22	.48	.38	.20	.14	.17	4.4	7.0	13	1.6	1.7	4.9
17	.25	.37	3.6	.18	.14	.18	4.9	12	5.3	1.0	1.6	4.1
18	3.1	.79	2.0	.17	.12	.13	6.3	9.5	4.3	.81	1.1	1.9
19	1.1	3.6	.67	.16	.19	.11	5.7	16	3.5	1.9	1.1	1.2
20	.65	.80	.44	.14	.16	.09	7.1	6.3	6.2	3.7	18	7.4
21	.45	.50	.35	.14	.15	.09	2.6	5.4	19	4.5	18	43
22	.33	.48	.33	.14	15	.07	9.4	3.8	4.6	9.9	4.7	3.2
23	.27	4.3	.77	.14	27	1.6	16	9.4	6.5	11	8.9	14
24	.45	17	.59	.14	13	1.6	7.5	24	18	5.6	6.1	6.9
25	2.3	49	3.1	.14	3.9	2.3	4.5	10	5.6	2.6	9.3	1.1
26	3.2	16	1.9	.14	1.1	5.8	1.7	8.2	4.7	3.4	17	.63
27	3.3	5.2	2.4	.14	.64	14	1.1	3.5	13	3.7	13	.46
28	2.8	21	1.4	.13	.47	8.2	3.5	5.1	2.0	10	7.0	.39
29	1.4	32	.61	.11	---	23	2.2	12	9.0	2.2	3.3	.36
30	.76	3.5	1.4	.11	---	8.7	1.5	7.1	7.9	5.5	3.1	.33
31	.71	---	40	.11	---	13	---	7.2	---	5.3	1.9	---
TOTAL	48.40	238.30	166.34	30.91	63.57	82.29	404.3	284.2	295.7	190.91	193.69	182.17
MEAN	1.56	7.94	5.37	1.00	2.27	2.65	13.5	9.17	9.86	6.16	6.25	6.07
MAX	12	49	40	11	27	23	50	24	25	25	32	43
MIN	.22	.37	.33	.11	.09	.07	1.1	2.0	2.0	.81	.59	.33
AC-FT	96	473	330	61	126	163	802	564	587	379	384	361

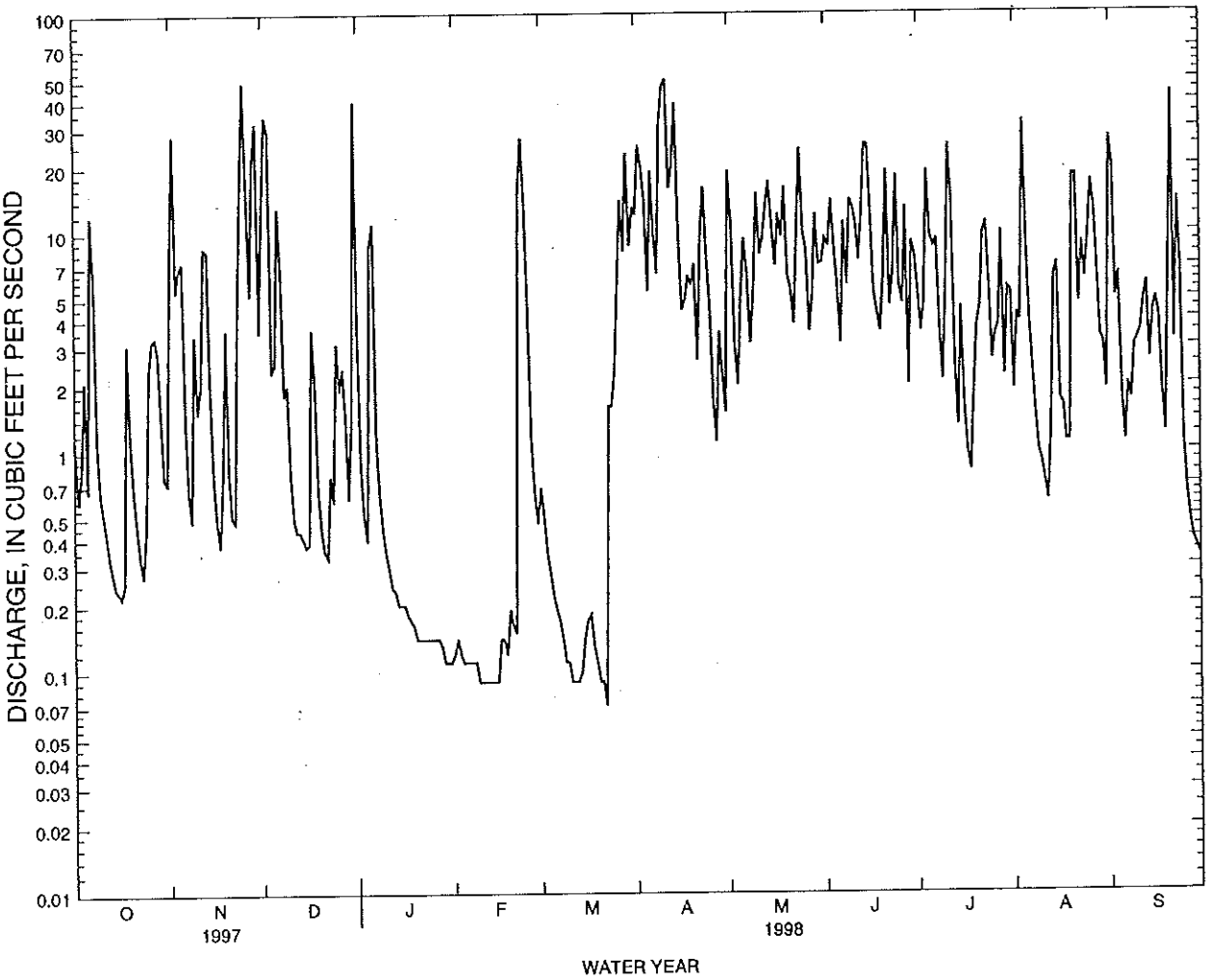
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

MEAN	2.03	4.08	3.42	3.55	2.63	5.06	6.03	3.33	3.89	4.80	3.81	2.22
MAX	5.35	23.2	9.65	13.8	10.6	24.0	17.0	9.17	9.86	8.05	7.75	8.15
(WY)	1991	1980	1971	1979	1969	1980	1986	1998	1998	1997	1970	1992
MIN	.006	.55	.11	.067	.15	.74	.53	.96	.88	.87	.67	.19
(WY)	1985	1996	1981	1981	1983	1983	1992	1996	1985	1981	1973	1984

HAWAII, ISLAND OF HAWAII

16720300 KAWAIKI STREAM NEAR KAMUELA

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1968 - 1998	
ANNUAL TOTAL	1442.62		2180.78			
ANNUAL MEAN	3.95		5.97		3.76	
HIGHEST ANNUAL MEAN					7.48	1980
LOWEST ANNUAL MEAN					1.42	1981
HIGHEST DAILY MEAN	58	Jul 9	50	Apr 11	297	Nov 18 1979
LOWEST DAILY MEAN	.08	May 31	.07	Mar 22	.00	Nov 14 1968
ANNUAL SEVEN-DAY MINIMUM	.10	May 25	.09	Feb 9	.00	Jul 5 1981
ANNUAL RUNOFF (AC-FT)	2860		4330		2730	
10 PERCENT EXCEEDS	9.9		16		9.4	
50 PERCENT EXCEEDS	1.4		3.1		1.3	
90 PERCENT EXCEEDS	.21		.14		.16	



HAWAII, ISLAND OF HAWAII

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 downstream from Kawaiki Stream intake and 4.4 mi north of Kamuela.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorders and concrete control. Elevation of gage is 4,020 ft (from topographic map).

REMARKS.--Records computed by Dale Nishimoto. Records good except for estimated daily discharges which are poor. Ditch diverts from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela. Rain gage located at station monitoring total rainfall between service dates.

AVERAGE DISCHARGE.-- 34 years (water years 1965-98), 7.46 ft^3/s (5,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 49 ft^3/s, November 2, 1967; no flow, July 8-9, 14-16, 1992, August 4-6, 1992.

EXTREMES FOR CURRENT YEAR.-- Maximum daily discharge, 15 ft^3/s, April 9-11, 14, June 14-15, July 11, August 4, September 21; minimum daily, 0.15 ft^3/s, February 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	9.9	8.6	11	.33	4.1	14	13	14	13	7.9	14
2	2.8	13	13	4.9	.52	2.5	14	14	14	12	9.8	14
3	2.4	12	13	2.9	.34	1.6	14	12	14	11	12	13
4	6.7	12	11	2.0	.29	1.2	14	8.5	14	14	15	13
5	2.8	12	8.3	3.0	.26	.96	13	13	13	14	14	8.3
6	5.8	6.5	12	12	.25	.74	14	14	11	14	12	4.5
7	11	3.1	12	5.7	.23	.59	14	13	13	14	11	8.6
8	5.6	2.2	8.6	3.6	.22	.48	13	11	13	12	6.6	6.8
9	2.9	8.5	9.6	2.3	.20	.40	15	13	14	8.9	4.1	9.2
10	2.8	6.2	4.7	1.7	.20	.35	15	14	14	12	3.2	11
11	1.8	7.0	2.9	1.3	.19	.32	15	14	14	15	2.5	11
12	1.3	12	2.4	1.1	.17	.29	14	14	14	14	1.9	11
13	.99	12	2.5	.91	.17	.26	14	14	14	10	4.5	13
14	.82	8.7	2.1	.79	.15	.24	15	14	15	6.1	13	10
15	.80	3.9	1.8	.72	.17	.22	14	14	15	12	13	13
16	.75	2.3	2.0	.66	.50	.48	13	14	14	6.5	7.7	13
17	.87	1.6	9.9	.60	.49	.66	13	14	13	3.7	5.9	12
18	8.0	1.7	8.7	.56	.40	.45	13	14	13	2.6	4.0	7.4
19	4.3	9.2	3.7	.53	.65	.35	13	14	12	6.2	3.7	4.3
20	2.7	3.5	2.4	.51	.51	.27	13	13	13	11	12	7.5
21	1.8	2.0	1.7	.47	.54	.23	11	13	14	12	14	15
22	1.2	1.9	1.5	.45	7.7	.23	12	11	13	14	13	12
23	.94	7.1	4.1	.42	13	6.0	14	14	12	14	13	14
24	1.4	12	3.2	.42	13	7.2	14	14	14	13	13	13
25	8.0	13	10	.41	12	9.0	13	14	13	10	13	8.2
26	8.9	12	8.2	.43	6.6	12	8.1	14	12	12	14	4.8
27	11	12	8.8	.39	3.7	13	4.7	12	14	9.6	14	3.2
28	10	13	7.1	.35	2.6	13	11	12	8.8	14	13	2.9
29	6.5	13	3.4	.31	---	14	9.3	14	13	9.8	12	2.5
30	3.7	11	3.7	.28	---	14	6.3	13	14	12	11	2.7
31	2.9	---	13	.26	---	14	---	13	---	13	7.9	---
TOTAL	126.07	244.3	203.9	60.97	65.38	119.12	380.4	408.5	398.8	345.4	301.7	282.9
MEAN	4.07	8.14	6.58	1.97	2.33	3.84	12.7	13.2	13.3	11.1	9.73	9.43
MAX	11	13	13	12	13	14	15	14	15	15	15	15
MIN	.75	1.6	1.5	.26	.15	.22	4.7	8.5	8.8	2.6	1.9	2.5
AC-FT	250	485	404	121	130	236	755	810	791	685	598	561

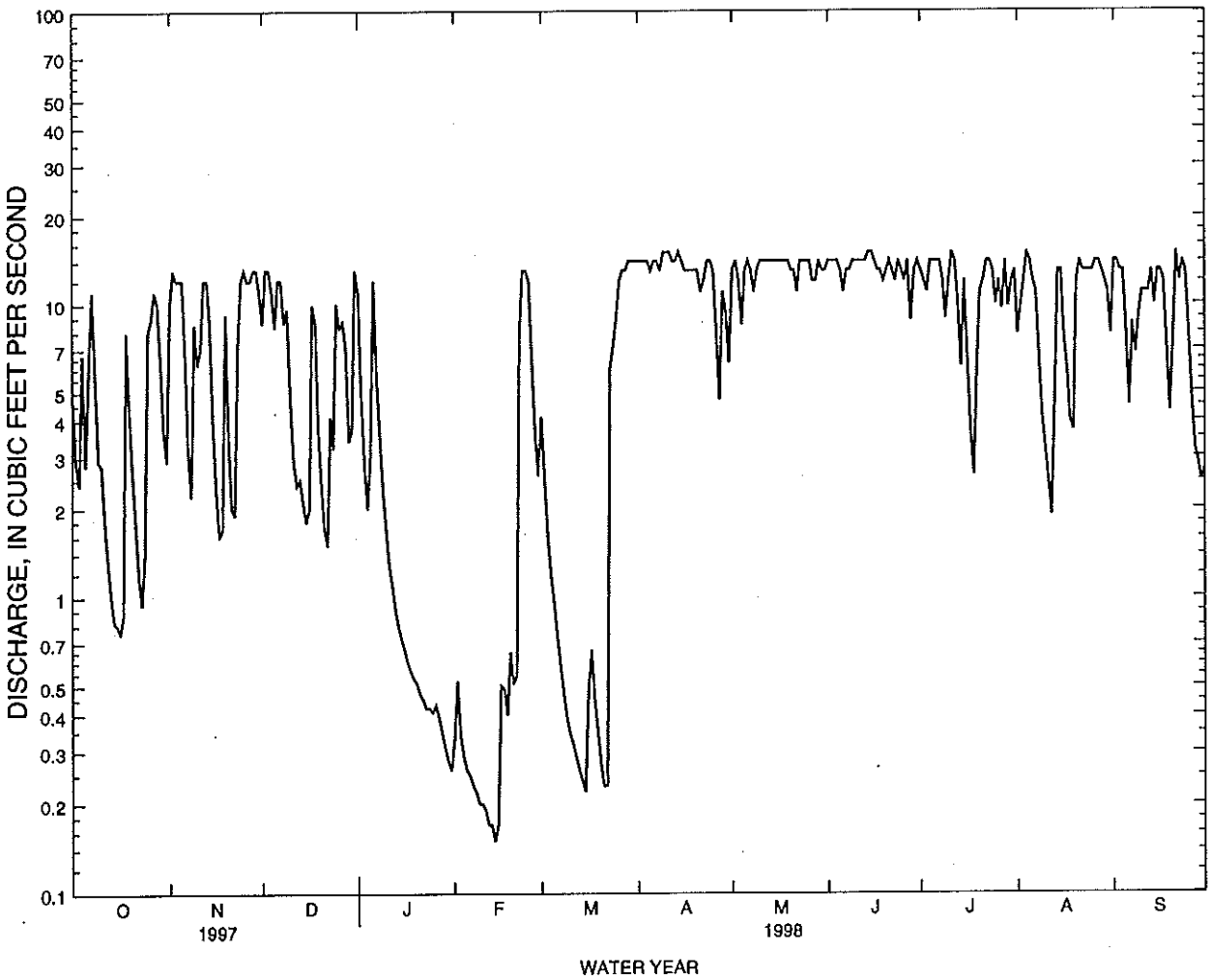
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 1998, BY WATER YEAR (WY)

MEAN	5.55	7.69	6.78	5.78	5.39	8.01	9.29	7.45	8.73	10.5	8.37	5.76
MAX	14.0	21.0	17.5	11.9	17.1	16.0	22.1	16.2	16.5	20.5	18.7	13.4
(WY)	1965	1968	1971	1967	1969	1973	1970	1970	1966	1967	1966	1964
MIN	.14	1.85	.77	.53	.77	1.69	2.23	2.18	3.30	2.67	2.66	.19
(WY)	1985	1996	1981	1981	1995	1974	1992	1992	1984	1984	1973	1965

HAWAII, ISLAND OF HAWAII

16720500 UPPER HAMAKUA DITCH BELOW KAWAIKI STREAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1919 - 1998	
ANNUAL TOTAL	2299.79		2937.44			
ANNUAL MEAN	6.30		8.05		7.46	
HIGHEST ANNUAL MEAN					11.3	1970
LOWEST ANNUAL MEAN					3.78	1984
HIGHEST DAILY MEAN	16	Feb 25	15	Apr 9	49	Nov 2 1967
LOWEST DAILY MEAN	.28	Feb 8	.15	Feb 14	.00	Jul 8 1992
ANNUAL SEVEN-DAY MINIMUM	.32	Feb 5	.18	Feb 9	.04	Dec 29 1980
ANNUAL RUNOFF (AC-FT)	4560		5830		5400	
10 PERCENT EXCEEDS	12		14		17	
50 PERCENT EXCEEDS	5.8		9.3		5.2	
90 PERCENT EXCEEDS	.81		.45		.68	



HAWAII, ISLAND OF HAWAII

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 upstream from Alakahi Stream, and 3.6 mi north of Kamuela.

PERIOD OF RECORD.--April 1968 to current year.

REVISED RECORDS.--WDR HI-94-1: 1982-90.

GAGE.--Water-stage recorder and concrete, Columbus-type control. Elevation of gage is 3,890 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Gary Sanchez. Records good. Ditch diverts water from Kawainui and Kawaiki Streams for irrigation in vicinity of Kamuela.

AVERAGE DISCHARGE.--30 years (water years 1969-98), 5.30 ft^3/s (3,840 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 41 ft^3/s, August 18, 1972; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 26 ft^3/s, April 11; no flow March 9-15, 20-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	8.1	11	9.2	.01	2.3	12	15	15	13	6.3	15
2	1.6	15	22	4.3	.01	1.0	15	15	15	10	7.5	17
3	1.3	10	23	2.1	.01	.37	14	11	17	9.5	9.3	13
4	5.0	11	14	1.2	.01	.12	14	8.0	16	16	17	13
5	1.4	12	10	3.3	.01	.02	12	12	14	14	14	7.6
6	5.3	5.8	16	12	.01	.01	15	14	11	14	11	4.3
7	9.7	2.2	14	4.9	.01	.01	13	13	13	14	9.2	6.5
8	4.5	1.1	9.4	2.8	.01	.01	13	10	13	11	5.8	5.3
9	1.8	6.5	9.8	1.4	.01	.00	17	12	16	7.8	3.4	6.6
10	1.4	5.0	5.2	.84	.01	.00	21	15	17	10	2.3	8.3
11	.69	5.3	3.0	.54	.01	.00	26	14	16	16	1.4	8.0
12	.29	11	2.2	.40	.01	.00	20	14	15	16	.91	8.3
13	.09	11	2.0	.20	.01	.00	20	16	16	10	2.4	10
14	.03	7.5	1.4	.11	.01	.00	24	17	18	6.0	9.5	7.7
15	.02	2.9	1.1	.05	.01	.00	19	16	20	10	10	9.4
16	.02	1.3	.99	.04	.01	.01	16	15	18	5.7	5.6	9.6
17	.02	.69	7.2	.04	.01	.02	14	16	15	3.0	4.1	9.3
18	4.4	.58	7.0	.03	.01	.01	14	16	14	1.9	2.6	5.5
19	2.2	7.2	2.7	.02	.01	.01	14	17	12	4.2	2.3	3.0
20	.96	2.3	1.3	.02	.01	.00	15	15	13	8.2	11	5.7
21	.36	.94	.78	.02	.01	.00	11	14	16	9.2	15	18
22	.08	.82	.60	.02	5.6	.00	13	11	13	12	11	12
23	.02	5.1	2.2	.01	14	1.0	17	14	12	13	11	16
24	.11	13	1.6	.01	12	2.3	15	19	16	11	11	13
25	3.8	19	7.0	.01	9.6	3.6	13	16	13	8.3	12	8.2
26	5.6	15	6.0	.01	5.0	7.7	8.1	16	12	9.0	15	5.1
27	7.7	12	6.4	.01	2.1	10	5.0	12	15	7.6	14	3.4
28	7.4	17	5.3	.01	1.1	10	9.7	12	8.3	12	13	2.5
29	4.7	19	2.0	.01	---	13	8.4	15	13	7.7	10	1.8
30	2.1	13	2.4	.01	---	11	5.7	14	14	9.9	9.2	1.8
31	1.4	---	18	.01	---	11	---	14	---	11	6.5	---
TOTAL	77.29	241.33	215.57	43.62	49.61	73.49	433.9	438.0	436.3	311.0	263.31	254.9
MEAN	2.49	8.04	6.95	1.41	1.77	2.37	14.5	14.1	14.5	10.0	8.49	8.50
MAX	9.7	19	23	12	14	13	26	19	20	16	17	18
MIN	.02	.58	.60	.01	.01	.00	5.0	8.0	8.3	1.9	.91	1.8
AC-FT	153	479	428	87	98	146	861	869	865	617	522	506

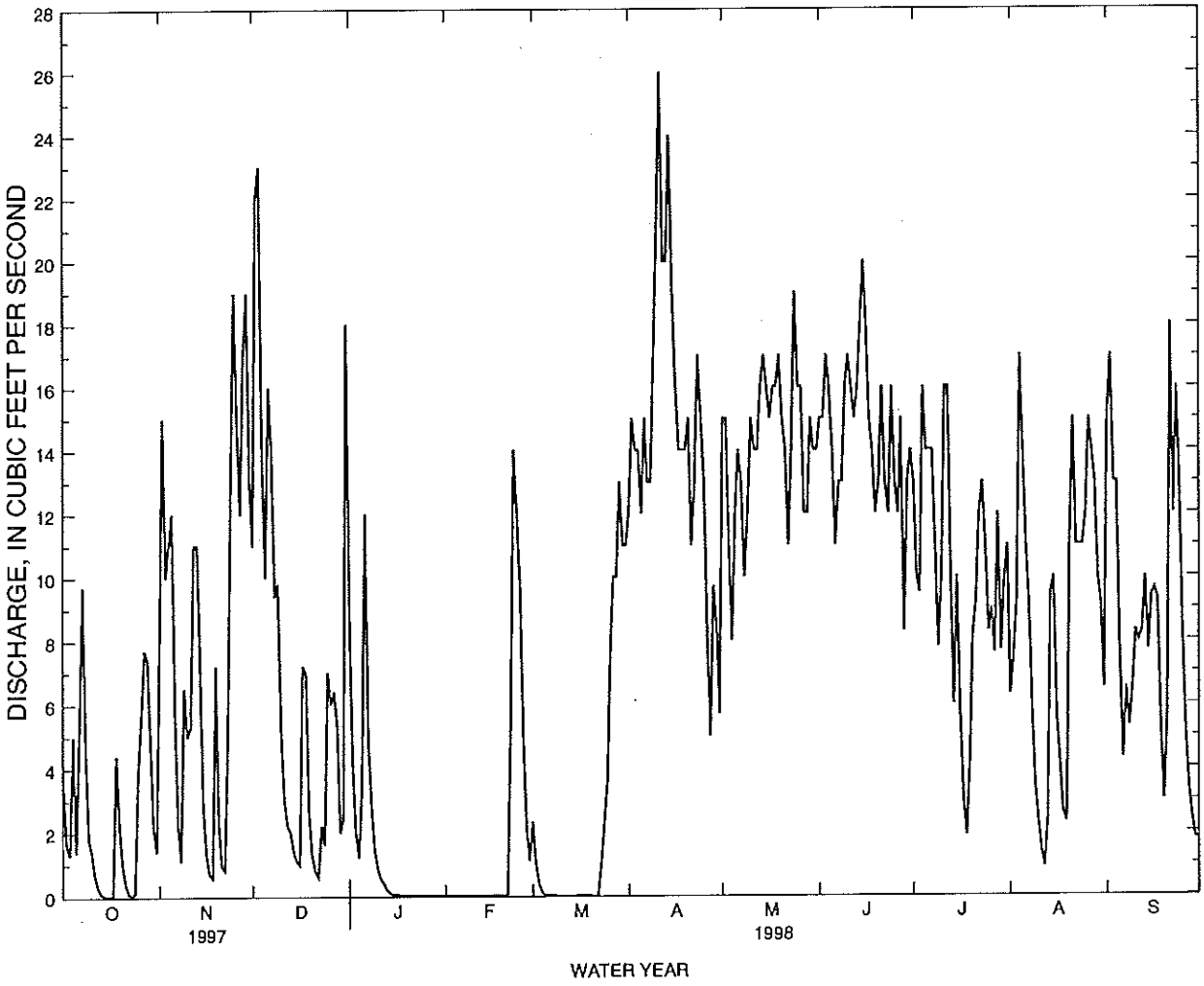
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

MEAN	3.28	4.69	4.40	3.68	2.98	5.86	7.58	5.64	6.50	8.07	6.53	4.10
MAX	9.75	12.0	12.0	10.6	14.5	23.2	17.8	14.1	14.5	15.8	15.7	10.5
(WY)	1984	1973	1971	1979	1969	1973	1970	1998	1998	1982	1982	1992
MIN	.000	.79	.17	.088	.062	.76	.44	1.00	.55	.49	.55	.33
(WY)	1985	1996	1981	1981	1980	1984	1992	1992	1980	1980	1980	1984

HAWAII, ISLAND OF HAWAII

16724800 UPPER HAMAKUA DITCH ABOVE ALAKAHI STREAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1968 - 1998	
ANNUAL TOTAL	2055.50		2838.32			
ANNUAL MEAN	5.63		7.78		5.30	
HIGHEST ANNUAL MEAN					9.22	1994
LOWEST ANNUAL MEAN					1.85	1980
HIGHEST DAILY MEAN	27	Jul 9	26	Apr 11	41	Aug 18 1972
LOWEST DAILY MEAN	.01	Jan 12	.00	Mar 9	.00	Oct 11 1968
ANNUAL SEVEN-DAY MINIMUM	.01	Jan 29	.00	Mar 9	.00	Oct 11 1968
ANNUAL RUNOFF (AC-FT)	4080		5630		3840	
10 PERCENT EXCEEDS	13		16		14	
50 PERCENT EXCEEDS	4.3		7.7		3.1	
90 PERCENT EXCEEDS	.03		.01		.01	



HAWAII, ISLAND OF HAWAII

16725000 ALAKAHI STREAM NEAR KAMUELA

LOCATION.--Lat 20°04′27″, long 155°40′25″, Hydrologic Unit 20010000, on right bank 25 ft upstream from upper Hamakua ditch intake, and 3.5 mi north of Kamuela.

DRAINAGE AREA.--0.87 mi^2.

PERIOD OF RECORD.--January 1964 to current year.

REVISED RECORDS.--WDR HI-94-1: 1964-90.

GAGE.--Water-stage recorders. Elevation of gage is 3,900 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Clayton Yoshida. Records fair. Parker Ranch pipeline diverts from tributary 0.4 mi upstream for ranch use in Kamuela area.

AVERAGE DISCHARGE.--34 years (water years 1965-98), 7.83 ft^3/s (5,670 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,430 ft^3/s (revised), January 11, 1967, gage height 8.65 ft, from rating curve extended above 28 ft^3/s on basis of computations of peak flow over dam and slope-area measurement at gage height 8.65 ft; maximum gage height, 12.80 ft, November 18, 1979; minimum, 0.03 ft^3/s on several days in 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 5	2300	183	4.62	Sep. 21	0515	*237	*5.09
Apr. 11	0230	193	4.71				

Minimum discharge, 0.29 ft^3/s, February 10-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	19	4.2	9.1	.37	1.6	24	42	22	13	4.2	50
2	1.7	51	70	2.5	.38	1.3	54	27	20	6.8	7.5	50
3	5.4	11	62	1.5	.35	1.1	44	6.4	40	9.0	7.5	11
4	5.6	24	6.3	1.2	.34	.85	37	3.9	25	51	68	15
5	2.0	6.7	5.9	14	.34	.72	12	10	12	23	23	4.6
6	29	2.6	32	29	.32	.63	42	20	6.2	22	9.6	2.6
7	9.6	2.0	18	3.6	.32	.55	24	14	20	22	5.3	3.8
8	2.5	4.6	4.3	2.0	.32	.46	15	5.2	13	7.7	3.3	3.6
9	1.7	4.8	4.6	1.3	.32	.43	66	9.6	30	4.2	2.3	5.1
10	1.9	3.3	2.1	1.1	.30	.40	99	35	32	8.1	1.9	6.3
11	1.5	16	1.5	.87	.29	.37	96	17	24	52	1.7	6.2
12	1.3	25	1.3	.77	.29	.37	36	20	17	35	1.5	8.9
13	1.2	5.7	1.2	.69	.29	.34	47	31	30	6.0	2.5	11
14	1.1	2.4	1.2	.61	.29	.34	74	40	53	3.0	14	5.0
15	1.1	1.8	1.1	.57	.31	.37	26	23	63	9.6	18	7.3
16	1.0	1.6	.99	.50	.44	.59	8.5	15	33	3.3	4.1	8.0
17	1.2	1.5	3.6	.47	.41	.73	8.9	30	12	2.1	3.3	7.1
18	5.4	9.5	3.8	.46	.42	.57	11	23	8.8	1.7	2.6	3.8
19	2.3	2.4	1.6	.43	.47	.44	12	39	6.7	4.3	2.4	2.3
20	1.7	1.7	1.1	.43	.45	.38	18	15	13	6.7	37	14
21	1.4	1.5	.97	.41	.49	.37	4.8	11	41	8.4	46	78
22	1.2	1.5	.85	.40	29	.37	20	7.0	11	25	10	8.1
23	1.1	3.2	1.1	.40	61	1.6	38	20	12	28	17	39
24	1.2	46	1.1	.38	33	2.6	17	51	43	13	14	18
25	3.3	74	3.4	.37	8.9	3.1	8.7	24	11	5.7	21	4.0
26	5.4	59	3.3	.40	2.7	9.0	3.2	17	8.8	6.7	45	2.4
27	4.7	11	4.0	.37	1.7	28	2.0	8.1	31	7.3	34	1.8
28	4.0	45	3.0	.37	1.3	18	4.6	8.9	4.6	23	18	1.6
29	2.4	60	1.5	.37	---	44	3.3	25	17	5.2	8.1	1.4
30	1.7	10	1.8	.35	---	19	2.3	19	19	12	6.7	1.3
31	2.5	---	84	.34	---	20	---	17	---	12	4.0	---
TOTAL	108.5	507.8	331.81	75.26	145.11	158.58	858.3	634.1	679.1	436.8	443.5	381.2
MEAN	3.50	16.9	10.7	2.43	5.18	5.12	28.6	20.5	22.6	14.1	14.3	12.7
MAX	29	74	84	29	61	44	99	51	63	52	68	78
MIN	1.0	1.5	.85	.34	.29	.34	2.0	3.9	4.6	1.7	1.5	1.3
AC-FT	215	1010	658	149	288	315	1700	1260	1350	866	880	756

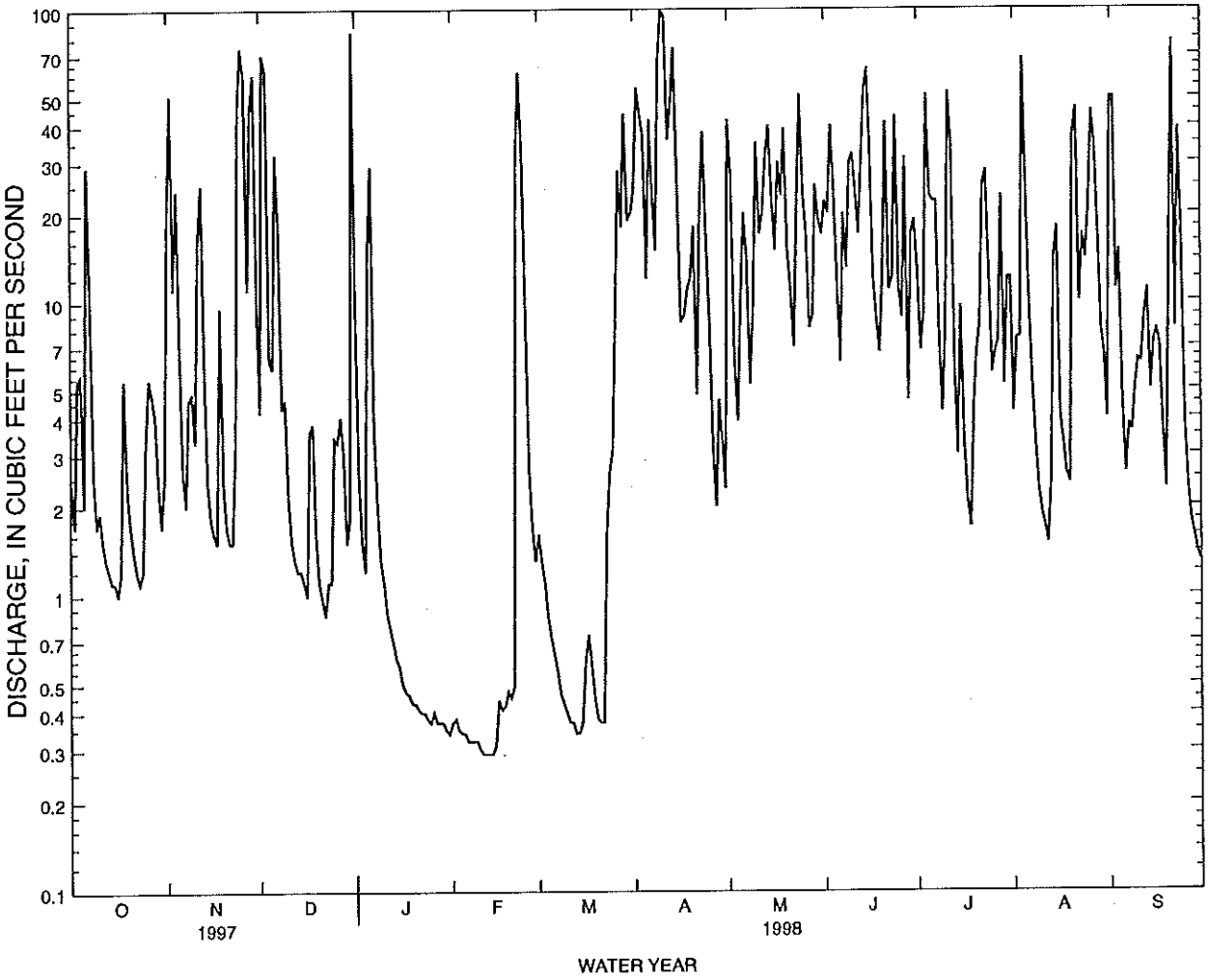
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

MEAN	4.67	8.05	7.31	7.49	5.73	9.95	11.8	7.19	8.17	10.4	8.17	5.05
MAX	13.5	26.5	16.7	26.4	18.6	37.9	31.6	20.5	22.6	18.7	15.9	17.8
(WY)	1984	1980	1971	1979	1969	1980	1986	1998	1998	1978	1970	1992
MIN	.31	1.07	.54	.46	.40	1.27	.82	1.83	2.04	2.38	1.72	.087
(WY)	1985	1969	1981	1981	1993	1983	1992	1996	1985	1981	1971	1965

HAWAII, ISLAND OF HAWAII

16725000 ALAKAHI STREAM NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1964 - 1998	
ANNUAL TOTAL	3162.76		4760.06			
ANNUAL MEAN	8.67		13.0		7.83	
HIGHEST ANNUAL MEAN					13.4	1994
LOWEST ANNUAL MEAN					3.39	1981
HIGHEST DAILY MEAN	115	Jul 9	99	Apr 10	338	Nov 18 1979
LOWEST DAILY MEAN	.54	Feb 11	.29	Feb 11	.03	May 22 1965
ANNUAL SEVEN-DAY MINIMUM	.56	Feb 5	.30	Feb 9	.04	Sep 22 1965
ANNUAL RUNOFF (AC-FT)	6270		9440		5670	
10 PERCENT EXCEEDS	24		39		19	
50 PERCENT EXCEEDS	3.0		5.3		3.2	
90 PERCENT EXCEEDS	.92		.42		.56	



HAWAII, ISLAND OF HAWAII

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 500 ft upstream from diversion intake leading to Waimea Reservoir and 3.7 mi northeast of Kamuela Post Office.

PERIOD OF RECORD.--October 1974 to September 1983, September 1992 to September 1994 (discharge measurements only). October 1994 to current year.

REVISED RECORDS.--WDR HI-94-1: 1981.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,020 ft above mean sea level (from topographic map).

REMARKS.--Records for current year computed by Gary Sanchez. Records good. Records for 1975-1983 are poor. Records for 1984-1990, published in WDR: HI-84-1 to HI-90-1 are unreliable and should not be used. Ditch diverts from Kawainui, Kawaiki, and Alakahi Streams for use in vicinity of Kamuela.

AVERAGE DISCHARGE.--13 years (water years 1975-83, 1995-98), 9.70 ft^3/s (7,030 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 48 ft^3/s, April 6, 1977; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 37 ft^3/s, April 10; minimum daily discharge, 0.82 ft^3/s, October 9, November 15-17, December 16-17, and February 13-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	17	20	17	.99	6.7	26	31	29	25	16	29
2	4.8	33	35	9.7	.96	4.4	30	27	31	21	21	33
3	4.7	25	32	6.2	.88	3.1	28	19	33	23	21	25
4	15	32	18	4.4	.88	2.4	29	16	30	36	34	26
5	5.3	31	14	5.9	.88	1.9	26	24	23	31	30	13
6	14	15	24	19	.88	1.6	28	25	18	29	22	11
7	18	6.9	21	8.9	.88	1.4	28	22	21	26	18	11
8	2.8	4.8	9.1	7.7	.88	1.2	25	17	24	20	14	11
9	.82	21	3.6	5.1	.88	1.1	29	17	30	16	11	13
10	2.6	14	2.7	3.9	.88	1.0	37	27	33	18	12	16
11	3.7	13	2.1	3.2	.88	.96	36	26	29	36	7.3	13
12	2.6	21	2.8	2.7	.86	.92	29	25	27	31	5.5	15
13	2.0	8.4	5.3	2.3	.82	.88	29	27	27	20	12	18
14	1.7	.90	4.6	2.1	.82	.88	33	30	31	15	24	15
15	1.8	.82	2.3	1.9	.82	.88	28	27	34	22	22	16
16	1.2	.82	.82	1.7	.92	2.2	25	24	29	14	11	16
17	1.3	.82	.82	1.6	.88	2.5	26	30	25	9.5	11	14
18	13	.95	5.8	1.5	.92	1.5	25	26	23	7.2	11	11
19	7.8	7.8	6.2	1.4	1.1	1.2	28	30	21	16	10	8.7
20	4.8	7.9	4.1	1.4	.91	.95	27	23	23	22	25	16
21	3.2	4.3	3.3	1.3	.91	.88	22	18	28	27	19	35
22	2.2	4.7	2.9	1.3	14	1.0	26	16	22	33	1.6	17
23	1.7	16	4.3	1.2	30	12	29	21	20	31	1.7	32
24	1.8	30	4.2	1.2	28	9.6	28	26	32	24	7.0	21
25	8.1	35	10	1.2	22	8.6	24	27	24	18	21	13
26	11	30	12	1.2	12	20	17	25	22	18	26	11
27	14	22	12	1.0	6.6	25	11	19	28	21	25	7.8
28	13	31	11	1.0	4.9	24	22	23	17	28	19	6.4
29	9.4	31	5.5	.96	---	29	18	25	26	17	16	5.3
30	4.6	18	6.7	.95	---	25	11	24	28	20	12	5.1
31	4.0	---	35	.91	---	23	---	25	---	24	12	---
TOTAL	189.02	484.11	321.14	119.82	136.33	215.75	780	742	788	698.7	498.1	484.3
MEAN	6.10	16.1	10.4	3.87	4.87	6.96	26.0	23.9	26.3	22.5	16.1	16.1
MAX	18	35	35	19	30	29	37	31	34	36	34	35
MIN	.82	.82	.82	.91	.82	.88	11	16	17	7.2	1.6	5.1
AC-FT	375	960	637	238	270	428	1550	1470	1560	1390	988	961

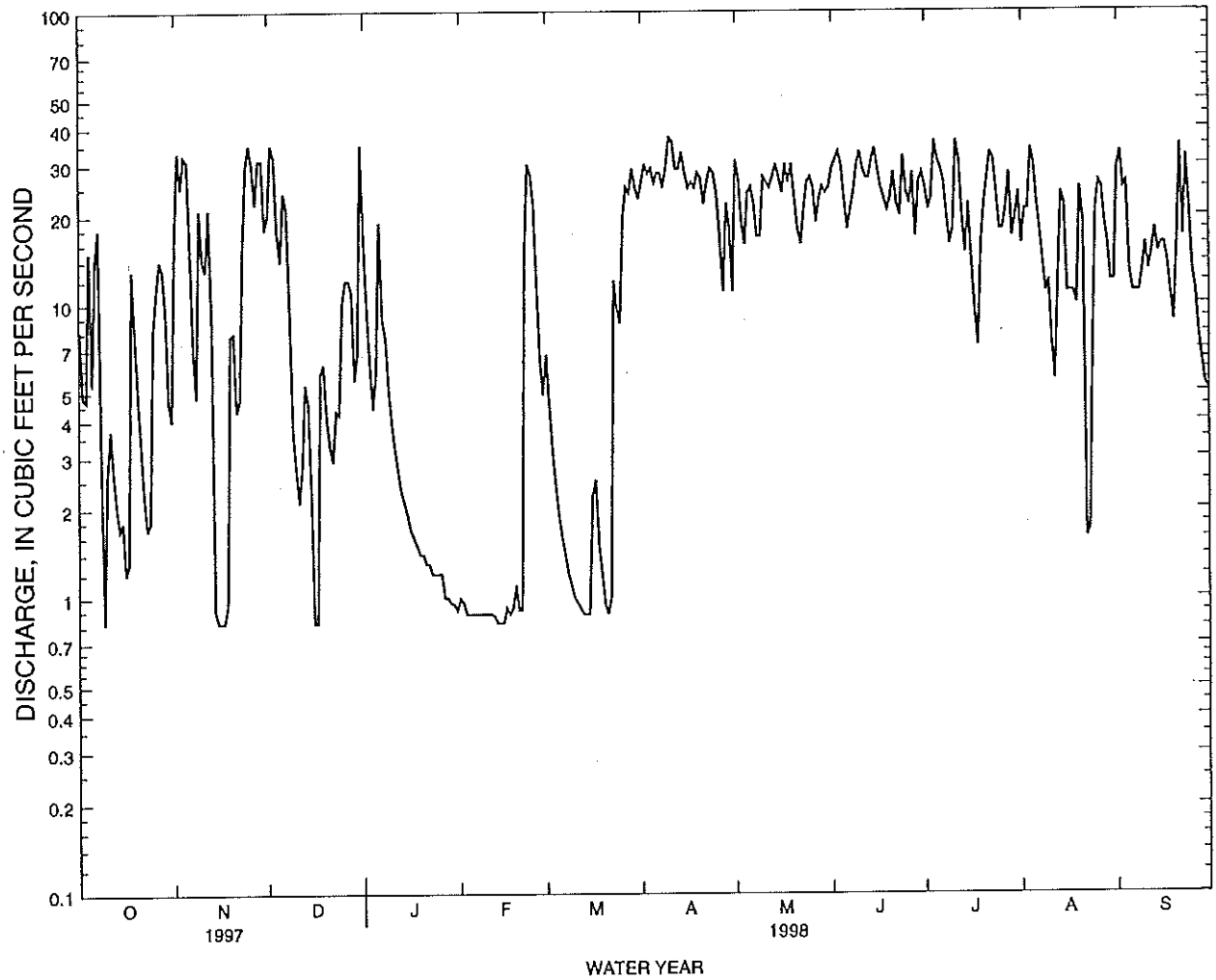
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

MEAN	6.88	10.0	7.76	5.26	5.40	11.7	13.6	11.3	10.3	14.1	11.3	8.52
MAX	12.9	17.4	12.6	9.93	11.4	19.7	26.0	23.9	26.3	26.0	19.6	16.9
(WY)	1976	1977	1979	1978	1975	1982	1998	1998	1998	1978	1978	1982
MIN	1.18	2.82	.79	.31	.63	3.61	2.76	2.65	3.03	2.84	2.23	2.95
(WY)	1975	1996	1981	1981	1995	1995	1981	1981	1981	1981	1979	1981

HAWAII, ISLAND OF HAWAII

16726000 UPPER HAMAKUA DITCH ABOVE WAIMEA RESERVOIR DIVERSION, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1975 - 1998	
ANNUAL TOTAL	3317.54		5457.27			
ANNUAL MEAN	9.09		15.0		9.70	
HIGHEST ANNUAL MEAN					15.0	1998
LOWEST ANNUAL MEAN					3.80	1981
HIGHEST DAILY MEAN	35	Nov 25	37	Apr 10	48	Apr 6 1977
LOWEST DAILY MEAN	.03	May 28	.82	Oct 9	.00	Oct 1 1974
ANNUAL SEVEN-DAY MINIMUM	.78	Feb 5	.85	Feb 9	.00	Oct 1 1974
ANNUAL RUNOFF (AC-FT)	6580		10820		7030	
10 PERCENT EXCEEDS	20		30		24	
50 PERCENT EXCEEDS	6.9		15		6.2	
90 PERCENT EXCEEDS	1.2		.96		.54	



HAWAII, ISLAND OF HAWAII

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 downstream from pipe railed bridge, and 4.0 mi northeast of Kamuela Post Office.

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 2,890 ft above mean sea level (from topographic map).

REMARKS.--Records computed by Dale Nishimoto. Records good. Ditch diverts water from Kawainui, Kawaiki, and Alakahi Streams for use in vicinity of Kamuela.

AVERAGE DISCHARGE.--21 years (water years 1978-98), 1.53 ft^3/s (1,110 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 42 ft^3/s, April 16, 1985; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 18 ft^3/s, February 24; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.01	.00	.00	.00	.00	.00	.01	.00	.07	.67
2	.00	.03	.05	.00	.00	.00	.00	.00	.00	.00	.09	.16
3	.00	.06	.04	.00	.00	.03	.00	.00	.01	.00	.11	.06
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.25	.08
5	.00	.00	.00	.01	.00	.00	.00	.00	.00	.08	.10	.00
6	.31	.00	.00	.04	.00	.00	.00	.00	.00	.09	.02	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.04	.00	.00	.21	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.36	.00	.00
14	.00	.00	.00	.00	.00	.00	.01	.00	.00	.14	.00	.00
15	.00	.00	.13	.00	.00	.00	.00	.00	.02	.10	.02	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.00	.22
19	.00	.00	.00	.00	.00	.00	.00	.01	.00	.12	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.02	.08	.16	.27
22	.00	.00	.00	.00	5.1	.00	.00	.00	.00	.10	.01	.00
23	.00	.00	.00	.00	12	.74	.00	.00	.00	.12	.00	.08
24	.00	.00	.00	.00	18	.41	.00	.00	.02	.07	.02	.01
25	.00	.01	.00	.00	14	4.3	.00	.00	.00	.05	.10	.00
26	.00	.00	.00	.00	7.8	8.7	.00	.00	.00	.04	.09	.00
27	.00	.00	.00	.00	2.8	.08	.00	.10	.00	.06	.07	.00
28	.00	.00	.00	.00	.02	.00	.00	.00	.00	.09	.04	.00
29	.00	.01	.00	.00	---	.00	.10	.00	.00	.07	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.09	.00	.00
31	.00	---	.03	.00	---	.00	---	.00	---	.11	.00	---
TOTAL	0.31	0.11	0.26	0.05	59.72	14.26	0.18	0.11	0.08	2.57	1.15	1.55
MEAN	.010	.004	.008	.002	2.13	.46	.006	.004	.003	.083	.037	.052
MAX	.31	.06	.13	.04	18	8.7	.10	.10	.02	.36	.25	.67
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.6	.2	.5	.1	118	28	.4	.2	.2	5.1	2.3	3.1

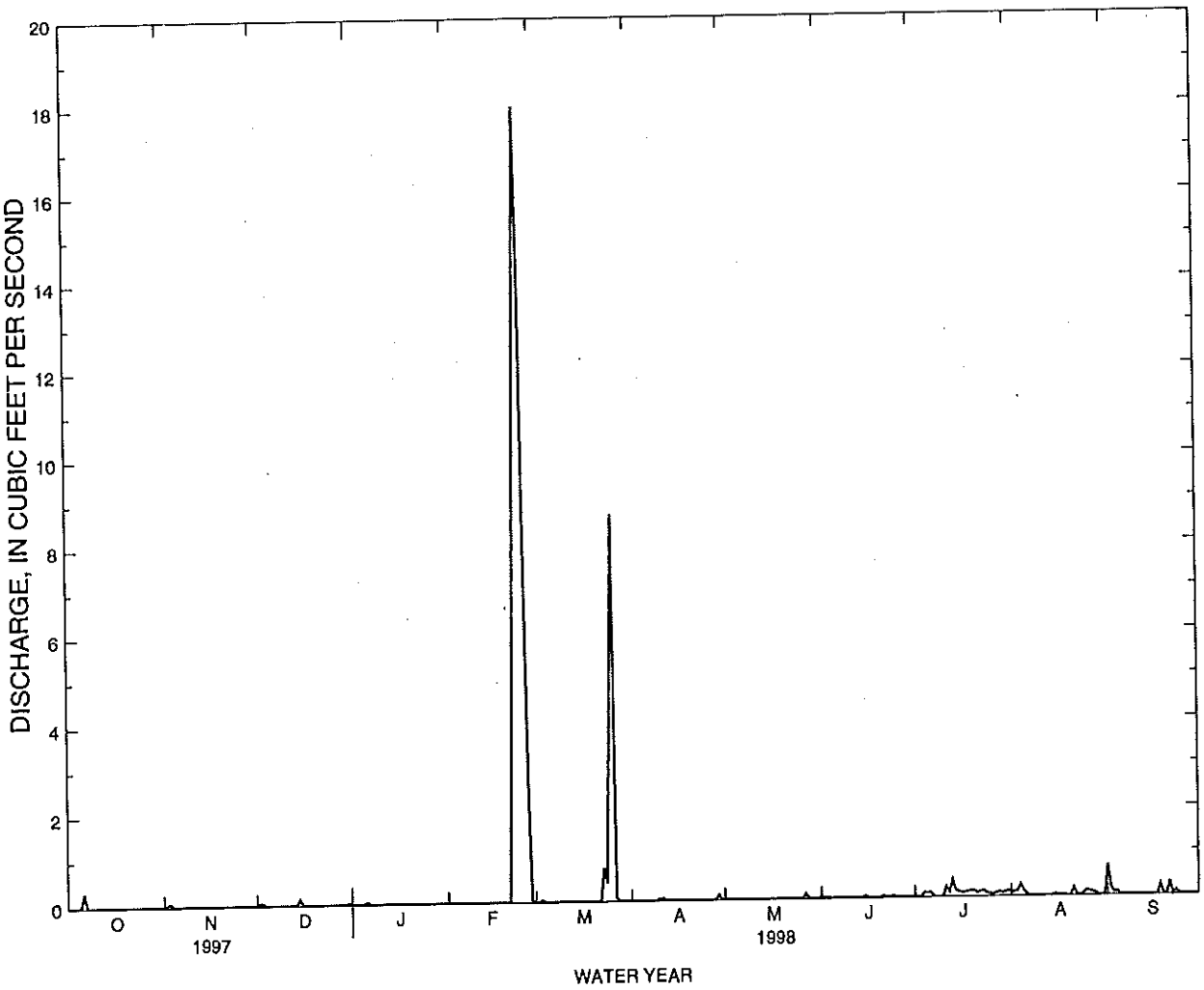
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1998, BY WATER YEAR (WY)

MEAN	1.25	2.24	1.41	1.38	1.08	2.17	2.27	1.48	1.60	1.54	1.34	.60
MAX	6.36	10.1	5.46	8.23	4.56	15.2	13.9	9.55	11.6	9.04	10.8	4.44
(WY)	1986	1988	1988	1987	1988	1985	1986	1986	1986	1978	1985	1985
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
(WY)	1985	1990	1989	1989	1993	1989	1993	1983	1983	1980	1984	1984

HAWAII, ISLAND OF HAWAII

16727000 UPPER HAMAKUA DITCH ABOVE PUUKAPU RESERVOIR, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1978 - 1998	
ANNUAL TOTAL	8.57		80.35			
ANNUAL MEAN	.023		.22		1.53	
HIGHEST ANNUAL MEAN					6.79	1986
LOWEST ANNUAL MEAN					.007	1990
HIGHEST DAILY MEAN	3.9	Sep 22	18	Feb 24	42	Apr 16 1985
LOWEST DAILY MEAN	.00	Jan 1	.00	Oct 1	.00	Oct 1 1977
ANNUAL SEVEN-DAY MINIMUM	.00	Jan 1	.00	Oct 7	.00	Oct 1 1977
ANNUAL RUNOFF (AC-FT)	17		159		1110	
10 PERCENT EXCEEDS	.00		.09		5.2	
50 PERCENT EXCEEDS	.00		.00		.00	
90 PERCENT EXCEEDS	.00		.00		.00	



HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA

LOCATION.--Lat 20°02′38″, long 155°41′10″, Hydrologic Unit 20010000, on left bank 0.6 mi upstream from Oolamakapehu Gulch and 1.7 mi northwest of Kamuela.

DRAINAGE AREA.--2.51 mi^2.

PERIOD OF RECORD.--December 1966 to current year. Records from March 1956 to December 1966 at site 0.5 mi upstream are not equivalent because of difference in drainage area between sites. These records are published as station 16756000 Kohakohau Stream near Kamuela.

GAGE.--Water-stage recorder. Datum of gage is 3,273 ft above mean sea level (stadia survey by Hawaii State Department of Land and Natural Resources).

REMARKS.--Published data do not include leakage through the dam at the gage which is estimated to average 0.4 ft^3/s. All daily discharges less than 3.0 ft^3/s are poor and are not published.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft^3/s, November 18, 1979, gage height, 6.54 ft, from rating curve extended above 45 ft^3/s on the basis of computations of flow over dam at gage height 6.20 ft.

EXTREMES FOR CURRENT YEAR.--

Water Year 1991: Peak discharges greater than base discharge of 400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 27	2400	*1,890	*5.92	Aug. 7	1100	586	4.42
Mar. 12	2400	750	4.66				

REVISED RECORDS.--Published figures for water years 1967 to 1990 have been revised. These figures supersede those published in the annual data reports for 1967 to 1990. Previously published data for water years 1967 to 1990 were incorrectly published under station 16756000. All daily discharges greater than 3.0 ft^3/s for water years 1967 to 1990 have been downgraded to fair. All daily discharges less than 3.0 ft^3/s are poor and are not published. Previously published minimum discharges for water years 1967 to 1990 should not be used.

EXTREMES FOR WATER YEARS 1967 THROUGH 1990.--Peak discharges greater than base discharge of 400 ft^3/s and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Gage height (ft)
1967	01/11/67	0100	*2,200	*6.20
	04/17/67	1000	401	4.11
1968	02/17/68	1615	1,070	5.07
	04/06/68	1430	1,090	5.10
	04/10/68	2000	1,010	5.00
	04/18/68	2000	786	4.71
	04/20/68	1915	*2,210	*6.21
1969	12/16/68	1630	666	4.54
	03/18/69	0045	*700	*4.59
1970	12/05/69	0215	593	4.43
	01/06/70	1330	*824	4.76
	04/23/70	1330	573	4.40
	08/25/70	2200	573	4.40
1971	11/05/70	1515	*1,210	*5.23
	12/27/70	2330	639	4.50
	01/19/71	1715	971	4.95
1972	03/04/72	2130	*743	*4.65
	04/10/72	0900	599	4.44
	08/18/72	2215	567	4.39
1973	03/07/73	unknown	*359	4.03
1974	11/12/73	0915	673	4.55
	01/07/74	1345	*947	*4.92
	04/12/74	1615	772	4.69
1975	11/11/74	unknown	*396	*4.10
1976	01/16/76	unknown	*659	*4.53
1977	08/06/77	unknown	*407	*4.12
1978	03/01/78	unknown	*435	*4.17
1979	12/06/78	0300	*1,560	5.60
	01/13/79	2245	809	4.74
	01/22/79	1100	963	4.94
	02/10/79	1415	892	4.85
	02/25/79	1700	1,510	5.50
1980	11/18/79	0630	*2,620	*6.54
	01/09/80	1330	2,030	6.05
	03/17/80	0700	971	4.95
	03/24/80	0130	1,560	5.60
	04/02/80	0430	729	4.63
1981	10/31/80	unknown	*639	*4.50
1982	01/27/82	0030	694	4.58
	02/11/82	2000	*1,380	*5.42
1983	12/18/82	unknown	*924	*4.89
1984	12/26/83	unknown	*1,340	*5.37
1985	03/06/85	unknown	*729	*4.63
1986	02/16/86	0300	743	4.65
	03/20/86	2400	586	4.42
	03/23/86	1730	786	4.71
	04/08/86	1230	955	4.93
	04/10/86	1100	*1,310	*5.34
1987	01/18/87	2330	801	4.73
	04/22/87	0300	*1,010	*5.00
1988	11/21/87	unknown	*1,250	5.28
1989	02/03/89	0930	1,040	5.03
	04/07/89	2300	*2,570	*6.50
	04/28/89	1900	1,310	5.34
1990	03/01/90	0930	*390	*4.09

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1966 TO SEPTEMBER 1967
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	15	---	25	60	4.5	---	---	---	---
2	---	---	---	7.5	---	40	85	---	---	---	3.8	---
3	---	---	---	30	---	6.0	32	---	---	---	25	---
4	---	---	---	250	---	---	4.8	---	---	---	8.2	---
5	---	---	---	75	---	3.0	21	---	---	3.3	3.0	---
6	---	---	---	15	---	---	21	---	---	6.0	3.9	---
7	---	---	---	6.0	---	---	7.0	---	---	38	21	---
8	---	---	---	6.0	---	---	3.2	---	---	28	39	---
9	---	---	---	30	---	---	---	---	---	5.5	5.0	3.3
10	---	---	7.5	6.0	---	---	7.0	---	---	3.3	3.0	4.3
11	---	---	30	947	4.5	21	13	---	---	4.8	---	---
12	---	---	4.5	118	3.0	7.9	---	---	---	15	---	---
13	---	---	10	9.0	4.5	---	---	---	---	4.1	5.0	---
14	---	---	15	6.0	---	---	---	---	---	7.3	4.0	---
15	---	---	4.5	4.0	---	---	---	---	---	44	3.5	---
16	---	---	3.0	3.0	---	---	---	---	---	103	4.0	---
17	---	---	---	6.0	---	---	65	---	---	31	3.5	---
18	---	---	40	12	---	---	---	---	---	13	9.0	---
19	---	---	225	14	---	---	---	---	---	4.4	3.0	---
20	---	---	125	9.0	---	8.1	---	---	---	3.2	---	---
21	---	---	100	6.0	3.0	10	---	---	---	8.2	---	---
22	---	---	15	3.0	---	15	---	---	---	26	---	---
23	---	---	6.0	---	---	7.8	---	---	---	13	---	---
24	---	---	3.0	---	3.0	---	---	---	---	4.1	---	---
25	---	---	---	---	---	---	---	---	---	5.7	---	---
26	---	---	6.0	---	---	28	---	9.0	---	19	---	---
27	---	---	60	---	---	166	---	25	7.8	47	---	---
28	---	---	10	---	280	24	---	3.0	21	9.2	---	---
29	---	---	4.5	---	---	3.9	---	---	7.1	28	---	---
30	---	---	3.0	---	---	11	---	---	3.0	13	---	---
31	---	---	---	---	---	52	---	---	---	3.3	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1967 TO SEPTEMBER 1968
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	23	3.1	---	---	---	11	12	---	---	---	---
2	---	178	38	---	---	---	10	12	---	---	---	---
3	---	138	23	19	---	43	59	24	---	---	---	---
4	---	33	18	25	---	67	22	7.0	---	---	---	---
5	---	22	15	4.0	---	16	5.4	5.0	---	---	3.2	---
6	---	21	20	---	---	3.1	50	3.5	---	---	---	---
7	---	35	30	---	---	---	23	---	---	---	---	---
8	---	5.2	4.5	---	---	---	16	---	---	---	---	---
9	---	3.0	11	---	---	---	17	---	---	---	---	---
10	---	25	43	---	---	---	333	---	---	---	7.5	---
11	---	30	5.4	---	---	---	103	---	---	---	11	---
12	---	16	12	---	---	---	18	---	---	---	13	---
13	---	3.5	16	---	---	---	5.2	---	---	---	4.4	---
14	---	---	34	---	---	---	3.5	4.4	5.9	16	23	---
15	---	---	5.2	---	---	52	10	---	---	24	4.4	---
16	---	---	---	---	7.0	24	9.0	---	---	3.2	---	---
17	---	---	---	27	280	8.2	5.0	---	---	3.0	---	---
18	---	---	---	8.0	52	---	40	---	5.6	5.9	---	---
19	---	---	---	33	4.4	22	19	75	18	5.0	---	---
20	---	---	---	3.5	---	35	294	128	5.5	3.9	---	---
21	---	---	---	---	19	13	23	9.2	---	---	---	---
22	---	16	---	---	9.2	3.8	4.9	3.1	7.3	---	---	---
23	3.5	4.0	---	---	---	25	3.5	---	5.7	5.7	---	---
24	---	---	---	---	---	55	11	---	11	3.9	---	---
25	---	---	---	---	---	13	19	---	5.2	---	---	3.3
26	---	9.8	---	30	---	4.4	13	---	10	---	---	4.4
27	---	12	---	3.5	---	---	7.0	---	4.7	---	---	---
28	---	---	---	9.0	---	3.2	45	---	9.7	---	---	---
29	---	7.3	---	4.0	---	15	42	---	3.4	---	---	14
30	---	---	---	---	---	135	17	---	---	---	---	6.2
31	31	---	---	---	---	44	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	1238.5	---	---	---	---	---
MEAN	---	---	---	---	---	---	41.3	---	---	---	---	---
MAX	---	---	---	---	---	---	333	---	---	---	---	---
MIN	---	---	---	---	---	---	3.5	---	---	---	---	---
AC-FT	---	---	---	---	---	---	2460	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1968 TO SEPTEMBER 1969
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	7.8	121	49	6.0	---	8.0	15	18
2	---	---	---	---	16	29	100	5.8	---	7.3	3.8	46
3	---	---	---	3.3	159	8.0	34	9.5	5.2	---	7.0	12
4	---	---	15	13	45	12	24	20	6.6	---	3.4	23
5	---	---	17	14	6.0	22	22	4.1	---	---	3.5	9.3
6	---	---	7.0	40	3.0	44	11	---	---	14	27	4.3
7	---	---	5.4	15	---	22	30	---	---	27	20	3.0
8	---	---	---	5.0	---	7.3	37	---	---	24	4.0	---
9	---	---	---	35	---	22	21	---	---	9.5	---	---
10	---	---	---	23	---	7.3	15	---	---	9.5	6.4	---
11	---	---	---	4.1	---	3.8	61	---	8.3	4.4	10	---
12	---	---	---	---	---	---	186	---	16	5.4	12	---
13	---	---	145	---	---	---	85	---	3.5	---	91	---
14	---	---	52	---	19	---	45	---	---	32	121	---
15	---	---	8.3	---	91	---	24	---	---	8.8	170	---
16	---	---	40	---	118	5.4	52	---	---	3.3	20	---
17	---	---	21	---	24	21	44	---	---	3.3	40	---
18	---	---	17	---	38	59	28	---	---	6.4	30	---
19	---	---	4.3	---	32	10	36	---	---	36	8.3	5.2
20	---	---	---	---	35	6.4	47	---	---	72	9.5	---
21	---	---	3.4	17	15	3.8	25	---	---	9.5	4.3	11
22	---	---	---	3.0	32	3.1	49	---	---	4.7	3.1	9.3
23	---	---	---	---	25	---	12	---	---	10	4.1	6.0
24	---	---	---	---	12	5.4	5.0	---	---	19	15	---
25	---	---	---	---	34	42	3.8	---	---	17	10	---
26	---	---	---	---	50	7.8	---	18	---	4.0	5.2	13
27	---	---	---	---	17	3.4	6.8	13	---	---	5.4	16
28	---	---	---	---	41	---	15	---	---	---	4.7	19
29	---	14	---	9.0	---	---	27	---	---	6.6	5.8	17
30	---	3.8	---	31	---	---	16	---	---	8.0	19	7.2
31	---	---	---	16	---	5.2	---	---	---	24	11	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	---	4.2	1.3	---	3.1	50	46	---	57	---	5.0
2	3.5	---	---	---	---	19	25	10	4.1	43	---	6.0
3	---	---	---	---	---	---	23	4.6	3.6	35	---	3.5
4	---	---	---	19	---	---	31	3.1	---	47	---	18
5	---	---	59	---	---	---	37	---	---	30	34	12
6	---	16	3.1	91	---	---	10	---	---	49	23	21
7	---	11	---	11	---	12	12	9.8	---	33	16	9.5
8	---	---	---	---	---	7.7	15	50	4.9	18	14	4.0
9	---	---	---	---	---	---	11	37	---	30	4.6	---
10	---	---	11	---	---	---	6.5	65	---	115	---	---
11	---	---	15	---	---	---	19	26	---	8.6	---	---
12	---	---	---	20	---	---	17	21	4.1	15	5.8	---
13	---	---	22	---	---	4.0	20	6.4	6.1	5.6	6.2	---
14	---	---	42	42	---	7.8	11	3.5	7.7	3.8	3.0	---
15	---	---	23	16	---	7.1	31	15	9.0	3.3	6.8	---
16	---	---	3.8	5.2	---	4.2	19	18	7.4	21	6.0	---
17	---	---	---	8.7	---	---	27	12	37	16	20	9.1
18	---	---	---	---	---	6.4	4.7	37	46	25	27	6.0
19	---	---	---	---	---	12	16	20	22	8.0	39	4.2
20	---	---	---	---	---	11	10	20	4.3	3.7	14	---
21	---	---	---	---	---	3.0	3.3	7.8	---	---	4.1	---
22	---	---	---	---	---	15	14	4.2	7.2	---	14	23
23	---	---	---	5.6	---	33	318	---	5.2	15	21	4.7
24	---	---	---	3.6	---	24	53	---	5.9	15	16	---
25	---	---	---	---	---	3.8	12	---	18	3.8	214	---
26	---	---	---	---	---	---	23	28	5.4	5.7	170	---
27	---	---	---	---	---	---	36	36	---	5.2	31	---
28	---	---	---	---	---	4.3	7.8	39	27	6.1	43	---
29	---	7.8	---	---	---	---	25	9.5	22	---	21	---
30	---	7.2	5.3	---	---	---	91	4.3	4.7	---	20	---
31	---	---	---	---	---	20	---	4.2	---	---	9.5	---
TOTAL	---	---	---	---	---	---	978.3	---	---	---	---	---
MEAN	---	---	---	---	---	---	32.6	---	---	---	---	---
MAX	---	---	---	---	---	---	318	---	---	---	---	---
MIN	---	---	---	---	---	---	3.3	---	---	---	---	---
AC-FT	---	---	---	---	---	---	1940	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	27	8.9	4.8	---	---	12	---	---	---	---	---
2	---	13	26	3.7	---	---	3.5	---	4.9	---	---	---
3	---	---	19	---	---	---	---	---	4.9	---	---	---
4	---	5.4	4.7	---	---	---	---	---	---	---	---	---
5	3.0	131	159	37	---	3.3	10	---	---	---	---	---
6	3.2	18	94	58	---	---	---	---	5.9	---	---	---
7	---	6.6	36	18	---	---	---	3.6	9.6	---	---	---
8	---	---	11	5.4	---	6.0	---	---	3.1	22	---	---
9	---	4.5	4.0	43	---	4.4	3.2	---	---	8.8	---	---
10	---	52	---	10	---	---	---	---	23	---	---	---
11	---	20	---	4.0	---	---	8.2	---	12	9.4	---	---
12	---	4.4	---	---	---	11	30	---	---	18	---	---
13	---	3.4	---	---	---	8.8	14	---	---	125	---	---
14	---	16	---	---	---	3.3	4.6	---	---	32	---	---
15	---	12	---	---	---	---	11	---	---	4.7	---	---
16	---	4.5	---	---	---	---	30	---	---	---	3.4	---
17	---	---	21	---	---	---	19	---	---	---	---	---
18	---	---	24	---	---	---	15	---	---	---	---	---
19	---	---	35	53	---	---	36	---	---	---	---	---
20	6.6	---	72	16	---	---	18	---	---	---	---	---
21	6.7	38	12	3.8	---	---	5.9	---	---	---	---	---
22	28	5.2	13	---	---	---	4.8	---	---	---	---	---
23	18	---	8.2	---	---	---	3.9	---	---	---	---	---
24	28	3.2	16	---	---	---	---	---	---	---	---	---
25	3.8	13	182	---	---	3.1	---	---	---	11	---	---
26	---	3.2	205	---	---	197	---	---	7.1	---	---	---
27	---	---	138	---	---	46	---	---	3.6	---	---	---
28	---	---	103	135	---	17	---	---	---	---	---	---
29	---	---	42	29	---	5.0	---	---	---	---	---	---
30	---	---	34	4.3	---	5.2	---	3.5	---	61	---	---
31	---	---	11	---	---	5.2	---	4.0	---	8.9	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1971 TO SEPTEMBER 1972
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	8.6	---	---	---	---	5.5	---	3.4	---	23
2	---	---	8.1	---	---	---	---	3.4	---	5.8	---	3.3
3	---	---	---	---	---	---	3.6	---	---	4.4	---	---
4	---	---	---	---	---	49	4.0	---	---	---	---	19
5	---	---	---	---	17	159	13	3.2	---	3.0	---	4.8
6	7.0	---	---	---	---	9.4	8.3	---	---	4.0	---	---
7	11	---	---	---	---	---	3.5	---	---	29	---	---
8	---	4.8	---	---	---	---	43	---	---	15	---	---
9	---	23	---	4.1	---	---	141	---	---	3.1	---	---
10	---	---	---	---	19	---	318	---	---	---	---	---
11	---	6.0	34	---	3.4	---	21	---	---	---	---	---
12	---	13	4.6	---	---	---	12	---	---	---	---	---
13	---	3.2	---	---	---	---	5.0	---	---	---	4.4	---
14	---	---	17	---	---	---	---	---	---	33	31	---
15	---	---	44	---	---	---	---	---	---	3.4	8.7	---
16	---	---	4.7	---	---	---	---	---	---	3.2	---	---
17	---	10	---	---	---	---	---	---	---	3.0	13	---
18	---	44	---	---	5.6	---	---	---	---	3.1	270	---
19	---	25	6.4	---	20	---	---	---	---	3.1	85	---
20	---	3.2	27	---	---	---	8.7	---	---	3.1	15	---
21	---	---	10	---	---	---	3.6	---	---	3.2	7.4	---
22	3.3	---	5.4	---	---	---	6.4	---	---	3.3	---	---
23	---	5.5	---	---	---	---	23	---	---	3.3	---	---
24	---	11	---	15	---	---	8.4	---	---	3.1	---	---
25	---	17	---	30	44	---	6.7	---	---	3.4	---	---
26	---	5.3	---	4.0	6.0	---	16	---	---	118	---	---
27	---	---	---	---	---	---	16	---	18	100	---	---
28	---	---	5.3	---	---	---	6.2	---	31	21	---	---
29	---	---	---	---	---	37	14	---	---	5.1	---	8.8
30	---	14	11	---	---	7.8	12	---	---	---	---	3.4
31	---	---	---	---	---	---	---	---	---	---	46	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	---	---	5.1	14	13	11	9.3	6.6	---	---	---
2	---	19	---	---	3.9	16	5.6	3.8	6.0	3.9	---	---
3	9.8	50	3.3	4.5	---	9.2	3.3	7.4	3.6	8.1	---	---
4	8.1	34	---	---	---	29	---	15	3.5	22	---	---
5	---	67	---	---	---	5.1	---	5.5	10	30	---	---
6	---	33	---	---	---	61	---	---	3.2	6.4	---	---
7	---	60	---	---	---	166	---	---	---	9.4	---	---
8	---	30	---	---	---	11	---	3.4	9.6	34	---	---
9	---	5.3	5.3	---	57	8.1	7.1	4.0	---	46	---	---
10	---	9.0	---	---	15	8.5	46	---	---	10	---	---
11	---	67	---	---	3.1	10	22	---	---	10	---	---
12	---	12	---	---	---	3.5	16	---	---	6.6	---	---
13	---	3.2	---	---	---	---	21	---	4.1	3.4	---	---
14	---	4.5	---	---	---	6.7	6.0	---	4.6	6.2	---	---
15	---	19	23	---	---	35	19	---	3.1	19	---	---
16	---	125	---	---	---	33	11	---	26	4.0	---	---
17	---	36	---	---	---	91	5.7	10	27	---	---	---
18	---	26	---	---	---	29	5.1	29	3.6	---	---	---
19	---	11	18	---	---	100	---	46	---	---	---	---
20	---	3.2	4.9	5.0	---	23	---	5.6	---	---	---	---
21	---	---	---	---	67	41	---	3.0	---	---	---	---
22	---	---	---	---	4.7	7.8	---	---	---	---	---	---
23	---	---	15	---	---	11	---	3.4	---	---	---	---
24	---	---	4.5	---	3.7	100	5.8	6.2	---	---	---	4.7
25	---	---	---	---	22	20	---	---	---	---	---	---
26	---	---	5.5	4.2	30	4.6	---	---	---	---	---	---
27	14	---	8.8	103	9.2	12	18	---	---	---	---	---
28	---	---	---	94	---	6.5	4.2	---	---	---	---	---
29	---	---	---	41	---	17	3.3	---	---	---	---	15
30	---	---	---	16	---	61	7.1	---	---	---	---	---
31	---	---	---	28	---	41	---	9.5	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	9.3	6.5
2	---	---	4.9	---	---	---	---	---	---	---	3.1	4.7
3	---	---	4.7	---	---	---	---	---	---	---	---	19
4	---	---	5.7	---	---	---	---	---	---	---	---	---
5	---	---	3.7	---	---	---	---	---	---	---	3.2	---
6	---	---	3.7	---	---	---	---	---	---	6.6	---	---
7	---	---	4.6	235	---	---	---	---	---	5.0	---	---
8	---	---	---	88	---	---	---	---	---	5.6	---	---
9	---	---	10	37	---	---	---	---	---	4.4	---	---
10	---	---	11	8.2	---	---	---	31	---	---	---	---
11	---	---	3.0	---	4.5	---	---	6.6	10	---	33	---
12	---	83	---	---	6.0	---	33	---	5.9	---	42	---
13	---	83	---	---	4.8	---	8.7	---	---	---	14	---
14	---	3.5	---	---	8.3	---	---	---	---	---	4.4	---
15	12	---	---	---	4.0	---	16	---	5.4	---	---	---
16	11	---	---	---	---	---	201	---	---	---	---	---
17	5.0	---	---	---	---	---	29	5.6	---	---	---	---
18	13	---	---	---	---	---	37	12	---	---	5.2	---
19	20	---	---	---	---	26	12	25	---	---	6.6	---
20	15	---	---	---	---	9.2	34	25	---	---	12	---
21	10	---	---	---	---	---	46	17	---	---	3.7	---
22	---	---	---	---	---	---	24	8.2	---	---	5.4	---
23	---	14	---	---	---	---	9.2	---	---	---	8.3	---
24	---	25	---	15	---	---	---	---	---	---	---	---
25	---	8.5	---	---	---	---	---	---	---	---	---	---
26	---	4.2	---	12	---	---	---	---	---	---	---	---
27	---	16	---	6.6	---	---	---	---	---	17	---	---
28	---	11	---	---	---	---	---	---	---	4.2	---	---
29	7.0	6.4	---	---	---	---	---	---	---	3.1	---	---
30	4.4	4.0	---	14	---	---	---	---	---	---	7.4	---
31	---	---	---	7.5	---	---	---	---	---	---	21	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	72	---	---	---	---	4.8	3.0
2	---	---	---	---	---	6.4	---	---	---	---	10	---
3	---	---	---	---	---	3.4	---	---	---	---	---	---
4	---	---	---	7.3	---	5.4	---	---	---	10	---	---
5	---	---	---	19	---	30	---	---	---	---	---	---
6	---	---	---	14	---	17	---	---	---	---	---	---
7	---	---	---	43	---	6.9	---	9.2	---	---	---	---
8	---	---	---	85	---	11	---	4.0	---	---	---	---
9	---	---	---	7.5	---	5.5	---	---	---	---	---	---
10	---	---	---	---	---	19	---	---	---	---	7.4	---
11	---	16	---	---	19	18	---	---	---	---	12	---
12	---	40	---	11	9.3	50	---	---	---	16	---	---
13	---	4.4	---	3.6	---	33	---	---	---	14	4.8	---
14	---	3.4	---	---	---	43	---	---	---	37	5.1	---
15	---	---	---	---	---	30	---	---	---	11	19	---
16	---	---	11	---	---	26	---	---	---	---	7.1	---
17	---	---	---	---	16	11	---	---	---	7.1	10	4.7
18	---	---	---	---	32	15	---	---	---	42	11	---
19	---	---	---	---	5.4	35	7.4	---	---	8.9	18	---
20	15	---	12	---	---	13	39	---	---	---	5.8	---
21	---	---	27	---	---	9.1	57	---	---	---	4.0	---
22	---	3.8	50	---	---	7.2	18	---	---	---	---	---
23	---	---	16	---	---	6.4	24	---	---	---	---	---
24	---	---	6.3	---	---	6.3	28	---	---	---	---	---
25	---	---	4.2	45	---	---	9.6	---	---	---	---	---
26	---	---	28	13	---	---	---	---	---	---	---	---
27	42	---	18	---	35	---	4.6	---	---	---	---	---
28	8.8	---	4.4	---	78	---	6.3	---	---	---	---	---
29	---	---	---	---	---	---	6.1	---	---	---	3.0	---
30	4.1	---	---	---	---	---	---	---	---	---	20	---
31	---	---	---	---	---	---	---	---	---	---	25	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	7.5	---	---	---	33	21	---	14	---	---
2	4.2	---	3.5	---	---	16	20	5.0	---	5.2	---	13
3	13	---	---	---	---	26	46	---	---	12	---	6.7
4	---	---	---	---	---	11	72	---	---	17	---	---
5	5.0	---	8.7	---	---	17	15	3.5	---	7.0	---	---
6	---	---	3.2	---	26	29	8.2	7.0	---	11	8.6	---
7	7.4	---	---	---	18	27	6.0	4.7	---	88	7.7	---
8	---	---	---	22	---	16	4.7	4.0	---	103	3.8	---
9	---	11	---	9.1	---	17	52	---	---	46	---	---
10	---	---	---	---	---	9.2	32	---	---	15	---	---
11	---	12	---	---	---	20	12	---	---	4.1	---	---
12	---	20	---	---	---	14	10	3.5	---	4.7	7.6	---
13	---	---	---	25	---	4.8	4.2	25	---	4.9	7.1	---
14	---	---	---	27	23	---	---	17	---	3.7	16	---
15	---	---	---	11	15	---	---	5.5	---	17	---	---
16	14	14	---	178	---	---	---	---	9.7	8.1	5.7	---
17	20	17	---	25	---	41	---	---	5.8	---	---	---
18	34	---	---	6.1	---	14	---	---	36	---	---	---
19	24	6.9	---	4.1	---	---	---	---	33	---	24	---
20	5.5	44	---	---	---	3.3	---	---	46	5.4	36	---
21	3.6	7.6	---	---	---	9.5	3.3	4.7	20	47	4.3	---
22	---	---	---	---	30	5.0	31	---	14	18	---	---
23	---	---	---	---	40	11	47	---	11	31	---	---
24	---	6.7	---	---	20	14	16	---	7.6	42	---	---
25	---	6.4	---	---	9.5	12	7.3	---	---	17	---	---
26	5.5	---	---	---	---	---	3.5	---	5.0	7.0	---	---
27	26	---	---	---	---	21	---	---	8.4	3.9	---	---
28	19	---	---	---	---	23	---	---	5.6	---	4.8	---
29	11	---	---	---	---	9.8	---	---	3.8	---	4.2	---
30	---	---	---	---	---	21	4.2	---	14	---	---	---
31	---	---	---	---	---	29	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	6.7	3.9	---	25	5.6
2	---	---	---	---	---	---	---	3.7	4.0	---	9.7	3.1
3	---	13	---	---	---	---	4.3	---	7.5	---	27	3.5
4	---	4.5	---	---	---	26	12	---	5.5	9.8	6.7	3.3
5	---	---	---	---	---	25	59	---	---	11	23	---
6	---	20	---	---	---	26	184	---	---	26	191	---
7	---	28	6.1	---	---	43	218	3.5	---	27	47	---
8	---	38	15	---	---	25	152	4.2	---	65	10	---
9	---	32	4.3	---	---	3.6	83	---	---	23	4.8	---
10	5.8	61	8.7	---	---	---	59	---	---	35	---	---
11	---	18	6.7	---	---	---	55	---	---	23	8.1	---
12	3.6	3.8	---	---	---	---	17	---	---	44	39	---
13	---	---	5.8	---	---	---	5.6	---	---	41	4.4	---
14	---	---	---	---	---	---	8.1	---	---	15	---	---
15	---	---	---	---	---	6.6	---	---	---	9.7	---	---
16	---	22	42	---	---	---	5.3	---	---	14	---	---
17	---	59	12	---	---	---	3.1	---	---	57	---	3.6
18	---	16	---	---	---	18	---	---	---	26	---	---
19	---	5.0	---	---	---	5.5	---	---	---	22	---	---
20	---	10	---	---	---	27	45	---	7.6	6.0	5.0	---
21	---	12	---	---	---	41	27	---	37	7.9	10	---
22	---	3.1	---	---	---	91	7.8	---	11	5.4	15	---
23	---	---	---	---	---	52	4.7	---	12	---	10	---
24	---	---	---	---	---	49	---	---	4.1	---	5.0	---
25	---	11	---	---	---	6.5	---	4.7	---	---	6.0	---
26	---	5.3	---	---	---	---	6.0	7.8	---	---	---	---
27	14	---	4.8	---	22	---	3.0	10	---	11	---	---
28	6.2	---	---	---	---	3.0	3.2	24	---	27	20	---
29	---	---	---	---	---	11	35	11	---	5.0	12	---
30	---	---	---	---	---	3.6	35	18	---	5.1	31	---
31	---	---	---	---	---	6.4	---	10	---	5.0	30	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	3.0	---	118	---	17	3.3	3.7	---	12	6.6	23
2	---	5.0	---	152	---	42	3.5	---	---	6.1	4.7	15
3	---	15	---	30	---	---	3.7	3.8	---	14	3.0	5.7
4	---	10	---	10	---	---	3.3	---	---	15	6.1	3.3
5	---	5.0	---	5.0	---	---	3.8	---	---	32	23	16
6	---	---	---	3.0	---	---	8.6	---	---	100	31	4.6
7	---	---	---	---	---	8.4	21	---	---	20	24	---
8	---	---	---	---	---	20	5.1	---	---	23	13	3.6
9	---	---	---	---	---	---	---	---	---	17	6.0	7.6
10	---	---	---	---	---	---	---	---	---	27	5.6	14
11	---	---	---	---	---	---	---	---	---	42	13	3.1
12	8.1	---	---	---	---	---	---	8.3	---	45	5.2	---
13	---	---	---	---	---	---	---	---	---	34	5.0	---
14	---	---	---	---	---	---	---	18	---	8.7	6.4	---
15	---	---	---	---	---	---	---	20	---	4.1	7.6	---
16	3.7	---	---	---	---	45	---	14	6.7	---	40	---
17	25	---	15	---	---	19	---	3.3	4.5	---	40	3.7
18	---	---	35	---	---	31	---	---	4.4	18	5.5	---
19	---	---	78	---	---	44	---	---	42	55	3.1	5.9
20	---	---	10	3.4	---	30	---	---	9.8	72	---	---
21	---	---	5.0	10	---	12	---	21	7.1	67	11	---
22	15	---	---	---	---	12	---	6.9	5.7	15	15	---
23	8.0	---	---	---	---	3.7	---	---	112	8.9	24	---
24	5.0	---	---	12	---	---	---	---	17	5.4	7.2	---
25	10	---	---	5.0	---	---	---	---	7.5	5.0	30	---
26	3.0	---	---	23	---	---	---	---	8.1	9.9	25	---
27	5.0	---	---	7.0	---	---	---	---	27	29	14	---
28	7.0	---	---	4.1	---	5.0	14	---	33	18	4.7	---
29	7.5	---	---	---	---	---	13	---	13	31	6.0	---
30	7.0	---	---	---	---	---	13	---	20	11	12	---
31	5.0	---	---	---	---	---	---	---	---	5.9	3.5	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	8.6	15	---	---	---	3.9	3.6	---
2	---	---	---	---	3.3	5.3	---	---	---	---	4.1	---
3	---	---	---	---	---	3.2	---	9.9	---	13	32	---
4	---	---	---	---	---	---	9.0	9.9	---	12	27	---
5	7.5	---	7.6	---	---	---	---	---	---	18	42	---
6	---	4.7	304	---	26	---	5.3	---	---	20	7.3	---
7	---	---	14	---	4.4	---	8.7	---	---	121	3.6	---
8	23	---	5.8	---	---	---	---	---	---	42	---	---
9	13	---	26	---	---	141	---	---	---	15	---	5.5
10	4.3	---	24	---	159	65	---	---	---	5.3	---	---
11	---	---	7.3	5.7	38	11	---	---	12	3.6	---	---
12	---	---	21	135	34	4.0	---	---	43	---	---	---
13	---	4.8	14	338	27	---	---	---	20	---	---	---
14	---	11	32	348	38	9.8	---	---	3.2	12	---	---
15	---	21	18	353	47	17	---	20	---	18	37	---
16	---	12	4.1	210	21	31	---	10	---	6.8	34	---
17	---	4.4	---	59	19	16	---	8.7	---	8.2	8.7	---
18	---	3.6	4.8	14	30	3.9	---	---	8.2	3.7	3.2	---
19	---	---	12	6.0	9.0	---	---	---	55	---	---	---
20	---	12	24	72	12	23	---	---	24	---	---	---
21	---	26	12	43	11	15	---	---	13	---	---	---
22	---	3.1	3.5	452	3.7	6.9	---	---	22	34	---	---
23	---	---	---	106	---	3.0	16	---	57	21	---	---
24	3.5	---	---	37	49	---	3.2	---	24	8.1	---	---
25	---	---	---	14	248	---	---	---	35	26	---	---
26	6.0	---	---	8.8	24	---	---	---	65	11	---	---
27	4.0	4.1	---	6.7	32	---	---	---	38	14	---	---
28	---	---	---	9.9	28	---	---	---	32	31	---	---
29	---	---	---	13	---	---	---	---	32	14	---	---
30	---	---	---	4.2	---	---	---	---	9.5	4.4	---	---
31	---	---	---	22	---	---	---	---	---	3.2	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	7.7	---	45	94	46	---	---	33	24
2	---	---	3.8	---	---	5.1	299	49	---	---	14	4.7
3	---	---	41	---	---	---	125	25	---	---	5.7	---
4	---	---	21	---	---	11	55	75	17	---	20	---
5	---	---	7.2	---	---	57	20	40	7.9	---	9.7	13
6	---	---	3.3	---	---	131	20	26	4.4	7.4	8.2	4.1
7	---	---	---	---	---	47	15	18	3.9	15	3.3	---
8	---	---	---	---	---	39	4.5	8.7	---	3.1	9.0	---
9	---	---	---	606	---	138	6.6	22	3.1	3.0	3.0	---
10	---	---	---	103	---	49	3.8	6.6	14	4.2	---	---
11	---	---	---	275	---	15	8.9	12	49	19	---	3.2
12	---	---	---	29	---	6.4	201	29	42	11	---	---
13	---	---	---	7.0	---	43	138	31	61	5.0	---	32
14	---	50	---	3.5	23	186	75	7.9	25	6.7	---	17
15	---	138	---	---	15	41	103	5.2	18	5.1	---	25
16	---	343	---	---	12	30	26	9.3	15	3.5	---	7.6
17	---	475	---	---	3.8	235	7.4	8.5	11	---	---	4.2
18	---	586	---	---	---	19	3.5	4.4	23	---	---	---
19	---	40	---	---	---	34	13	11	9.9	---	---	---
20	---	17	---	---	---	42	4.1	39	4.2	---	25	---
21	---	19	---	---	---	26	9.7	14	3.1	---	19	42
22	---	13	---	---	---	280	17	5.7	---	4.1	3.5	21
23	---	3.7	---	---	---	517	47	3.9	3.3	5.5	---	3.7
24	---	3.8	14	---	---	708	46	3.0	---	6.4	---	---
25	---	---	25	---	---	188	19	---	3.7	12	---	---
26	---	---	9.2	---	---	115	37	---	9.0	27	---	---
27	---	---	31	---	---	22	30	---	4.7	27	---	---
28	---	---	8.5	---	11	24	8.7	---	---	12	7.3	---
29	---	---	27	---	25	100	20	---	---	4.1	9.1	---
30	---	---	12	---	---	24	49	---	---	5.4	47	---
31	---	---	3.4	---	---	20	---	3.0	---	3.6	34	---
TOTAL	---	---	---	---	---	---	1506.2	---	---	---	---	---
MEAN	---	---	---	---	---	---	50.2	---	---	---	---	---
MAX	---	---	---	---	---	---	299	---	---	---	---	---
MIN	---	---	---	---	---	---	3.5	---	---	---	---	---
AC-FT	---	---	---	---	---	---	2990	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	5.7	---	---	---	---	---	43	---	---	---	---
2	---	---	---	---	---	6.4	---	4.5	---	---	---	---
3	---	---	---	---	---	5.0	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	7.8	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	38	---	---	---	11	---	---	---	17	---	---	---
9	13	7.1	---	---	4.9	---	---	---	---	---	7.5	---
10	8.8	---	---	---	---	---	---	---	---	---	12	---
11	27	35	---	---	---	---	---	---	---	---	8.1	---
12	121	23	---	---	---	---	---	---	---	---	19	---
13	27	3.6	---	---	---	---	---	---	---	---	---	---
14	8.3	---	---	---	---	---	---	---	---	---	---	---
15	3.5	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	14	4.2	---	---	---	---	---	---	---	---	---	---
18	13	23	---	---	---	---	---	---	---	---	---	---
19	4.6	16	---	---	---	---	---	---	---	---	9.7	---
20	---	5.0	---	---	---	---	---	---	---	---	5.2	---
21	---	---	---	---	---	---	---	---	---	12	---	---
22	---	---	---	---	17	---	---	---	---	---	---	---
23	8.3	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	17	---	---	---	---	---	---	---
25	---	---	---	---	11	---	---	---	---	---	---	---
26	---	---	---	---	6.6	---	---	---	---	---	---	---
27	---	---	---	---	24	---	---	---	---	---	---	8.2
28	---	---	---	---	32	---	---	---	---	---	---	3.6
29	17	---	---	---	---	---	---	---	---	---	---	---
30	6.2	---	---	---	---	---	---	---	---	---	---	---
31	115	---	---	---	---	---	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	18	---	3.5	---	3.2	39	---	23	59	17
2	5.8	---	37	---	3.4	5.7	---	28	---	152	15	13
3	---	---	36	---	---	---	---	7.1	---	40	16	9.3
4	---	---	32	---	---	5.5	4.8	3.9	---	65	19	4.4
5	---	---	20	---	4.2	---	3.8	3.4	---	45	10	3.2
6	---	---	16	---	24	---	---	---	---	29	4.8	---
7	---	6.1	41	---	25	3.9	---	---	---	12	6.0	---
8	---	17	112	---	6.9	7.9	---	---	---	17	5.5	12
9	---	9.3	30	36	33	13	---	13	---	26	15	5.1
10	---	---	18	---	43	19	---	29	---	91	91	35
11	---	---	6.1	---	452	25	---	45	---	19	39	5.6
12	---	7.7	3.7	---	35	34	---	29	---	15	72	3.2
13	---	22	3.2	---	7.5	201	3.4	9.5	---	19	33	---
14	---	3.7	3.3	---	4.0	19	7.9	18	---	85	8.0	4.4
15	---	---	---	---	---	23	---	5.5	---	57	4.5	23
16	---	---	---	---	---	4.7	21	3.7	---	30	3.2	23
17	---	---	---	---	---	3.0	24	---	---	18	3.7	6.1
18	---	---	---	---	---	11	11	3.7	---	42	10	4.6
19	---	---	---	---	---	3.2	5.6	20	---	29	7.5	4.8
20	---	---	---	---	---	---	5.9	8.9	---	6.9	3.6	3.3
21	---	---	---	17	---	---	5.7	9.5	---	31	3.2	---
22	---	---	---	24	---	6.4	11	18	---	15	11	---
23	---	---	---	19	---	83	5.8	5.7	---	5.8	38	11
24	---	289	---	3.5	---	53	7.2	3.1	---	3.5	37	4.6
25	---	37	3.3	44	---	37	19	3.1	---	---	13	8.3
26	---	13	25	226	---	18	49	11	8.7	---	33	6.3
27	---	10	---	252	---	4.6	28	3.8	40	---	36	3.3
28	---	49	---	112	---	3.0	85	4.1	39	---	40	---
29	---	11	---	13	---	---	139	3.4	19	---	22	4.3
30	---	3.2	---	25	---	---	94	6.9	20	---	9.8	3.6
31	---	---	---	6.8	---	6.4	---	5.2	---	44	40	---
TOTAL	---	---	---	---	---	---	---	---	---	---	708.8	---
MEAN	---	---	---	---	---	---	---	---	---	---	22.9	---
MAX	---	---	---	---	---	---	---	---	---	---	91	---
MIN	---	---	---	---	---	---	---	---	---	---	3.2	---
AC-FT	---	---	---	---	---	---	---	---	---	---	1410	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	100	20	16	14	3.1
2	4.1	---	---	---	---	---	---	49	8.8	12	8.2	---
3	---	---	---	---	---	---	---	37	20	9.6	5.2	5.9
4	---	---	---	---	---	---	---	65	5.4	39	17	3.8
5	---	---	---	---	---	---	---	18	6.0	17	19	---
6	---	---	---	---	---	---	---	11	12	59	7.5	8.0
7	---	---	23	---	---	---	---	75	6.4	45	6.7	8.1
8	---	---	4.9	---	---	---	---	26	12	31	4.5	38
9	7.0	---	---	---	---	---	---	6.8	5.2	23	3.5	11
10	7.4	---	---	---	---	---	---	---	8.8	14	---	12
11	---	---	---	---	---	---	---	---	5.5	12	---	8.9
12	21	---	3.1	---	---	---	---	5.1	3.5	7.2	12	5.9
13	32	9.6	---	---	---	---	---	20	3.0	30	21	17
14	5.5	50	---	---	---	---	5.5	27	5.2	41	6.2	6.0
15	3.4	15	---	---	---	---	36	7.7	---	28	3.6	3.8
16	---	5.1	29	---	---	---	---	5.2	5.3	16	---	3.9
17	---	3.8	8.1	---	---	---	16	7.3	8.4	14	---	12
18	---	---	214	---	---	---	6.1	4.5	5.1	11	---	52
19	---	---	186	---	---	---	8.3	3.2	12	6.5	3.3	16
20	---	---	31	---	---	---	17	---	4.5	4.2	---	11
21	---	19	25	---	---	---	6.4	---	4.7	3.9	---	4.5
22	---	5.7	12	---	---	---	22	---	13	3.7	---	---
23	---	---	13	---	---	---	19	---	12	4.5	---	---
24	---	18	40	---	---	---	6.5	---	4.8	12	4.1	---
25	---	4.2	8.0	---	---	---	4.9	5.5	3.8	33	9.1	4.0
26	---	---	34	---	---	---	4.7	4.1	4.5	25	5.7	5.6
27	---	---	24	---	---	---	8.6	4.6	4.9	28	5.0	19
28	---	---	9.5	---	---	---	25	---	4.8	17	26	14
29	---	19	4.0	---	---	---	38	---	34	7.5	25	59
30	---	4.1	3.0	---	---	---	83	---	17	4.6	5.5	18
31	---	---	---	---	---	---	---	20	---	13	3.9	---
TOTAL	---	---	---	---	---	---	---	---	---	587.7	---	---
MEAN	---	---	---	---	---	---	---	---	---	19.0	---	---
MAX	---	---	---	---	---	---	---	---	---	59	---	---
MIN	---	---	---	---	---	---	---	---	---	3.7	---	---
AC-FT	---	---	---	---	---	---	---	---	---	1170	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	3.1	---	---	---	---	---	---	---	---	---	---
2	6.3	19	---	---	---	7.2	---	---	---	---	---	---
3	3.4	9.0	---	---	8.2	8.4	---	---	---	---	---	---
4	---	4.6	---	---	---	16	12	---	---	---	---	---
5	---	21	---	7.7	---	3.0	---	---	---	---	13	---
6	---	4.6	---	15	---	---	31	---	---	---	7.6	---
7	21	---	---	---	---	---	32	---	---	---	---	---
8	47	---	---	---	11	---	25	---	---	---	---	---
9	12	---	---	---	4.3	---	6.6	---	---	---	---	---
10	22	---	---	---	---	---	29	---	---	---	---	---
11	7.3	---	---	---	---	---	24	---	---	---	---	---
12	3.9	9.5	---	---	---	---	4.7	---	---	---	---	---
13	---	22	---	---	---	---	---	---	16	---	4.2	---
14	3.3	4.6	---	---	---	---	57	---	---	---	---	---
15	14	3.8	---	---	11	---	28	---	---	---	---	---
16	135	---	---	---	13	---	25	---	---	---	---	---
17	21	---	---	---	---	---	91	---	---	---	---	---
18	5.4	---	---	---	---	---	39	12	---	---	---	---
19	6.6	---	---	---	6.9	---	18	---	---	---	---	---
20	---	---	---	---	41	---	5.0	13	---	---	---	---
21	---	---	---	---	16	---	4.7	5.0	---	---	---	---
22	---	---	---	---	---	---	3.4	---	---	---	---	---
23	---	---	---	---	---	---	9.0	3.3	---	---	---	---
24	41	---	---	---	---	---	4.2	13	---	---	---	---
25	20	---	---	---	---	---	---	4.7	---	---	---	---
26	20	---	429	---	---	---	---	---	---	---	---	---
27	121	---	33	---	---	---	---	---	---	---	12	---
28	11	---	4.8	---	---	13	---	---	---	---	3.0	---
29	8.0	---	---	41	---	35	5.5	---	---	---	---	---
30	5.0	---	---	29	---	16	4.4	---	---	---	---	---
31	4.6	---	---	35	---	5.9	---	---	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	29	---	---	---	---	---	---
2	---	---	---	---	---	8.5	32	21	---	---	4.7	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	3.7	---	---	---	13	---	---
5	---	---	---	8.0	---	19	---	---	---	9.0	---	---
6	---	---	---	---	---	284	---	---	---	---	---	---
7	---	---	---	---	---	184	---	---	---	---	34	---
8	---	---	---	---	---	141	---	18	---	---	60	---
9	---	---	166	---	---	27	---	6.5	---	---	17	---
10	---	---	15	---	---	30	---	---	---	---	---	---
11	---	---	---	---	---	44	---	10	---	---	---	---
12	---	---	---	---	---	18	---	8.5	---	---	---	---
13	---	---	---	---	---	33	---	---	---	---	3.9	---
14	---	---	---	11	---	50	---	---	---	---	7.4	---
15	---	---	---	18	---	17	---	---	---	---	3.7	---
16	---	---	---	---	---	14	17	---	---	---	---	---
17	---	---	---	---	---	7.3	8.0	---	---	---	23	---
18	---	---	---	---	---	5.1	5.2	---	---	16	---	---
19	---	72	---	---	---	5.1	---	---	---	---	---	44
20	---	16	---	---	---	---	---	---	---	---	---	3.7
21	---	---	---	---	---	16	---	---	---	---	---	---
22	---	---	---	---	---	21	---	---	---	---	---	---
23	---	---	---	---	---	9.4	---	---	---	---	---	---
24	---	---	---	---	---	---	---	3.4	---	3.9	---	---
25	---	---	3.3	---	---	---	---	---	---	6.0	---	---
26	---	---	36	---	19	---	---	---	---	---	---	---
27	---	---	14	---	8.3	---	---	8.3	---	---	11	---
28	---	---	3.1	---	27	---	---	7.7	---	---	---	---
29	---	---	---	---	---	---	---	3.5	---	---	27	---
30	---	---	---	3.6	---	---	---	---	---	7.6	---	---
31	---	---	---	---	---	---	---	---	---	6.4	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	---	121	44	---	---	19	32	---	---	---	---
2	---	---	25	41	---	---	17	4.8	---	---	---	---
3	---	---	7.2	32	---	---	20	7.2	5.4	16	---	---
4	---	---	---	4.3	---	---	94	5.2	7.8	22	---	---
5	---	---	---	---	---	---	42	---	16	10	---	---
6	---	---	---	---	---	---	52	27	---	---	---	---
7	---	---	---	30	---	---	65	18	---	27	---	---
8	---	---	---	52	---	---	469	---	3.9	27	4.4	---
9	4.0	---	---	85	---	---	318	---	18	21	---	9.6
10	---	---	---	15	---	---	612	---	12	25	---	3.5
11	5.6	---	---	4.4	---	---	226	---	---	3.3	---	---
12	---	---	---	---	30	---	50	---	---	---	---	---
13	---	---	---	---	3.0	---	34	---	4.3	---	---	---
14	---	---	---	---	---	---	18	---	26	---	12	---
15	---	---	---	---	27	---	17	---	13	---	3.2	---
16	---	20	---	---	186	---	3.1	---	29	4.6	---	---
17	---	---	---	---	5.0	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	10	---	---	---
19	---	46	---	---	---	---	---	---	115	---	---	---
20	---	4.2	---	---	---	21	---	---	21	---	---	---
21	---	---	---	---	---	205	---	---	4.8	---	---	---
22	---	---	---	---	---	166	4.3	---	---	---	---	---
23	---	---	---	---	---	170	7.2	---	---	---	---	---
24	---	---	---	---	---	23	4.8	---	12	---	8.5	---
25	---	---	---	---	---	---	---	---	47	---	---	---
26	---	3.1	---	---	---	---	---	---	28	---	---	---
27	---	---	---	---	---	3.9	7.5	---	18	---	---	---
28	13	---	5.0	---	---	5.2	38	---	7.3	---	---	---
29	---	---	28	---	---	46	9.6	---	3.6	---	---	---
30	---	---	5.7	---	---	72	29	65	---	---	---	---
31	---	---	---	---	---	45	---	14	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	33	---	---	---	205	30	---	26	20	---
2	---	---	125	20	---	---	47	67	---	3.2	3.1	---
3	---	---	201	13	---	14	19	20	---	23	---	---
4	---	---	37	---	---	---	4.3	27	---	23	---	---
5	---	---	8.1	---	---	---	---	31	---	41	---	---
6	---	---	125	---	---	---	---	7.8	---	7.6	---	---
7	32	---	12	---	---	---	---	75	---	---	---	---
8	---	---	3.3	---	---	---	---	17	---	---	---	---
9	---	---	---	---	---	---	---	4.7	---	21	---	---
10	---	---	---	112	---	---	---	3.1	5.2	4.9	---	---
11	---	3.8	9.5	230	---	---	---	---	23	3.3	---	---
12	---	40	13	218	---	---	---	---	12	3.8	13	---
13	---	---	---	22	---	---	---	---	3.7	18	---	---
14	---	8.7	---	25	---	---	---	---	---	115	---	---
15	---	5.8	---	7.4	---	---	26	---	22	18	---	---
16	---	---	---	20	---	---	35	---	57	---	---	---
17	---	8.9	---	4.1	25	---	15	---	7.8	---	---	---
18	---	---	---	55	37	---	14	---	---	---	---	---
19	---	11	---	65	3.0	---	7.2	---	---	---	---	---
20	4.4	32	---	5.8	7.5	5.1	16	---	21	35	---	---
21	---	---	6.9	---	---	---	3.3	---	23	12	---	---
22	---	---	---	4.6	---	---	197	---	---	---	---	---
23	---	---	---	---	---	---	6.9	---	11	---	---	---
24	---	---	---	---	---	---	---	47	---	---	---	---
25	---	---	---	31	6.2	---	---	13	---	---	---	---
26	45	---	---	45	---	---	---	30	5.5	---	---	---
27	---	3.7	---	3.4	---	---	26	16	26	---	---	---
28	4.8	5.3	---	---	---	---	29	---	---	---	---	---
29	---	30	---	3.4	---	---	5.7	5.7	9.8	---	---	---
30	---	43	---	---	---	---	---	---	33	---	---	---
31	---	---	---	---	---	---	---	15	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	---	---	16	---	---	---	---	---	---	---	---
2	5.3	24	---	97	---	---	---	3.2	---	---	---	---
3	---	---	3.3	29	---	---	13	---	---	---	---	---
4	---	---	---	16	---	---	3.3	---	23	---	3.2	---
5	---	---	---	---	---	---	7.2	18	20	3.2	17	11
6	---	---	91	---	---	---	35	---	---	7.1	83	3.3
7	---	---	72	---	---	---	3.2	---	---	22	28	---
8	---	---	42	---	---	---	---	---	---	26	10	---
9	---	---	5.6	43	---	---	---	---	---	38	---	---
10	---	7.1	---	22	---	---	29	---	---	---	---	4.9
11	---	22	---	19	---	---	28	---	---	4.0	---	---
12	---	---	7.3	4.4	---	---	---	5.9	---	40	---	---
13	---	---	170	---	---	---	---	15	---	5.9	3.8	---
14	---	---	20	---	---	---	---	---	---	8.4	---	---
15	---	9.8	4.4	---	---	42	---	---	---	3.9	---	---
16	---	---	---	12	---	---	---	---	---	---	---	---
17	---	---	---	12	---	---	---	---	8.0	---	7.0	---
18	---	11	---	---	---	---	---	---	---	16	---	---
19	---	5.3	---	---	---	---	---	---	---	3.7	---	---
20	---	24	---	---	---	---	---	---	22	---	---	---
21	---	354	---	---	---	---	---	---	9.7	3.8	---	---
22	4.2	103	---	---	---	---	15	14	4.9	---	---	---
23	23	43	---	---	---	---	---	21	5.6	---	---	---
24	---	24	---	---	---	---	---	---	8.8	---	---	---
25	---	7.8	---	---	12	---	---	---	12	---	---	---
26	6.1	7.7	---	16	67	---	9.7	---	---	---	---	---
27	---	---	---	45	9.4	---	16	---	13	---	---	---
28	---	---	---	13	---	---	27	6.5	10	4.3	---	---
29	---	---	---	---	---	---	52	8.1	---	7.9	---	---
30	---	---	---	---	---	---	4.8	---	3.7	14	---	---
31	---	---	---	---	---	---	---	---	---	1.7	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	10	10	18	---	---	4.6
2	---	---	---	---	---	---	6.7	---	---	---	8.4	6.3
3	---	---	---	---	121	---	7.5	---	---	---	---	---
4	---	---	---	---	20	37	---	---	---	5.7	3.6	---
5	---	---	---	---	7.9	17	33	---	30	11	---	---
6	---	---	---	---	---	13	23	---	125	21	5.9	---
7	---	---	---	---	---	40	407	---	21	3.2	---	---
8	---	3.5	---	16	---	11	141	4.1	17	---	---	---
9	---	---	---	---	---	---	25	13	6.6	---	---	---
10	---	8.0	---	22	21	---	9.0	7.3	4.0	5.9	---	---
11	---	20	4.0	4.4	39	---	---	---	3.0	24	---	---
12	---	---	3.0	---	25	---	---	---	37	16	---	---
13	---	---	---	---	---	---	---	43	15	118	---	---
14	---	3.2	---	46	---	---	135	24	31	83	---	---
15	---	---	---	44	---	---	35	11	75	21	---	---
16	---	---	---	13	---	5.2	14	8.2	32	4.5	---	---
17	---	---	---	---	---	---	---	13	34	---	---	---
18	---	---	---	---	---	---	---	---	24	3.7	---	---
19	---	---	---	---	---	---	---	8.6	5.1	145	---	---
20	---	---	---	---	---	---	---	35	8.1	22	186	---
21	---	15	---	---	---	---	13	8.9	7.3	5.8	13	---
22	---	24	---	---	---	---	32	3.8	---	26	8.0	---
23	---	24	---	---	---	---	35	23	---	5.2	3.7	---
24	---	6.5	---	---	30	---	13	7.6	---	---	---	---
25	---	---	5.9	---	18	---	---	75	---	11	---	---
26	---	---	23	---	---	---	---	27	---	8.8	---	---
27	---	---	---	---	---	---	---	3.4	---	---	---	---
28	---	---	---	---	---	---	248	---	---	12	---	---
29	---	---	---	---	---	---	201	11	3.0	33	---	---
30	---	4.5	---	---	---	---	55	35	---	23	---	---
31	---	---	---	---	---	8.4	---	21	---	6.3	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	26	159	7.2	---	4.2	15	---	---
2	---	---	---	---	16	43	4.3	---	11	43	---	---
3	---	---	---	---	27	65	20	---	7.2	17	---	3.4
4	---	---	---	---	13	53	6.9	3.9	7.7	---	---	6.2
5	9.9	---	---	---	12	40	4.7	17	4.0	---	---	13
6	15	---	---	---	19	40	---	29	3.6	---	---	5.4
7	---	---	---	---	41	44	---	30	4.1	---	19	3.3
8	---	---	---	---	6.9	125	---	57	16	---	3.2	---
9	5.8	---	15	30	3.2	19	---	---	11	---	---	3.6
10	---	---	5.4	7.6	---	4.7	---	---	4.2	---	---	24
11	---	---	---	5.2	---	6.3	---	5.0	3.5	3.2	---	4.7
12	---	---	---	39	---	13	---	---	3.1	21	---	6.2
13	---	---	---	5.0	---	11	---	---	3.6	---	5.3	4.5
14	---	---	---	---	---	4.2	---	---	3.3	---	---	5.8
15	---	---	---	---	---	4.9	---	---	4.2	---	9.2	5.6
16	---	---	---	3.3	---	17	---	---	41	---	16	22
17	---	---	---	19	---	5.1	---	---	36	---	9.9	41
18	---	---	---	67	---	3.2	---	---	22	25	3.7	13
19	---	---	---	16	---	---	7.6	4.0	10	14	---	21
20	---	---	---	36	---	---	26	52	28	5.0	3.6	5.1
21	3.8	---	---	---	---	---	11	83	18	---	---	3.7
22	---	---	---	---	---	---	46	16	21	---	---	3.7
23	7.3	---	---	---	---	---	4.1	---	21	---	3.9	---
24	---	---	---	---	6.2	---	4.4	22	50	10	14	4.5
25	3.8	---	---	---	21	---	---	31	37	30	13	---
26	5.1	---	---	---	55	---	---	13	13	7.6	7.9	---
27	---	---	---	---	6.6	---	---	46	30	12	13	3.0
28	---	---	---	---	11	---	---	29	15	19	---	16
29	---	---	---	---	---	4.4	---	8.0	44	23	---	32
30	---	---	---	46	---	4.6	---	24	7.1	---	---	18
31	---	---	---	49	---	14	---	9.1	---	---	---	---
TOTAL	---	---	---	---	---	---	---	---	483.8	---	---	---
MEAN	---	---	---	---	---	---	---	---	16.1	---	---	---
MAX	---	---	---	---	---	---	---	---	50	---	---	---
MIN	---	---	---	---	---	---	---	---	3.1	---	---	---
AC-FT	---	---	---	---	---	---	---	---	960	---	---	---

HAWAII, ISLAND OF HAWAII

16756300 KOHAKOHAU STREAM BELOW DWS INTAKE, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	---	---	---	---	---	44	18	4.0	4.2	19	---
2	3.6	---	---	---	---	---	9.0	---	3.1	---	5.8	---
3	11	---	---	---	---	---	24	---	3.4	---	8.1	---
4	17	---	---	---	---	---	6.7	---	---	---	15	17
5	9.6	---	---	---	---	---	72	14	---	---	11	4.2
6	4.8	---	---	---	---	---	38	---	---	---	31	---
7	3.0	---	---	---	---	9.7	9.4	7.0	34	---	318	---
8	---	---	47	---	---	34	17	15	7.9	---	20	4.1
9	---	---	374	---	---	55	---	3.6	3.4	---	8.9	---
10	---	---	39	3.1	---	15	---	---	---	6.6	8.2	21
11	40	---	7.7	5.0	---	47	---	---	---	27	5.2	15
12	14	---	5.9	---	---	184	---	---	---	3.3	18	10
13	9.0	---	23	---	---	308	---	---	---	4.0	17	13
14	14	34	25	---	23	270	---	46	6.2	7.0	4.3	---
15	37	33	4.2	---	---	174	---	44	14	13	---	---
16	34	5.2	---	---	---	130	---	6.7	---	9.8	---	---
17	13	---	---	---	---	191	---	13	---	---	---	---
18	21	66	14	---	---	28	---	---	3.0	5.2	---	---
19	11	42	10	---	---	21	---	---	---	14	---	---
20	---	13	16	---	---	10	---	---	---	---	---	---
21	---	6.4	8.0	---	---	7.6	---	---	---	---	---	---
22	---	---	5.7	---	---	---	---	---	---	---	---	---
23	---	53	11	---	---	---	---	---	---	---	---	---
24	9.5	41	33	---	---	---	18	---	---	---	---	---
25	7.2	6.8	24	---	---	---	18	---	9.4	6.4	---	---
26	---	3.6	3.4	---	---	---	8.9	---	41	26	---	---
27	---	---	---	385	---	4.0	7.8	22	8.2	---	22	---
28	---	---	---	289	---	6.5	18	31	19	---	29	---
29	---	---	---	8.1	---	9.0	24	44	11	21	8.2	---
30	31	---	---	3.5	---	15	34	23	5.5	75	---	---
31	---	---	---	---	---	12	---	11	---	8.1	---	---
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---
MEAN	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---

HAWAII, ISLAND OF HAWAII

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 upstream from Marine Dam, 0.4 mi east of Puu Ohu, and 1.6 mi north of Kamuela.

DRAINAGE AREA.--1.18 mi^2.

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. Elevation of gage is 3,460 ft above mean sea level (from topographic map).

REMARKS.--

Water year 1992: Records fair. Parker Ranch diverts less than 1 ft^3/s through a 6-in. pipe upstream of gage.

Water year 1993: Records good except for period of estimated record (August 19 through September 9) which is poor. Parker Ranch diverts less than 1 ft^3/s through a 6-in. pipe upstream of gage.

Water year 1994: Records good. Parker Ranch diverts less than 1 ft^3/s through a 6-in. pipe upstream of gage.

Water year 1995: Records good. Parker Ranch diverts less than 1 ft^3/s through a 6-in. pipe upstream of gage.

Water year 1996: Records good except for period of estimated record (March 28 to April 8) which is fair. Parker Ranch diverts less than 1 ft^3/s through a 6-in. pipe upstream of gage.

Water year 1997: Records good. Parker Ranch diverts less than 1 ft^3/s through a 6-in. pipe upstream of gage.

Water year 1998: Records good. Parker Ranch diverts less than 1 ft^3/s through a 6-in. pipe upstream of gage.

AVERAGE DISCHARGE.--

Water Year 1992: 45 years (water years 1948-92), 9.18 ft^3/s (6,650 acre-ft/yr).

Water Year 1993: 46 years (water years 1948-93), 9.21 ft^3/s (6,670 acre-ft/yr).

Water Year 1994: 47 years (water years 1948-94), 9.33 ft^3/s (6,760 acre-ft/yr).

Water Year 1995: 48 years (water years 1948-95), 9.32ft^3/s (6,750 acre-ft/yr).

Water Year 1996: 49 years (water years 1948-96), 9.25 ft^3/s (6,700 acre-ft/yr).

Water Year 1997: 50 years (water years 1948-97), 9.22 ft^3/s (6,680 acre-ft/yr).

Water Year 1998: 51 years (water years 1948-98), 9.35 ft^3/s (6,770 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,410 ft^3/s, November 18, 1979, gage height, 6.84 ft, from rating curve extended above 120 ft^3/s on the basis of computations of flow over dam at gage heights 5.46 ft and 5.96 ft; minimum, 0.34 ft^3/s, June 5-6, 1992.

EXTREMES FOR CURRENT YEAR.--

Water Year 1992: Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 26	0330	181	3.31	Sep. 14	0430	*997	*4.97
Jul. 27	1830	196	3.37	Sep. 25	2000	222	3.47

Minimum discharge, 0.34 ft^3/s, June 5-6.

Water Year 1993: Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 6	2230	*349	*3.87	No other peaks greater than base discharge.			

Minimum discharge, 1.2 ft^3/s, February 18, March 1.

Water Year 1994: Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 26	0530	216	3.45	Mar. 25	1100	*317	*3.78

Minimum discharge, 1.4 ft^3/s, October 6, 8-10.

Water Year 1995: Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 15	1700	*180	*3.27				

Minimum discharge, 1.2 ft^3/s, March 16-17.

Water Year 1996: Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 25	0300	*331	*3.76	No other peaks greater than base discharge.			

Minimum discharge, 0.79 ft^3/s, January 15-16, 24, 27.

HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

Water Year 1997: Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 24	0800	217	3.41	Mar. 17	2200	295	3.67
Jan. 20	0500	*362	*3.84	Jul. 9	1015	292	3.66
Feb. 22	2330	262	3.57				

Minimum recorded discharge, 0.69 ft^3/s, October 17-18, 21-22, 27-28.

Water Year 1998: Peak discharges greater than base discharge of 180 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 11	0230	*249	*3.52	Sep. 21	0515	226	3.44

Minimum recorded discharge, 1.0 ft^3/s, February 17-18, March 21-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	2.3	1.5	14	4.7	3.8	2.0	.88	.56	2.8	4.6	7.1
2	1.8	1.9	1.5	13	2.6	2.2	1.9	.57	.51	2.5	5.7	57
3	1.7	2.0	1.5	7.3	14	1.8	2.4	.46	.37	2.3	4.6	36
4	1.6	2.0	2.6	3.6	31	1.6	2.1	.49	.45	15	4.1	18
5	1.7	2.2	2.2	2.7	45	1.7	1.8	18	.47	16	3.9	99
6	1.8	1.8	2.4	2.2	42	1.6	1.6	36	.51	7.7	4.4	36
7	8.9	1.9	2.5	2.0	20	1.4	1.8	10	.82	3.9	10	12
8	7.1	1.7	1.9	1.9	5.9	1.4	1.8	3.1	.82	2.6	6.0	8.1
9	2.7	1.8	1.6	1.7	3.7	1.3	1.5	2.0	8.2	4.5	4.3	6.7
10	2.1	1.5	1.5	1.6	2.8	1.3	1.5	1.6	6.5	8.3	3.9	4.8
11	1.8	1.4	1.5	1.6	2.7	1.3	2.3	1.1	4.4	3.9	21	4.1
12	1.7	1.4	1.3	1.5	3.5	1.3	4.3	.87	2.2	4.0	7.2	3.6
13	1.8	1.3	1.2	1.6	5.5	1.2	2.7	.77	1.6	5.0	4.8	25
14	1.6	1.3	1.2	1.5	3.2	1.3	1.8	.71	1.2	5.7	3.6	169
15	5.4	1.2	1.3	17	2.6	1.4	1.6	.67	1.6	4.6	5.7	10
16	4.0	1.2	1.2	4.8	2.2	1.4	1.4	.61	2.0	17	19	7.9
17	2.3	1.2	1.4	2.8	2.0	1.3	1.7	.58	1.3	21	8.9	11
18	1.9	1.2	1.2	2.1	1.8	1.4	1.6	.75	1.2	14	4.4	9.8
19	1.8	2.2	1.4	14	1.7	4.8	1.4	.62	1.5	11	4.3	7.1
20	1.9	2.4	2.2	5.5	1.7	11	1.4	.49	1.8	44	9.8	4.6
21	1.8	1.7	3.1	3.1	1.7	3.5	1.0	.46	1.2	23	27	3.6
22	2.4	5.8	2.0	2.4	1.6	2.6	.70	.43	1.3	20	9.1	3.0
23	2.1	6.9	18	2.1	1.6	2.3	.53	.42	4.5	19	18	17
24	1.9	2.7	4.1	1.8	1.5	2.0	.49	.42	12	5.0	15	7.8
25	1.9	2.2	17	1.7	1.5	17	.48	.43	22	34	20	52
26	1.8	2.0	80	1.6	1.4	12	.46	.41	38	74	19	76
27	1.9	1.7	10	1.6	1.5	3.7	.47	.40	27	88	10	33
28	1.7	1.6	5.5	1.5	1.4	2.7	.56	.68	22	18	16	8.4
29	1.5	1.5	7.0	1.4	2.1	2.4	1.1	.61	4.8	7.2	24	5.5
30	1.4	1.5	4.7	2.4	---	2.9	1.4	.39	3.2	8.1	10	5.0
31	1.6	---	16	22	---	2.4	---	.38	---	7.2	7.8	---
TOTAL	75.5	61.5	200.5	144.0	212.9	98.0	45.79	85.30	174.01	499.3	316.1	748.1
MEAN	2.44	2.05	6.47	4.65	7.34	3.16	1.53	2.75	5.80	16.1	10.2	24.9
MAX	8.9	6.9	80	22	45	17	4.3	36	38	88	27	169
MIN	1.4	1.2	1.2	1.4	1.4	1.2	.46	.38	.37	2.3	3.6	3.0
AC-FT	150	122	398	286	422	194	91	169	345	990	627	1480

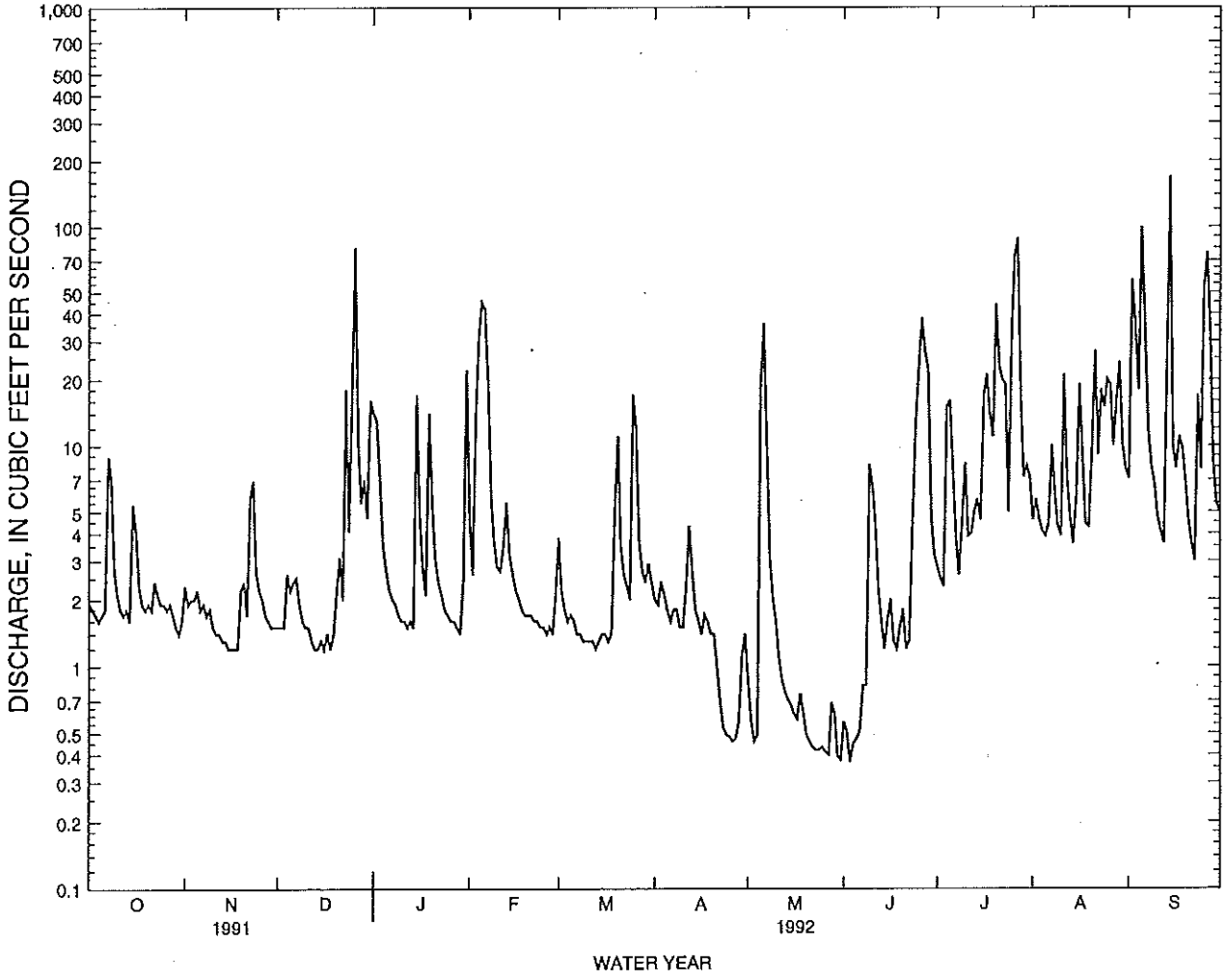
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1992, BY WATER YEAR (WY)

MEAN	6.01	8.45	9.64	8.62	7.63	10.6	12.9	9.29	8.27	11.5	11.1	5.85
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	19.8	20.0	21.3	33.6	24.9
(WY)	1984	1980	1958	1979	1960	1980	1986	1990	1952	1950	1958	1992
MIN	1.08	1.42	1.91	1.46	1.31	2.11	1.53	2.75	2.68	3.08	2.27	.91
(WY)	1985	1963	1990	1953	1954	1983	1992	1992	1962	1961	1973	1965

HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1991 CALENDAR YEAR		FOR 1992 WATER YEAR		WATER YEARS 1947 - 1992	
ANNUAL TOTAL	3904.8		2661.00			
ANNUAL MEAN	10.7		7.27		9.18	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	178	Aug 7	169	Sep 14	641	Nov 18 1979
LOWEST DAILY MEAN	1.2	Nov 15	.37	Jun 3	.37	Jun 3 1992
ANNUAL SEVEN-DAY MINIMUM	1.3	Nov 12	.42	May 21	.42	May 21 1992
ANNUAL RUNOFF (AC-FT)	7750		5280		6650	
10 PERCENT EXCEEDS	21		18		20	
50 PERCENT EXCEEDS	4.6		2.2		4.3	
90 PERCENT EXCEEDS	1.7		.82		1.9	



HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	2.1	5.2	29	2.2	1.2	2.7	23	46	7.4	7.5	e2.5
2	3.6	1.9	8.4	8.9	1.9	28	2.7	15	25	14	14	e2.2
3	3.3	2.1	4.8	3.8	1.6	26	4.6	27	7.5	14	30	e2.0
4	3.0	2.0	4.1	23	1.6	9.1	3.4	10	17	26	11	e1.9
5	2.8	2.8	18	114	1.8	5.3	3.8	22	25	7.1	7.5	e1.8
6	2.5	6.2	7.2	92	1.8	33	17	7.8	20	5.7	8.3	e1.7
7	2.4	3.8	4.4	39	1.5	22	45	11	12	8.5	10	e1.6
8	2.8	2.6	3.7	9.3	1.5	9.1	14	19	32	4.7	18	e1.5
9	2.3	11	68	4.8	1.5	16	8.1	20	16	3.9	23	e2.0
10	2.0	7.9	55	4.0	1.6	16	11	36	14	3.4	36	2.5
11	1.9	3.2	14	3.4	2.0	20	4.3	9.8	14	3.1	34	4.1
12	2.0	2.5	8.2	3.0	1.7	5.1	3.4	7.1	14	3.0	14	6.8
13	1.8	14	4.7	2.7	1.5	4.9	3.0	5.4	8.5	2.7	30	5.8
14	1.9	33	3.5	2.6	1.5	4.4	2.5	4.2	4.9	2.5	53	2.8
15	1.7	69	3.0	8.3	1.4	19	5.7	4.0	4.1	4.2	25	2.4
16	1.7	7.8	2.9	19	1.3	5.0	3.8	3.9	6.8	4.5	66	2.2
17	1.8	4.1	2.5	18	1.5	12	2.9	4.0	14	7.3	12	2.2
18	1.9	3.0	2.2	5.1	1.4	5.2	2.5	4.4	33	9.8	7.8	3.4
19	1.8	2.5	2.3	4.3	1.4	3.4	4.1	7.1	13	37	e11	4.6
20	1.6	2.2	2.4	3.9	1.5	5.6	77	6.3	7.5	21	e10	10
21	1.8	2.1	2.5	3.0	1.5	6.0	80	4.0	5.1	55	e7.0	4.3
22	1.6	3.1	15	2.6	1.8	3.9	62	3.4	6.0	45	e10	2.7
23	1.6	12	5.3	2.2	1.6	13	15	2.8	6.5	36	e16	8.2
24	1.6	8.9	4.0	2.2	1.6	4.7	10	3.7	4.8	62	e19	6.0
25	1.6	4.7	3.0	1.9	2.1	3.1	8.6	5.7	18	27	e9.0	3.1
26	5.6	12	2.7	1.7	2.3	2.5	6.5	3.7	27	16	e5.0	2.8
27	5.6	4.3	2.4	1.6	1.7	6.5	4.5	7.0	27	69	e4.0	2.2
28	8.6	3.2	2.1	1.8	1.3	5.9	3.7	7.9	18	23	e4.5	2.0
29	3.8	8.8	2.0	2.4	---	3.0	3.4	4.3	14	19	e3.0	2.0
30	2.6	10	1.8	3.8	---	5.7	15	2.8	10	35	e2.5	5.3
31	2.2	---	2.0	2.8	---	3.7	---	6.8	---	12	e2.0	---
TOTAL	83.8	252.8	267.3	424.1	46.1	308.3	430.2	299.1	470.7	588.8	510.1	102.6
MEAN	2.70	8.43	8.62	13.7	1.65	9.95	14.3	9.65	15.7	19.0	16.5	3.42
MAX	8.6	69	68	114	2.3	33	80	36	46	69	66	10
MIN	1.6	1.9	1.8	1.6	1.3	1.2	2.5	2.8	4.1	2.5	2.0	1.5
AC-FT	166	501	530	841	91	612	853	593	934	1170	1010	204

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1993, BY WATER YEAR (WY)

MEAN	5.94	8.45	9.62	8.73	7.50	10.6	12.9	9.30	8.43	11.7	11.2	5.80
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	19.8	20.0	21.3	33.6	24.9
(WY)	1984	1980	1958	1979	1960	1980	1986	1990	1952	1950	1958	1992
MIN	1.08	1.42	1.91	1.46	1.31	2.11	1.53	2.75	2.68	3.08	2.27	.91
(WY)	1985	1963	1990	1953	1954	1983	1992	1992	1962	1961	1973	1965

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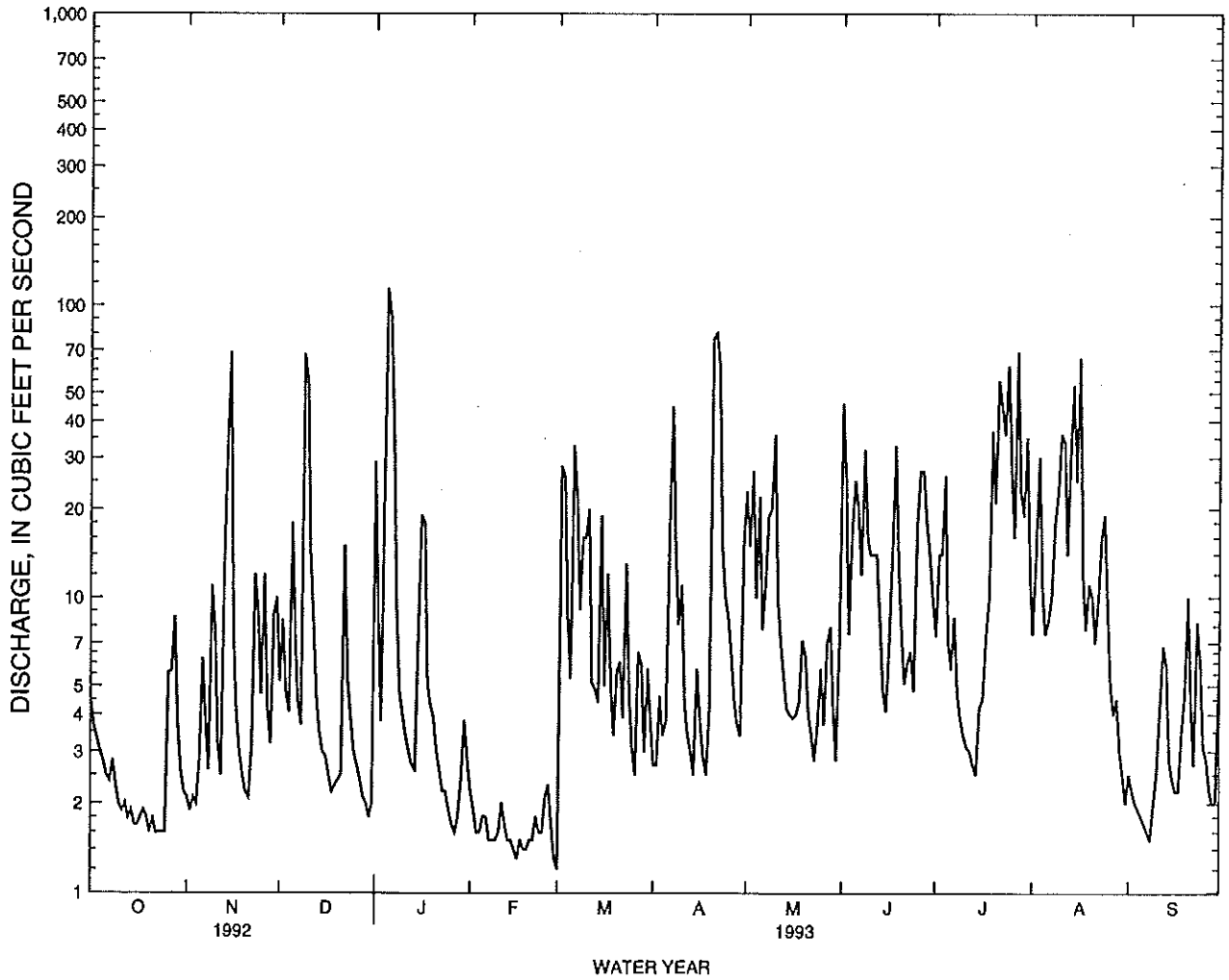
HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1947 - 1993	
ANNUAL TOTAL	2927.40		3783.9			
ANNUAL MEAN	8.00		10.4		9.21	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	169	Sep 14	114	Jan 5	641	Nov 18 1979
LOWEST DAILY MEAN	.37	Jun 3	1.2	Mar 1	.37	Jun 3 1992
ANNUAL SEVEN-DAY MINIMUM	.42	May 21	1.4	Feb 13	.42	May 21 1992
ANNUAL RUNOFF (AC-FT)	5810		7510		6670	
10 PERCENT EXCEEDS	19		26		20	
50 PERCENT EXCEEDS	2.8		4.5		4.3	
90 PERCENT EXCEEDS	.82		1.8		1.9	



HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	3.3	12	2.7	2.2	2.8	4.1	16	5.0	20	5.7	26
2	2.2	2.6	5.9	2.2	2.4	2.3	3.7	36	4.9	22	10	16
3	1.9	2.2	14	3.5	4.4	2.0	10	11	4.2	34	35	12
4	1.9	2.2	19	3.6	15	2.0	24	13	17	20	11	20
5	1.7	2.3	48	2.5	38	2.1	16	13	45	35	6.8	16
6	1.5	7.6	48	12	25	2.2	12	8.8	47	23	6.6	12
7	1.7	12	15	14	24	1.9	19	5.3	17	25	6.3	11
8	1.5	6.2	25	4.2	13	1.7	11	4.4	7.5	27	5.4	5.6
9	1.5	33	12	2.7	9.7	1.7	7.3	3.5	8.4	11	4.9	7.2
10	1.8	6.3	15	2.3	12	1.7	5.0	3.1	8.0	7.2	5.6	19
11	2.7	3.5	20	2.0	23	2.3	14	2.8	4.9	8.3	21	20
12	6.7	3.0	48	1.9	19	73	87	2.8	3.9	7.9	38	39
13	9.3	5.7	33	1.8	6.8	71	28	7.7	4.0	6.1	15	14
14	3.4	9.9	14	1.7	20	59	9.4	7.6	13	19	8.0	7.5
15	2.2	17	25	1.7	11	58	10	15	14	31	12	6.6
16	2.4	9.1	27	1.8	11	26	6.6	6.4	11	12	11	6.2
17	6.0	21	20	5.1	5.7	25	5.1	4.8	24	39	6.7	26
18	4.8	23	11	12	6.8	23	28	5.4	61	27	19	15
19	2.5	13	33	25	4.5	34	59	9.2	58	15	13	6.4
20	2.1	5.2	23	43	3.6	40	55	6.1	18	15	9.5	4.8
21	3.3	4.5	12	56	3.0	40	56	8.9	19	44	6.3	4.1
22	7.6	7.5	7.0	35	2.5	24	19	9.6	20	30	9.9	3.9
23	8.8	26	6.6	15	2.2	41	18	4.8	17	28	62	4.5
24	5.2	31	7.8	22	2.4	44	19	4.4	25	19	20	3.4
25	3.7	8.8	7.1	26	9.7	114	12	12	41	21	6.9	3.0
26	49	21	4.6	27	21	39	31	7.8	26	24	5.4	2.7
27	5.5	40	3.6	7.9	5.7	12	14	4.8	47	11	7.8	2.9
28	5.0	23	3.1	4.7	3.4	9.8	14	4.2	27	7.7	5.1	2.8
29	6.7	13	2.8	3.4	---	12	7.1	4.1	44	6.7	4.0	2.4
30	6.7	20	2.6	2.7	---	6.2	6.7	14	59	5.4	3.7	2.2
31	5.8	---	2.6	2.4	---	4.8	---	11	---	4.6	20	---
TOTAL	167.9	382.9	527.7	347.8	307.0	778.5	611.0	267.5	700.8	605.9	401.6	322.2
MEAN	5.42	12.8	17.0	11.2	11.0	25.1	20.4	8.63	23.4	19.5	13.0	10.7
MAX	49	40	48	56	38	114	87	36	61	44	62	39
MIN	1.5	2.2	2.6	1.7	2.2	1.7	3.7	2.8	3.9	4.6	3.7	2.2
AC-FT	333	759	1050	690	609	1540	1210	531	1390	1200	797	639

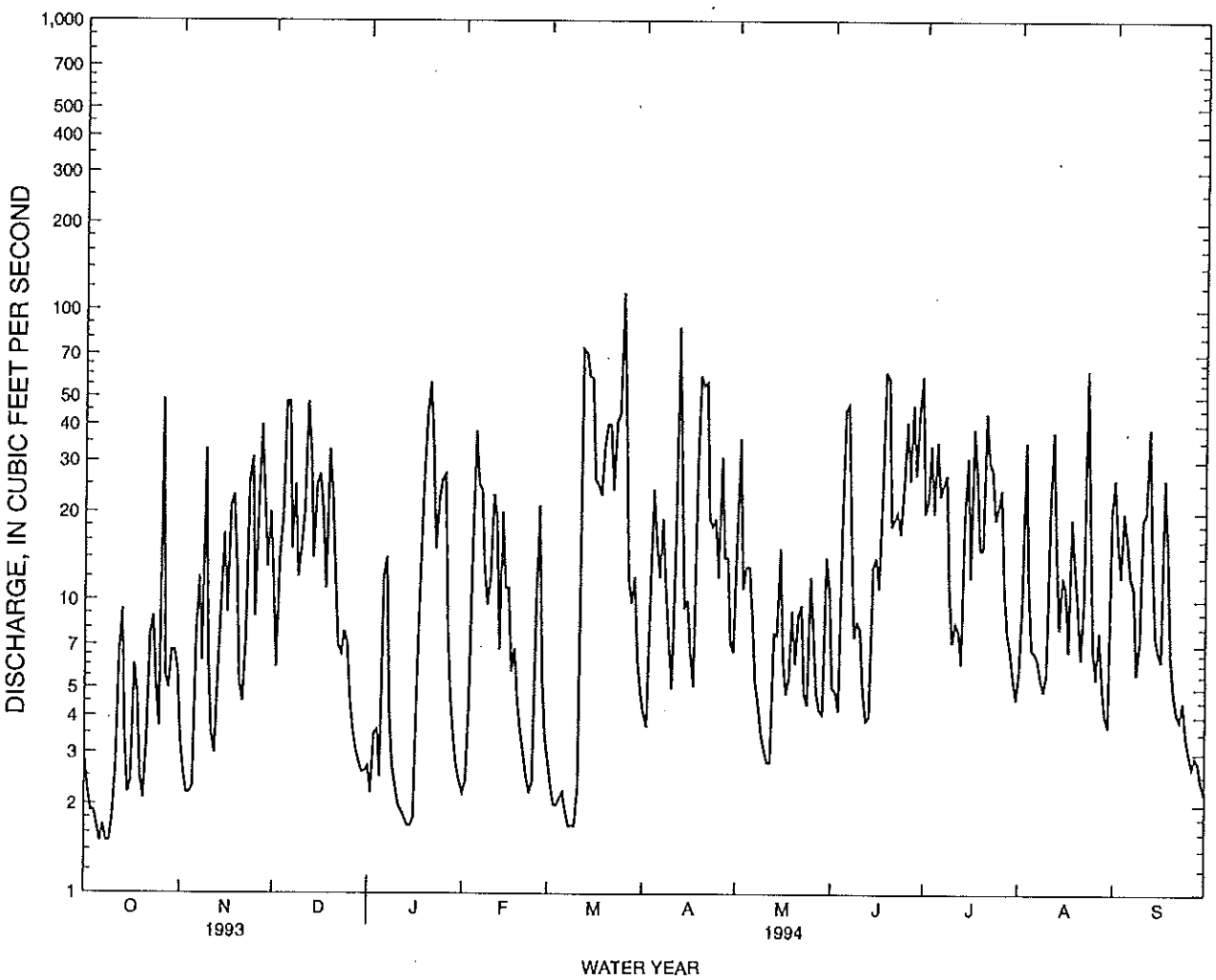
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1994, BY WATER YEAR (WY)

MEAN	5.93	8.54	9.77	8.79	7.57	10.9	13.1	9.28	8.74	11.8	11.2	5.90
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	19.8	23.4	21.3	33.6	24.9
(WY)	1984	1980	1958	1979	1960	1980	1986	1990	1994	1950	1958	1992
MIN	1.08	1.42	1.91	1.46	1.31	2.11	1.53	2.75	2.68	3.08	2.27	.91
(WY)	1985	1963	1990	1953	1954	1983	1992	1992	1962	1961	1973	1965

HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR		FOR 1994 WATER YEAR		WATER YEARS 1947 - 1994	
ANNUAL TOTAL	4258.5		5420.8			
ANNUAL MEAN	11.7		14.9		9.33	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	114	Jan 5	114	Mar 25	641	Nov 18 1979
LOWEST DAILY MEAN	1.2	Mar 1	1.5	Oct 6	.37	Jun 3 1992
ANNUAL SEVEN-DAY MINIMUM	1.4	Feb 13	1.7	Oct 4	.42	May 21 1992
ANNUAL RUNOFF (AC-FT)	8450		10750		6760	
10 PERCENT EXCEEDS	27		35		21	
50 PERCENT EXCEEDS	5.9		9.3		4.4	
90 PERCENT EXCEEDS	1.8		2.4		1.9	



HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.1	25	3.0	1.8	1.5	4.8	2.2	23	8.6	23	17
2	2.2	2.1	8.9	2.3	1.7	1.5	2.8	2.1	11	4.8	45	13
3	2.3	2.9	9.5	2.2	1.7	5.7	2.3	2.3	5.3	12	21	5.8
4	2.4	9.2	7.2	2.0	1.7	6.6	2.9	2.6	23	24	10	5.7
5	2.1	13	20	2.1	1.8	2.6	3.4	2.1	13	12	12	5.8
6	2.0	20	12	3.1	1.8	2.0	3.4	2.1	9.4	14	11	4.1
7	1.9	25	14	2.3	1.7	1.7	2.4	12	25	9.5	42	3.2
8	1.9	19	29	2.1	1.7	1.6	2.0	7.1	11	6.2	25	3.0
9	1.8	9.2	11	1.9	1.7	1.5	1.9	6.2	12	4.6	46	3.5
10	2.0	52	14	1.8	1.9	1.5	1.7	11	31	3.9	13	2.8
11	2.2	48	9.5	1.8	1.7	1.4	1.6	24	36	6.8	12	2.5
12	2.0	32	5.2	2.3	1.6	1.3	1.7	28	15	23	38	2.3
13	2.5	12	4.0	37	1.6	1.3	1.7	44	8.1	10	18	2.2
14	2.9	11	3.3	65	1.7	1.3	1.5	14	5.3	4.5	7.4	2.2
15	2.8	15	13	71	1.7	1.3	6.1	23	10	3.4	5.6	2.2
16	2.2	9.9	15	38	1.5	1.2	13	18	7.0	6.7	4.6	2.0
17	2.0	7.5	6.2	18	1.5	1.2	4.8	13	4.7	27	3.9	2.0
18	2.2	4.5	4.6	7.3	1.5	1.4	2.8	5.4	9.7	6.1	3.4	1.9
19	2.2	3.5	3.8	4.8	1.5	1.7	2.5	3.6	11	40	3.1	1.8
20	2.1	3.0	4.2	3.6	1.5	1.8	2.5	2.9	12	42	2.9	1.7
21	2.0	6.4	3.1	2.9	1.5	4.6	4.8	2.6	9.1	44	2.9	1.8
22	8.7	10	2.7	2.6	1.5	32	42	2.5	6.2	10	2.7	1.8
23	7.9	6.0	2.4	2.4	1.5	8.7	59	2.3	5.2	10	2.6	1.8
24	4.0	8.3	2.3	2.3	1.5	3.3	27	2.2	3.7	6.0	16	1.8
25	9.2	11	2.4	2.1	1.4	2.2	20	6.6	3.0	5.0	33	1.7
26	4.3	6.7	2.6	1.9	1.5	1.8	9.0	5.6	2.7	13	8.6	1.7
27	17	4.7	2.3	1.8	1.7	1.6	4.6	9.3	2.3	52	43	7.0
28	7.1	4.0	2.1	1.8	1.6	7.3	3.2	8.7	2.2	26	42	9.9
29	3.6	27	6.0	1.8	---	25	2.5	17	2.2	8.4	11	8.0
30	2.6	35	16	1.8	---	27	2.2	15	11	6.2	8.5	7.1
31	2.2	---	4.5	1.7	---	13	---	14	---	4.9	8.8	---
TOTAL	112.5	420.0	265.8	294.7	45.5	166.6	240.1	311.4	330.1	454.6	526.0	127.3
MEAN	3.63	14.0	8.57	9.51	1.63	5.37	8.00	10.0	11.0	14.7	17.0	4.24
MAX	17	52	29	71	1.9	32	59	44	36	52	46	17
MIN	1.8	2.1	2.1	1.7	1.4	1.2	1.5	2.1	2.2	3.4	2.6	1.7
AC-FT	223	833	527	585	90	330	476	618	655	902	1040	252

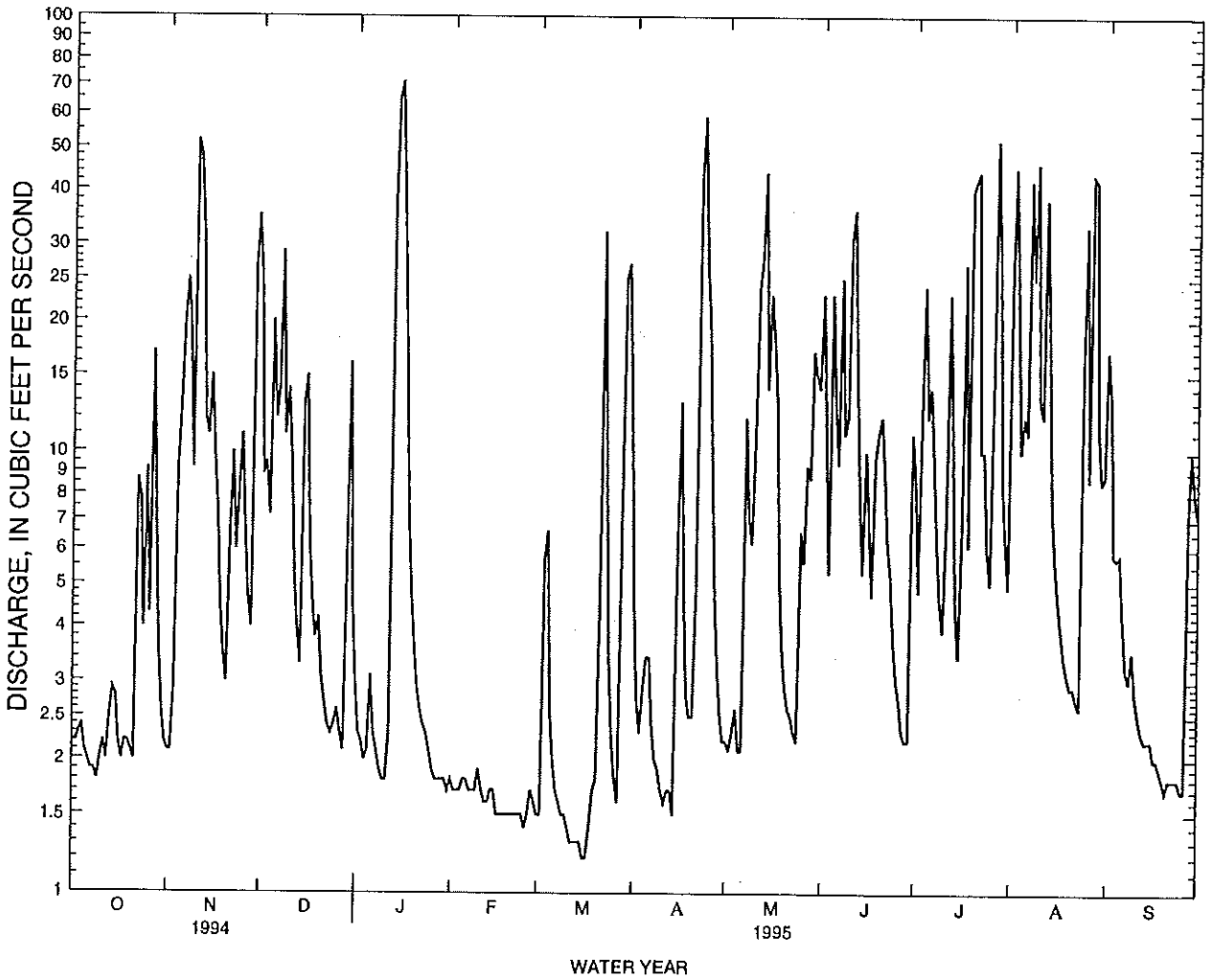
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1995, BY WATER YEAR (WY)

MEAN	5.88	8.66	9.75	8.80	7.45	10.8	13.0	9.30	8.78	11.9	11.4	5.87
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	19.8	23.4	21.3	33.6	24.9
(WY)	1984	1980	1958	1979	1960	1980	1986	1990	1994	1950	1958	1992
MIN	1.08	1.42	1.91	1.46	1.31	2.11	1.53	2.75	2.68	3.08	2.27	.91
(WY)	1985	1963	1990	1953	1954	1983	1992	1992	1962	1961	1973	1965

HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1994 CALENDAR YEAR		FOR 1995 WATER YEAR		WATER YEARS 1947 - 1995	
ANNUAL TOTAL	5140.6		3294.6			
ANNUAL MEAN	14.1		9.03		9.32	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	114	Mar 25	71	Jan 15	641	Nov 18 1979
LOWEST DAILY MEAN	1.7	Jan 14	1.2	Mar 16	.37	Jun 3 1992
ANNUAL SEVEN-DAY MINIMUM	1.9	Jan 10	1.3	Mar 11	.42	May 21 1992
ANNUAL RUNOFF (AC-FT)	10200		6530		6750	
10 PERCENT EXCEEDS	35		25		21	
50 PERCENT EXCEEDS	8.7		4.1		4.4	
90 PERCENT EXCEEDS	2.2		1.7		1.8	



HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	3.1	1.2	1.6	4.9	15	e71	5.8	2.3	16	2.6	1.2
2	3.0	2.4	1.1	1.4	2.8	12	e12	3.8	2.2	8.9	10	1.3
3	3.4	2.0	1.1	1.2	2.0	31	e6.0	2.9	2.1	4.0	7.1	1.2
4	2.6	1.8	1.2	1.2	1.7	20	e4.4	2.7	2.5	12	3.0	1.2
5	2.3	1.7	1.2	1.1	1.4	8.6	e3.6	2.6	4.0	8.5	2.3	1.2
6	2.1	1.7	1.2	1.2	1.3	4.9	e2.8	2.4	2.6	23	2.1	1.3
7	2.0	1.8	1.4	1.2	1.4	4.5	e2.7	2.4	3.4	4.6	2.5	1.2
8	1.9	1.8	1.3	1.7	1.4	3.5	e2.4	2.3	3.6	3.2	2.5	1.4
9	2.0	1.7	1.2	1.6	1.3	3.0	2.9	2.3	15	2.7	2.0	1.4
10	3.4	6.2	1.2	1.4	1.4	2.8	3.7	2.3	5.8	29	1.9	1.2
11	4.6	16	1.1	1.3	1.4	2.6	3.5	2.2	2.6	26	1.9	1.0
12	2.8	4.6	1.1	1.1	1.3	2.4	3.2	2.2	2.2	8.6	18	1.3
13	2.3	2.5	1.2	1.0	1.2	2.3	2.7	2.1	1.9	6.2	23	1.7
14	16	2.0	1.3	1.0	1.5	2.5	9.8	2.1	1.7	4.6	6.7	2.0
15	15	1.9	1.3	.89	24	2.9	74	2.4	1.6	3.0	3.3	4.8
16	4.4	1.8	1.8	1.0	28	8.0	56	2.2	1.6	2.6	3.6	3.1
17	3.1	1.6	2.6	1.2	6.4	8.4	20	3.5	1.8	2.5	3.0	1.7
18	3.8	1.5	4.8	2.0	3.4	22	7.8	14	6.4	2.5	2.2	2.5
19	12	1.5	2.6	5.1	3.0	18	55	15	6.2	2.4	2.0	3.4
20	16	1.5	1.7	1.9	29	5.1	33	6.6	3.3	2.3	2.1	1.8
21	5.3	1.4	1.5	1.4	26	3.4	48	3.3	2.6	2.1	1.8	1.4
22	8.4	1.5	1.5	1.1	13	2.9	23	2.5	2.2	1.9	1.6	1.3
23	4.9	1.6	1.3	.99	25	2.7	9.9	2.3	2.1	1.8	1.5	1.2
24	3.4	1.3	1.2	.95	40	6.5	6.2	2.2	2.7	1.9	1.5	1.1
25	9.8	1.3	1.2	1.1	101	5.3	4.9	2.3	5.0	2.0	1.5	1.1
26	9.5	1.2	1.3	1.0	10	3.5	4.1	3.5	3.1	2.2	1.4	1.2
27	4.0	1.2	1.1	1.1	13	2.8	5.0	3.5	5.3	2.3	1.3	1.1
28	2.7	1.1	1.1	3.9	33	e3.0	6.0	2.7	5.3	2.2	1.3	1.0
29	2.6	1.1	1.1	9.0	52	e23	4.0	2.4	14	2.0	1.3	.96
30	12	1.2	1.2	21	---	e25	3.5	2.4	8.9	2.0	1.2	.90
31	7.2	---	1.6	31	---	e49	---	2.5	---	2.1	1.2	---
TOTAL	176.0	72.0	45.7	102.63	431.8	306.6	491.1	111.4	124.0	195.1	117.4	47.16
MEAN	5.68	2.40	1.47	3.31	14.9	9.89	16.4	3.59	4.13	6.29	3.79	1.57
MAX	16	16	4.8	31	101	49	74	15	15	29	23	4.8
MIN	1.9	1.1	1.1	.89	1.2	2.3	2.4	2.1	1.6	1.8	1.2	.90
AC-FT	349	143	91	204	856	608	974	221	246	387	233	94

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1996, BY WATER YEAR (WY)

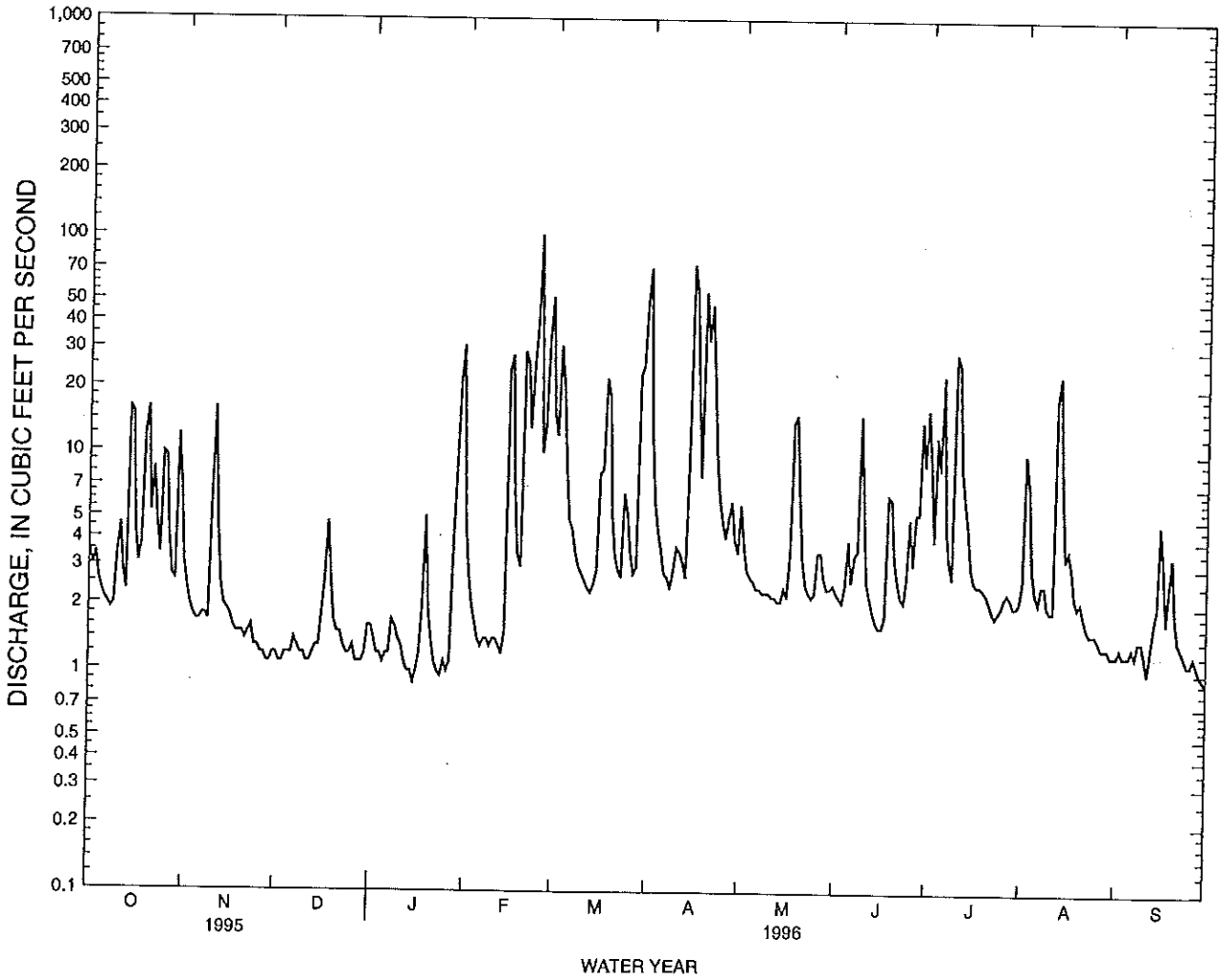
MEAN	5.88	8.53	9.58	8.69	7.61	10.8	13.0	9.18	8.69	11.8	11.2	5.78
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	19.8	23.4	21.3	33.6	24.9
(WY)	1984	1980	1958	1979	1960	1980	1986	1990	1994	1950	1958	1992
MIN	1.08	1.42	1.47	1.46	1.31	2.11	1.53	2.75	2.68	3.08	2.27	.91
(WY)	1985	1963	1996	1953	1954	1983	1992	1992	1962	1961	1973	1965

e Estimated

HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1947 - 1996	
ANNUAL TOTAL	2790.0		2220.89			
ANNUAL MEAN	7.64		6.07		9.25	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	71	Jan 15	101	Feb 25	641	Nov 18 1979
LOWEST DAILY MEAN	1.1	Nov 28	.89	Jan 15	.37	Jun 3 1992
ANNUAL SEVEN-DAY MINIMUM	1.1	Nov 27	1.1	Sep 24	.42	May 21 1992
ANNUAL RUNOFF (AC-FT)	5530		4410		6700	
10 PERCENT EXCEEDS	22		15		21	
50 PERCENT EXCEEDS	2.8		2.4		4.3	
90 PERCENT EXCEEDS	1.4		1.2		1.8	



HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.2	1.8	3.5	1.5	2.4	3.3	2.9	3.6	12	3.2	35
2	1.1	5.3	1.8	3.2	1.6	2.6	2.6	3.7	24	7.5	2.8	9.2
3	.95	2.9	2.1	2.7	1.7	3.5	2.4	5.9	35	9.1	2.7	6.1
4	.84	1.5	2.3	3.2	1.4	9.3	2.4	14	9.9	7.3	2.6	6.0
5	.85	1.1	1.9	13	1.4	6.2	2.0	18	6.6	20	2.5	3.6
6	.93	.94	2.6	4.5	1.5	9.5	2.0	10	12	10	2.9	2.8
7	.89	.82	59	2.9	1.4	5.5	1.9	5.0	27	29	5.3	2.4
8	.82	.80	33	2.3	1.3	9.4	1.8	3.2	14	35	3.6	2.3
9	.86	3.9	21	2.1	1.3	8.0	2.2	2.8	6.4	121	3.2	2.4
10	.89	4.9	5.1	1.9	1.3	4.6	3.1	2.2	6.7	65	2.5	2.2
11	.93	4.6	3.2	1.7	1.2	7.3	6.4	2.0	23	38	2.3	2.2
12	.76	2.2	2.5	1.6	1.8	7.2	6.5	3.7	12	30	2.1	2.2
13	.74	1.7	2.1	1.6	2.2	3.6	3.5	9.6	4.9	16	2.0	1.9
14	.83	3.0	16	1.5	2.6	2.7	3.0	9.4	4.0	8.5	2.1	1.9
15	.78	1.9	23	1.5	5.2	2.2	3.2	27	4.0	9.8	2.1	1.9
16	.78	1.5	4.8	1.6	4.2	2.1	2.5	9.7	4.8	19	2.0	2.0
17	.72	1.7	3.0	4.8	2.3	41	2.2	10	10	37	2.1	4.1
18	.78	7.4	2.4	2.9	2.4	37	2.0	4.3	6.1	32	2.0	3.6
19	.80	5.8	2.1	1.9	3.5	5.1	1.8	3.6	4.7	16	1.9	3.0
20	.74	41	1.8	55	6.3	6.0	1.6	3.4	11	9.9	2.8	2.1
21	.71	14	1.7	4.8	2.8	3.5	1.6	2.5	11	6.8	3.7	4.8
22	.95	5.1	1.6	19	24	2.5	1.7	2.2	4.6	8.5	2.6	4.0
23	1.3	11	2.2	4.4	47	2.5	1.7	2.0	3.6	16	2.2	5.3
24	1.0	18	97	3.0	4.2	18	1.6	1.7	13	7.1	2.4	6.1
25	.86	12	9.6	2.5	42	15	2.1	1.7	45	19	15	3.0
26	.77	6.6	4.0	2.1	17	9.8	28	1.7	35	18	15	17
27	.71	3.6	25	1.9	4.7	8.6	5.3	1.7	17	6.2	13	5.4
28	.74	4.1	22	1.9	3.2	13	3.4	1.5	17	4.8	13	10
29	1.8	2.8	4.0	1.8	---	26	3.6	1.5	15	4.1	8.9	6.7
30	2.8	2.1	2.6	1.7	---	9.6	3.4	1.6	11	3.8	3.7	6.7
31	1.9	---	6.2	1.6	---	4.8	---	1.6	---	3.4	3.8	---
TOTAL	30.53	173.46	367.4	158.1	191.0	288.5	108.8	170.1	401.9	629.8	136.0	165.9
MEAN	.98	5.78	11.9	5.10	6.82	9.31	3.63	5.49	13.4	20.3	4.39	5.53
MAX	2.8	41	97	55	47	41	28	27	45	121	15	35
MIN	.71	.80	1.6	1.5	1.2	2.1	1.6	1.5	3.6	3.4	1.9	1.9
AC-FT	61	344	729	314	379	572	216	337	797	1250	270	329

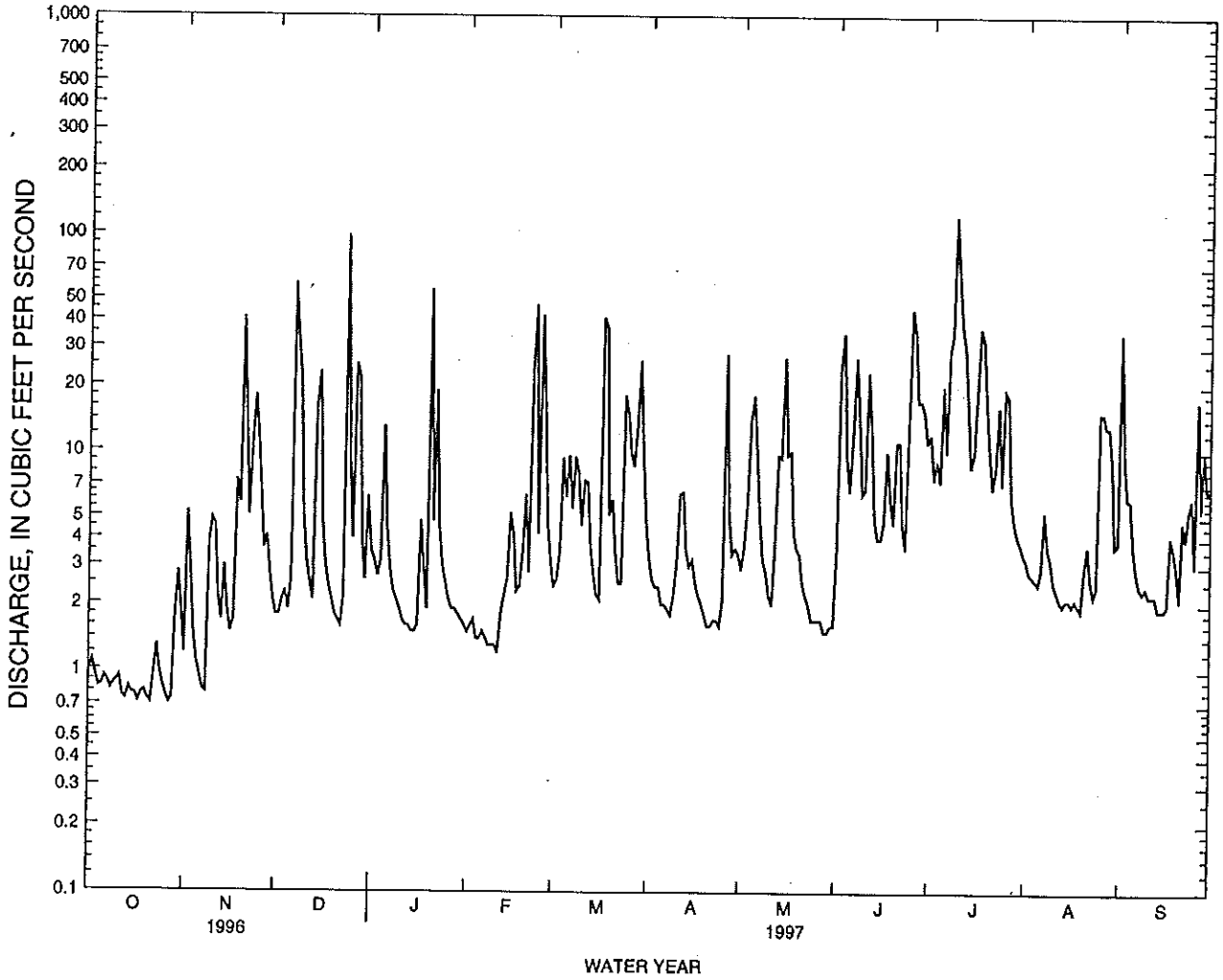
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1997, BY WATER YEAR (WY)

MEAN	5.78	8.47	9.62	8.62	7.59	10.7	12.8	9.11	8.78	11.9	11.1	5.78
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	19.8	23.4	21.3	33.6	24.9
(WY)	1984	1980	1958	1979	1960	1980	1986	1990	1994	1950	1958	1992
MIN	.98	1.42	1.47	1.46	1.31	2.11	1.53	2.75	2.68	3.08	2.27	.91
(WY)	1997	1963	1996	1953	1954	1983	1992	1992	1962	1961	1973	1965

HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1947 - 1997	
ANNUAL TOTAL	2498.58		2821.49			
ANNUAL MEAN	6.83		7.73		9.22	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	101	Feb 25	121	Jul 9	641	Nov 18 1979
LOWEST DAILY MEAN	.71	Oct 21	.71	Oct 21	.37	Jun 3 1992
ANNUAL SEVEN-DAY MINIMUM	.76	Oct 15	.76	Oct 15	.42	May 21 1992
ANNUAL RUNOFF (AC-FT)	4960		5600		6680	
10 PERCENT EXCEEDS	20		18		21	
50 PERCENT EXCEEDS	2.5		3.2		4.3	
90 PERCENT EXCEEDS	1.0		1.3		1.8	



HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	9.5	26	16	1.6	2.7	18	46	30	20	6.9	54
2	2.6	62	100	5.6	1.6	2.3	43	34	30	12	15	57
3	4.5	16	80	3.9	1.4	1.9	32	11	47	15	12	21
4	8.5	27	15	3.1	1.3	1.7	40	7.5	31	61	68	29
5	3.1	29	9.2	13	1.5	1.7	14	16	16	33	29	8.6
6	20	6.4	24	40	1.3	1.5	43	19	9.4	34	16	5.9
7	17	3.7	20	6.0	1.2	1.5	24	16	13	24	9.7	6.2
8	4.5	3.4	8.1	4.1	1.2	1.5	15	7.4	14	12	6.3	5.6
9	3.2	14	7.0	3.3	1.4	1.5	45	7.6	36	7.4	5.3	5.6
10	4.8	6.5	5.3	2.9	1.3	1.5	106	28	46	9.2	5.7	8.0
11	2.9	5.7	4.4	2.5	1.5	1.5	103	20	33	61	4.3	6.8
12	2.4	21	4.1	2.4	1.5	1.3	32	19	22	48	3.5	7.5
13	2.2	19	4.0	2.3	1.3	1.3	41	29	32	12	6.9	11
14	1.9	6.4	3.4	2.3	1.2	1.5	67	43	68	7.0	19	7.9
15	2.2	3.7	2.9	2.3	1.2	1.5	31	29	82	14	19	9.2
16	2.0	2.8	2.8	2.2	1.4	1.6	14	20	40	6.5	6.2	8.7
17	2.1	2.4	3.0	2.1	1.1	1.5	17	37	21	4.9	4.9	7.7
18	8.8	3.0	3.6	2.0	1.2	1.4	14	30	16	4.1	4.6	4.9
19	4.4	10	2.9	2.1	1.5	1.4	16	44	12	7.7	4.7	3.9
20	3.4	6.4	2.5	2.2	1.6	1.3	24	19	16	10	33	12
21	2.4	3.2	2.6	2.1	1.5	1.1	7.9	9.7	37	18	50	78
22	2.1	2.9	2.4	1.9	16	1.1	23	7.3	16	38	15	13
23	1.9	13	2.5	1.9	51	4.8	37	13	16	34	13	45
24	1.9	51	2.3	1.9	37	3.5	19	38	51	19	14	21
25	2.7	87	2.9	1.8	11	2.9	11	26	17	8.3	19	7.4
26	2.9	56	3.5	2.1	4.1	7.0	6.0	20	13	7.8	40	5.4
27	3.3	17	4.8	1.9	3.0	20	4.5	12	32	9.4	33	4.5
28	3.1	59	4.0	1.6	2.4	16	8.9	14	8.7	27	22	3.9
29	2.6	72	2.8	1.6	---	37	5.6	21	21	8.8	12	3.5
30	2.0	14	2.9	1.4	---	15	4.1	20	25	11	9.3	3.2
31	2.1	---	102	1.4	---	9.5	---	21	---	17	6.9	---
TOTAL	130.9	633.0	460.9	139.9	153.3	150.0	866.0	684.5	851.1	601.1	514.2	465.4
MEAN	4.22	21.1	14.9	4.51	5.47	4.84	28.9	22.1	28.4	19.4	16.6	15.5
MAX	20	87	102	40	51	37	106	46	82	61	68	78
MIN	1.9	2.4	2.3	1.4	1.1	1.1	4.1	7.3	8.7	4.1	3.5	3.2
AC-FT	260	1260	914	277	304	298	1720	1360	1690	1190	1020	923

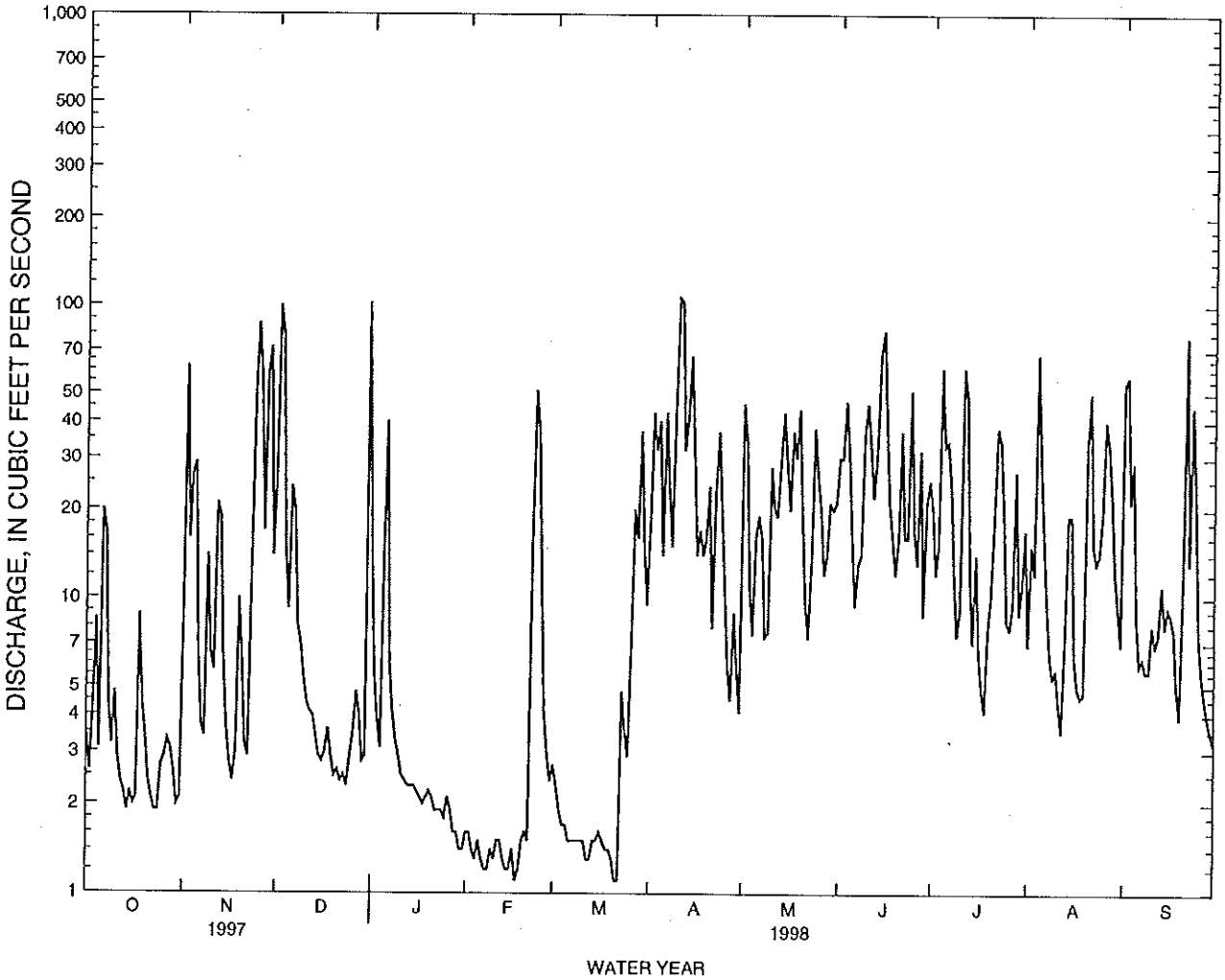
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

MEAN	5.75	8.72	9.73	8.54	7.55	10.6	13.2	9.36	9.16	12.1	11.2	5.97
MAX	18.2	43.7	31.4	38.7	23.0	52.1	43.4	22.1	28.4	21.3	33.6	24.9
(WY)	1984	1980	1958	1979	1960	1980	1986	1998	1998	1950	1958	1992
MIN	.98	1.42	1.47	1.46	1.31	2.11	1.53	2.75	2.68	3.08	2.27	.91
(WY)	1997	1963	1996	1953	1954	1983	1992	1992	1962	1961	1973	1965

HAWAII, ISLAND OF HAWAII

16758000 WAIKOLOA STREAM AT MARINE DAM, NEAR KAMUELA--Continued

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1947 - 1998	
ANNUAL TOTAL	3474.9		5650.3			
ANNUAL MEAN	9.52		15.5		9.35	
HIGHEST ANNUAL MEAN					17.8	1980
LOWEST ANNUAL MEAN					4.49	1981
HIGHEST DAILY MEAN	121	Jul 9	106	Apr 10	641	Nov 18 1979
LOWEST DAILY MEAN	1.2	Feb 11	1.1	Feb 17	.37	Jun 3 1992
ANNUAL SEVEN-DAY MINIMUM	1.3	Feb 5	1.3	Feb 12	.42	May 21 1992
ANNUAL RUNOFF (AC-FT)	6890		11210		6770	
10 PERCENT EXCEEDS	23		40		21	
50 PERCENT EXCEEDS	3.7		7.9		4.3	
90 PERCENT EXCEEDS	1.9		1.6		1.8	



HAWAII, ISLAND OF HAWAII

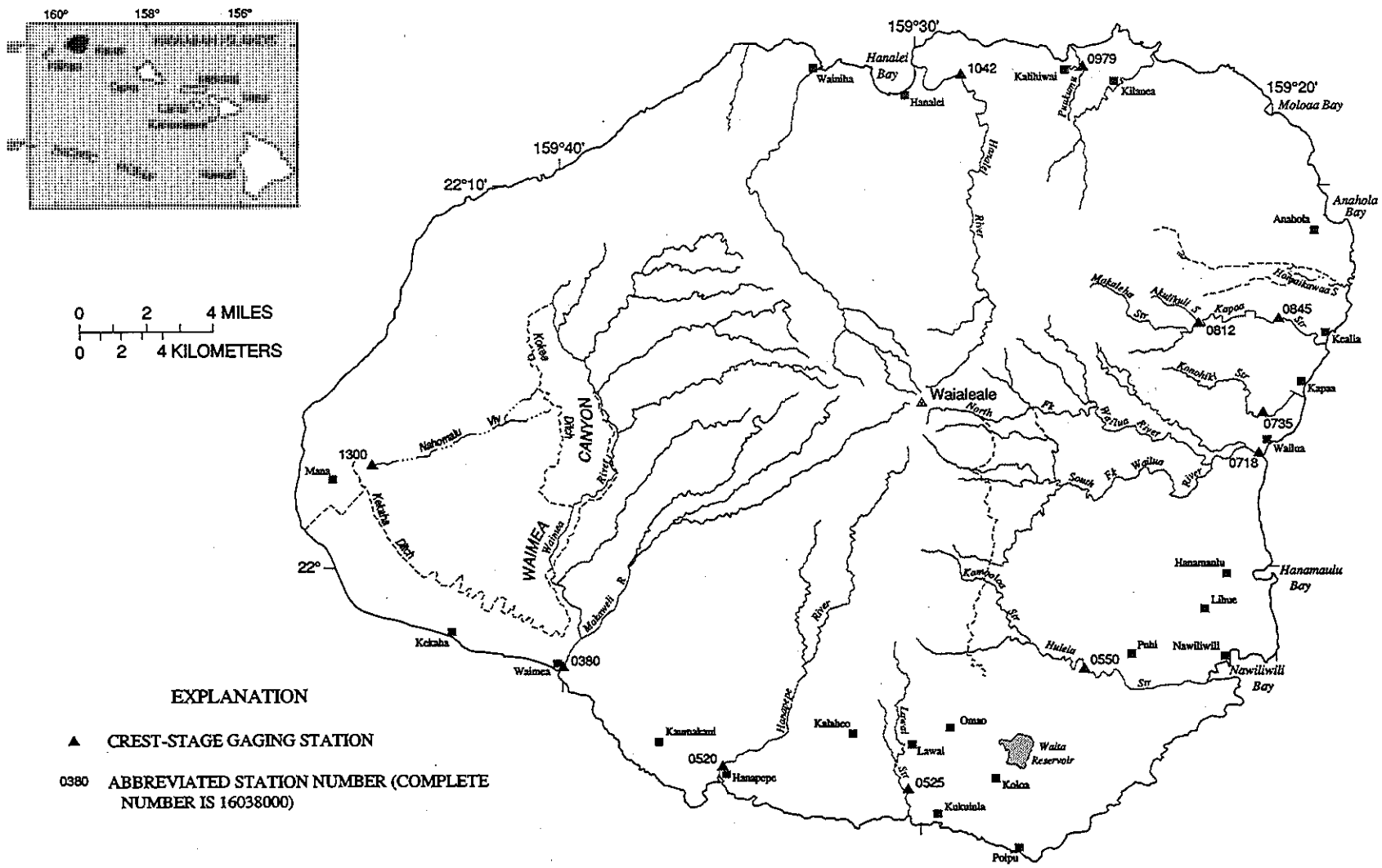
16759000 HAUANI GULCH NEAR KAMUELA

THE RECORDS FOR WATER YEARS 1992-98 WERE NOT COMPUTED
AT THE TIME OF PUBLICATION

HAWAII, ISLAND OF HAWAII

16764000 HILEA GULCH TRIBUTARY NEAR HONUAPO

THE RECORDS FOR WATER YEARS 1992-98 WERE NOT COMPUTED
AT THE TIME OF PUBLICATION



EXPLANATION

▲ CREST-STAGE GAGING STATION

0380 ABBREVIATED STATION NUMBER (COMPLETE NUMBER IS 16038000)

Figure 10. Locations of crest-stage gaging stations on Kauai.

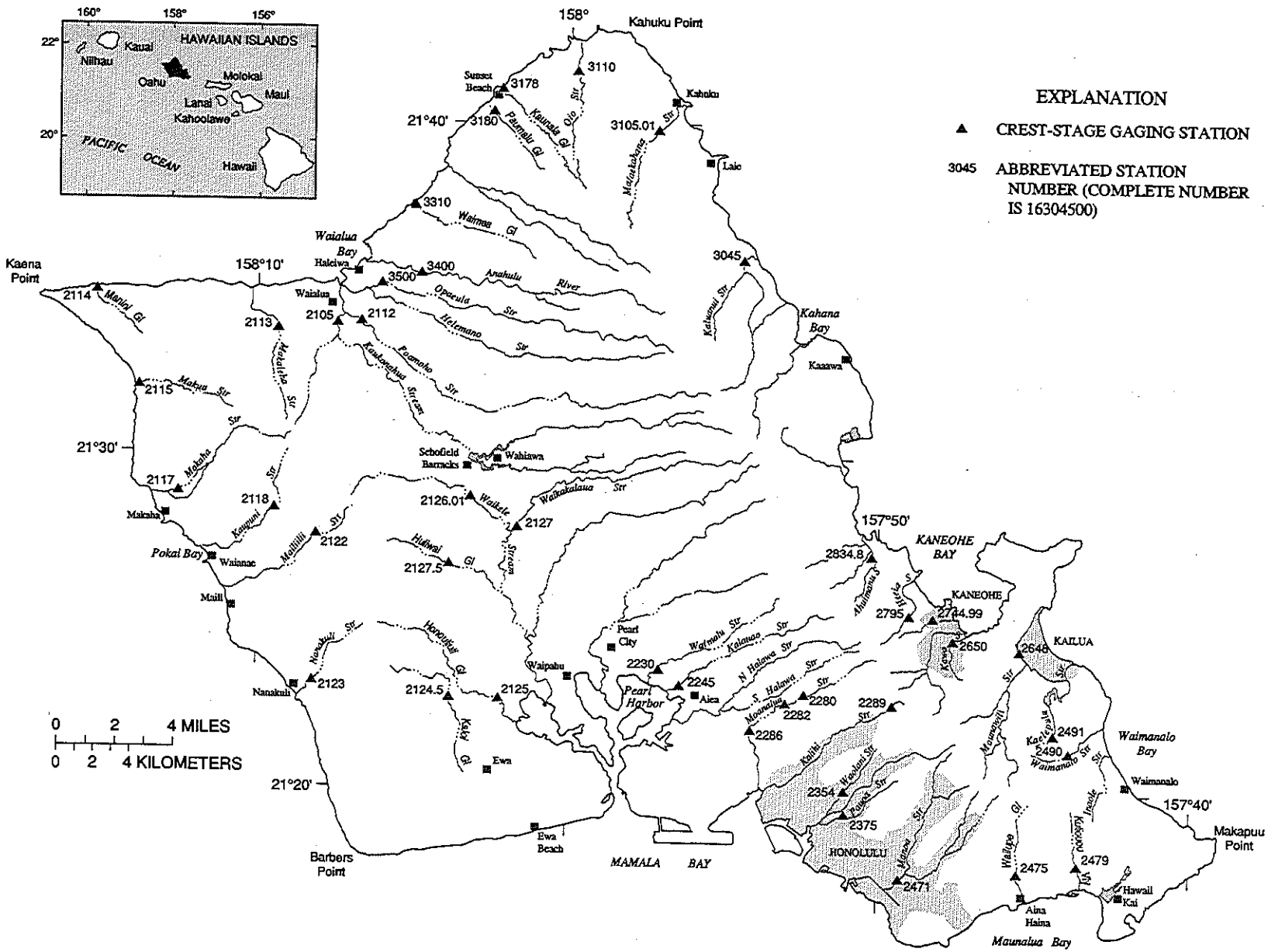


Figure 11. Locations of crest-stage gaging stations on Oahu.

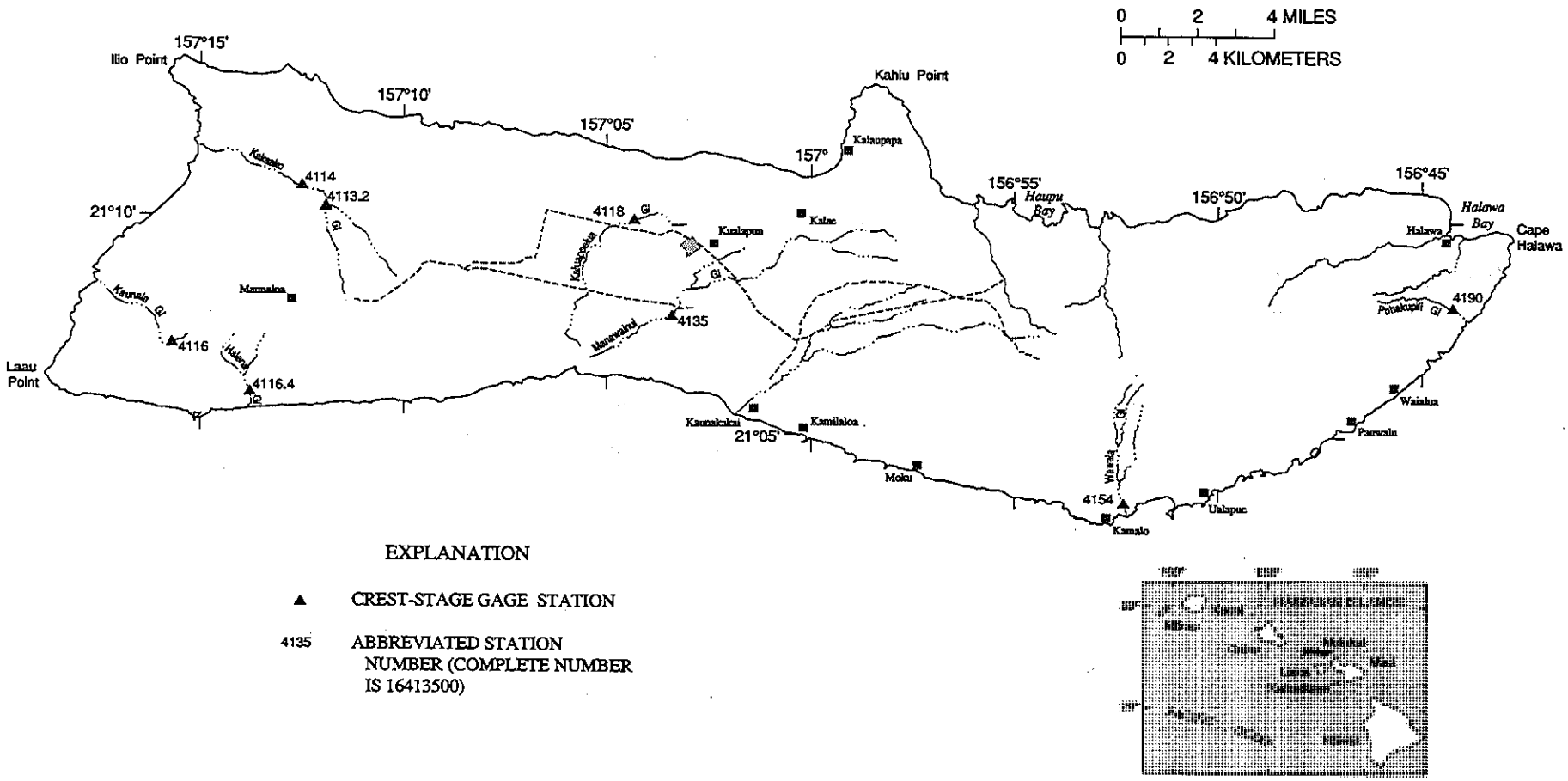


Figure 12. Locations of crest-stage gaging stations on Molokai.

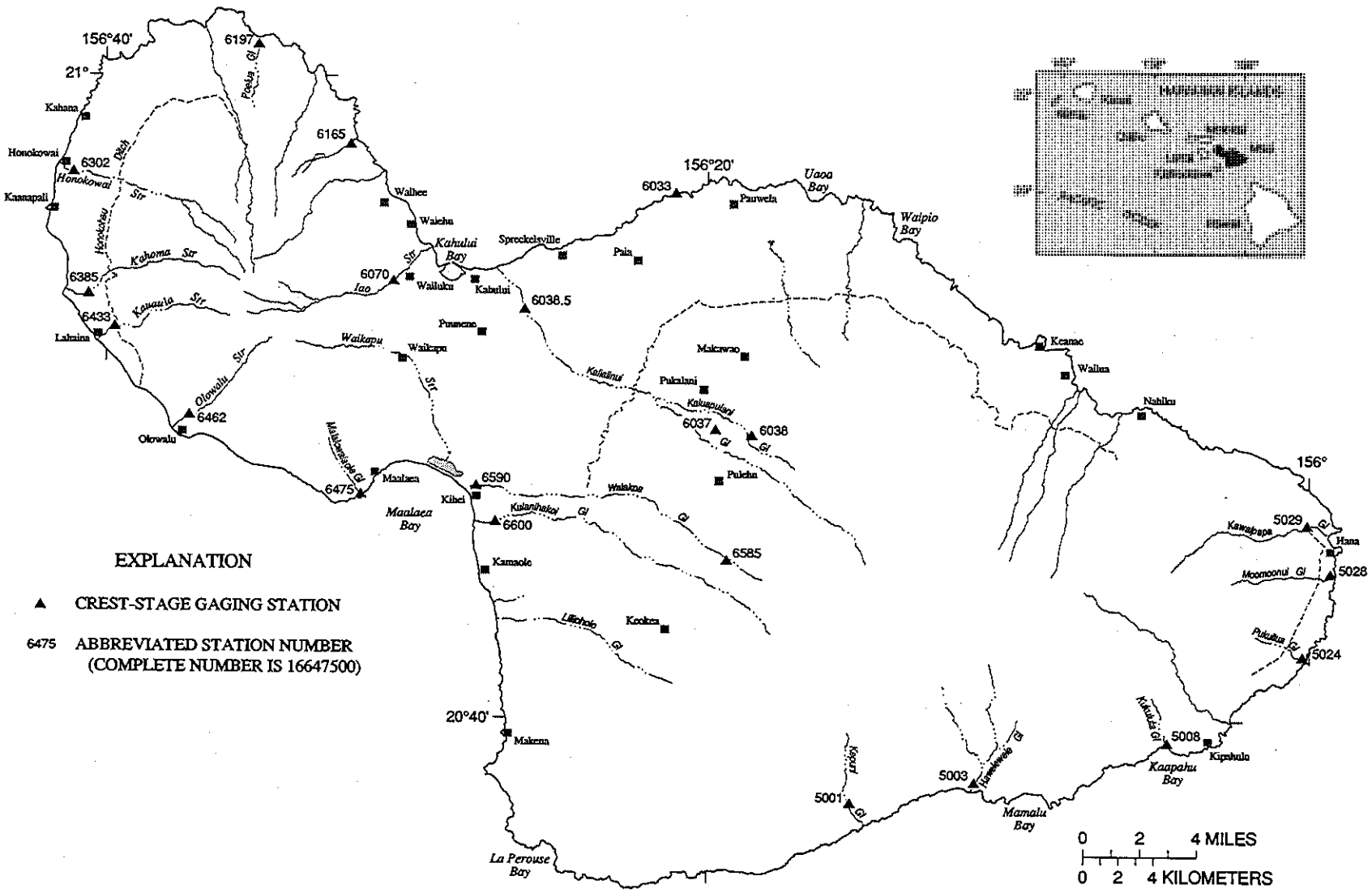


Figure 13. Locations of crest-stage gaging stations on Maui.

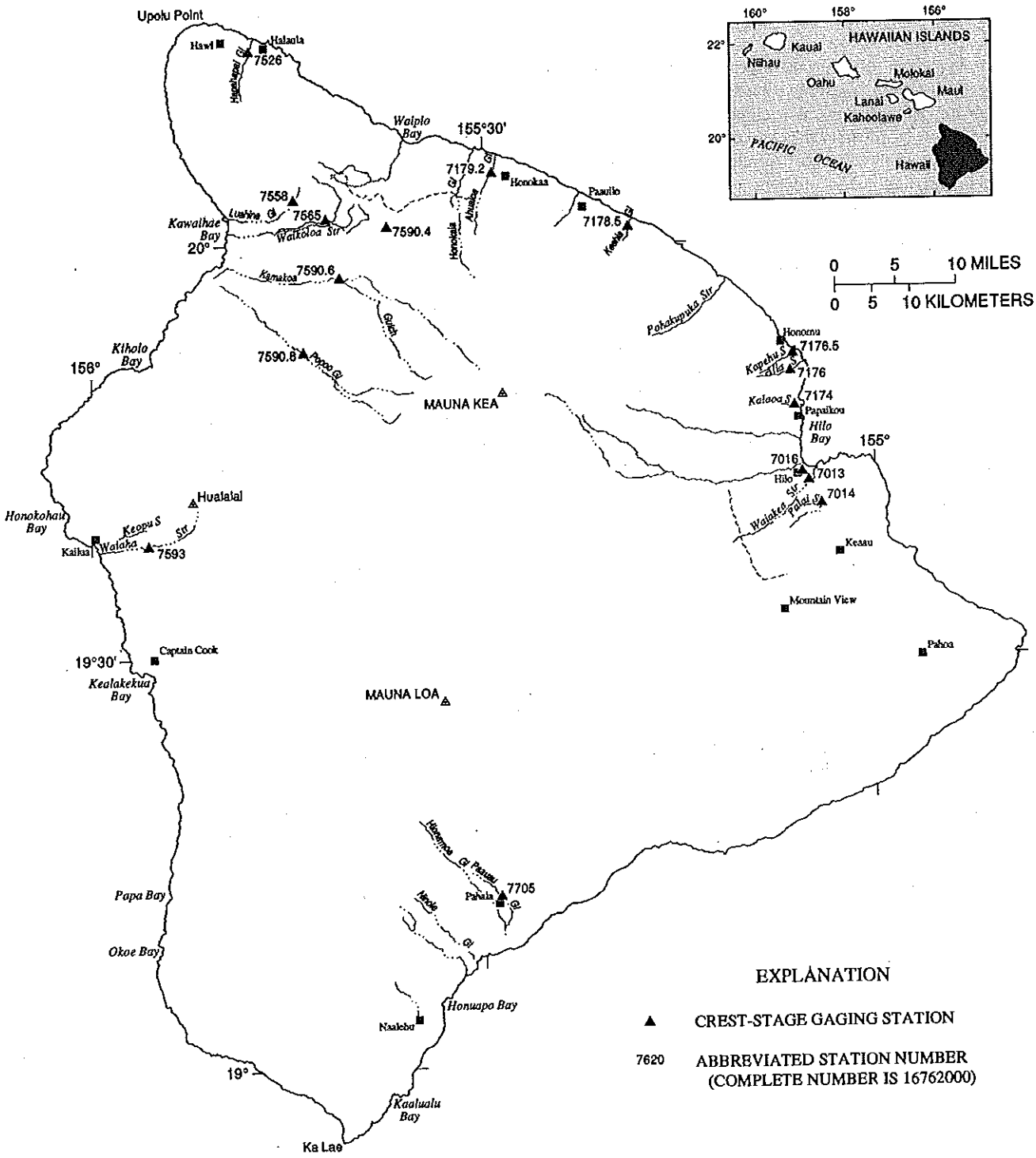


Figure 14. Locations of crest-stage gaging stations on Hawaii.

As the number of streams on which streamflow information is likely to be desired far exceeds the number of continuous-record stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than continuous-record stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to these events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at miscellaneous sites are given in a separate table.

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 of peak flow or by current meter. The date of the maximum discharge is not always certain, but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained 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.

Revised and previously unpublished annual maximum discharge at crest-stage partial-record stations during water years 1963-97

Station name and number	Location	Drainage area (mi^2)	Period of record	Water year maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft^3/s)	Date	Gage height (ft)	Dis-charge (ft^3/s)
			Island of Hawaii						
16717600 Alia Str nr Hilo	Lat 19°50′38″, long 155°06′21″, on left bank 10 ft downstream from culvert on Highway 19 at Pepeekeo 2.0 mi south of Honomu, and 8.0 mi north of Hilo.	0.58	1962-72≠, 1973-90, 1994-97	10-03-72	deleted	deleted	02-20-79	17.1	2,850
				11-12-73	deleted	deleted			
				01-08-75	deleted	deleted			
				01-07-76	deleted	deleted			
				02-27-77	deleted	deleted			
				07-06-78	deleted	deleted			
				11-17-79	deleted	deleted			
				11-11-80	deleted	deleted			
				12-25-81	deleted	deleted			
				12-18-82	deleted	deleted			
				02-08-84	deleted	deleted			
				11-18-84	deleted	deleted			
				04-10-86	4.54	560			
				11-13-86	deleted	deleted			
				12-13-87	deleted	deleted			
				07-22-89	deleted	deleted			
				01-19-90	deleted	deleted			
				11-16-94	10.01	407			
				02-25-96	10.14	421			
				07-30-97	8.46	263			
16756500 Keanuiomanu Str nr Kamuela	Lat 20°01′48″, long 155°42′05″, on left bank 150 ft upstream from Highway 25 at Waiaka and 2.0 mi west of Kamuela.	4.3	1964-72≠, 1973-97	11-08-63	5.89	a1,000	04-20-68	10.02	3,540
				a11-11-74	4.90	450			
				a03-02-78	a4.75	398			
				01-27-91	unknown	e2,290			
				09-14-92	6.80	1,500			
				01-06-93	6.08	1,030			
				03-25-94	5.24	586			
				01-15-95	4.67	371			
				02-25-96	5.46	690			

≠ Operated as a continuous-record gaging station
a At old gage datum
e Estimated

Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi^2)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft^3/s)	Date	Gage height (ft)	Dis-charge (ft^3/s)
			Island of Kauai						
16038000 Waimea River at Waimea	Lat 21°57′23″, long 159°39′59″, 150 ft upstream from highway bridge at Waimea and 0.2 mi upstream from mouth.	86.5	1944-98b	08-23-98	6.26	-	02-07-49	11.40	-
16052000 Hanapepe River at Hanapepe	Lat 21°54′47″, long 159°35′33″, 400 ft upstream from bridge on Highway 50 and 0.5 mi upstream from mouth.	26.6	1950-98b	08-23-98	4.68	-	04-15-63	11.30	-
16052500 Lawai Str nr Koloa	Lat 21°54′11″, long 159°30′21″, on right bank at private road bridge, 0.9 mi upstream from mouth, and 2.4 mi southwest of Koloa.	6.62	1962-63, 1964-72≠ 1973-98	04-24-98	2.53	369	01-31-75	11.37	5,810
16055000 Huleia Str nr Lihue	Lat 21°57′20″, long 159°25′23″, at highway bridge, 3.7 mi southwest of Lihue, and 4.5 mi upstream from mouth.	17.6	1912-15≠, 1962-67, 1968-70≠, 1971-98	12-08-97	5.51	463	11-28-70	22.40	26,800
16071800 Wailua Riv nr Kapaa	Lat 22°03′00″, long 159°20′26″, at State Park 600 ft upstream from highway bridge, 850 ft upstream from mouth, and 2.5 mi southwest of Kapaa.	52.6	1962-98b		<4.56	-	11-26-70	8.57	-
16073500 Konohiki Str nr Kapaa	Lat 22°04′01″, long 159°20′21″, at culvert on private road, 1.8 mi upstream from mouth, and 2.4 mi southwest of Kapaa High School.	3.38	1964-67, 1970-98	12-29-97	9.64	300	12-14-91	16.92	2,530
16081200 Akulikuli Str nr Kapaa	Lat 22°06′25″, long 159°22′07″, at Kahuna road crossing, 800 ft upstream from mouth, and 3.5 mi northwest of Kapaa armory.	0.40	1964-98	12-29-97	4.44	250	12-14-91	11.40	1,550
16084500 Kapaa Str at old highway crossing nr Kealia	Lat 22°06′28″, long 159°19′52″, at abutment of old highway bridge, 100 ft upstream from road crossing, 1.4 mi northwest of Kealia, and 2.1 mi upstream from mouth.	14.0	1962-98	10-23-97	7.42	854	12-14-91	23.11	30,330
16097900 Puukumu Str nr Kilauea	Lat 22°13′02″, long 159°25′18″, at culvert on Highway 56, 0.8 mi northwest of Kilauea School, and 0.9 mi upstream from mouth.	0.91	1964-68, 1971-98	12-08-97	<2.90	e20	04-07-71	17.27	1,430
16104200 Hanalei Riv at Highway 56 bridge nr Hanalei	Lat 22°12′50″, long 159°28′43″, at highway bridge, 1.6 mi northeast of Hanalei, and 2.4 mi upstream from mouth.	21.0	1963-98b		<6.82	-	11-03-95	13.82	-
16130000 Nahomalu Valley nr Mana	Lat 22°02′41″, long 159°45′17″, on left bank 1.1 mi northeast of Mana, and 5.3 mi northwest of Kekaha School.	3.81	1962-63, 1964-71≠, 1972-98	08-23-98	<3.71	e20	04-15-72	7.15	2,120

≠ Operated as a continuous-record gaging station
b Gage height only
< Actual value is known to be less than the value shown
e Estimated

Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi^2)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft^3/s)	Date	Gage height (ft)	Dis-charge (ft^3/s)
			Island of Oahu						
16210500 Kaukonahua Str at Waialua	Lat 21°33′56″, long 158°07′26″, 0.2 mi upstream from Highway 99, 0.4 mi southeast of Waialua High School, and 1.3 mi southwest of Weed Circle.	38.7	1963, 1968-98	1998	<19.09	<650	04-15-63	26.4	15,600
16211200 Poamoho Str at Waialua	Lat 21°34′00″, long 158°06′40″, at culvert crossing of Kaheaka Road, 0.2 mi upstream from Highway 83, and 1.1 mi east of Waialua High School.	12.7	1967-98	1998	<9.17	<200	04-19-74	24.0	7,340
16211400 Manini Gulch at Kaena	Lat 21°34′50″, long 158°15′12″, 180 ft upstream from Highway 99, 1.7 mi west of Camp Erdman, and 2.0 mi east of Kaena Point.	1.08	1974-98	1998	<12.08	<38	01-01-88	19.61	1,000
16211500 Makua Str at Makua	Lat 21°31′59″, long 158°13′49″, on bridge at Farrington Highway crossing, 0.1 mi north of Makua cemetary and 4.5 mi southeast of Kaena Point lighthouse.	4.24	1958-98	01-17-98	7.60	unknown	02-07-76 11-14-96	a8.00 11.74	3,220
16211700 Makaha Str at Makaha	Lat 21°28′47″, long 158°12′31″, 0.9 mi upstream from Farrington Highway and 1.1 mi north of junction of Farrington Highway and Makaha Valley Road.	5.25	1966-98	01-17-98	unknown	unknown	11-14-96	17.60	e5,000
16211800 Kaupuni Str at altitude 372 ft, nr Waianae	Lat 21°28′20″, long 158°09′26″, at abandoned diversion dam, 2.6 mi northeast of Waianae cemetery, and 2.8 mi northeast of junction of Waianae Valley Road and Farrington Highway.	3.58	1961-72≠, 1973-98	10-09-97	3.75	unknown	01-06-82	7.82	3,640
16212200 Mailiilii Str nr Waianae	Lat 21°27′34″, long 158°08′05″, at bridge at Lualualei Naval Reservation and 3.4 mi east of cemetery nr Waianae.	1.51	1958-98	1998	<0.98	unknown	01-06-82	7.20	2,460
16212450 Kaloi Gulch tributary nr Honouliuli	Lat 21°22′41″, long 158°03′45″, at culvert on private road, 1.8 mi west of Honouliuli, and 2.8 mi northwest of Ewa Post Office.	1.70	1968-98	1998	<2.42	<50	01-08-80	7.45	724
16212500 Honouliuli Str nr Waipahu	Lat 21°22′40″, long 158°02′10″, at bridge on Farrington Highway and 1.8 mi west of Waipahu Post Office.	11.0	1956-98	1998	<0.38	unknown	01-06-82	10.28	3,500
16212601 Waikele Str at Wheeler Field	Lat 21°28′44″, long 158°03′07″, at culvert 0.3 mi west of east-west runway at Wheeler Field and 1.9 mi southwest of Wahiawa Post Office.	6.35	1958, 1960-98	10-09-97	2.43	26	01-06-82	22.50	1,850

≠ Operated as a continuous-record gaging station
< Actual value is known to be less than the value shown
e Estimated
a At old gage datum

Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi^2)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft^3/s)	Date	Gage height (ft)	Dis-charge (ft^3/s)
			Island of Oahu--Continued						
16212700 Waikakalaua Str nr Wahiawa	Lat 21°27′50″, long 158°01′38″, 0.2 mi downstream from Kamehameha Highway and 2.4 mi south of Wahiawa Post Office.	7.49	1958-98	10-09-97	1.33	<275	04-15-63	16.50	4,830
16212750 Huliwai Gulch nr Kunia Camp	Lat 21°26′43″, long 158°03′47″, 200 ft upstream from Highway 75 and 1.2 mi south of Kunia Camp.	0.84	1974-98	1998	unknown	unknown	02-10-79	8.36	600
16223000 Waimalu Str nr Aiea	Lat 21°23′48″, long 157°56′56″, 1,300 ft upstream from bridge on Moanalua Road and 1.2 mi northwest of Aiea High School.	5.97	1952-70≠, 1973-98	11-01-97	2.32	698	01-05-68	6.82	8,020
16228000 Moanalua Str nr Honolulu	Lat 21°22′53″, long 157°52′22″, on left bank 1.8 mi northeast of Tripler Hospital and 5.0 mi north of Honolulu Post Office.	2.73	1927-78≠, 1979-98	10-08-97	2.93	147	11-18-30	11.58	4,580
16228200 Moanalua Str nr Aiea	Lat 21°22′37″, long 157°53′03″, on right bank 1.1 mi northeast of Tripler Hospital and 2.9 mi east of former Aiea sugar refinery.	3.34	1969-98	10-11-97	3.58	371	03-18-80	9.97	4,860
16228600 Moanalua Str at Tripler Hospital	Lat 21°21′52″, long 157°54′05″, on right bank 0.5 mi west of Tripler Hospital and 1.6 mi northeast of Aliamanu School.	4.44	1971-98	10-11-97	13.10	unknown	03-08-80	21.0	6,200
16228900 Kalihi Str nr Kaneohe	Lat 21°22′35″, long 157°49′32″, on right bank 800 ft downstream from Likelike Highway and 2.8 mi southwest of Castle High School in Kaneohe.	0.60	1967-71≠, 1972-98	10-04-97	2.32	139	01-08-80	5.60	1,700
16235400 Waolani Str at Honolulu	Lat 21°20′00″, long 157°51′04″, at Wyllie Street bridge and 1.8 mi northeast of Honolulu Post Office.	1.28	1958-98	1998	<0.04	<130	05-14-63	6.14	2,500
16237500 Pauoa Str at Honolulu	Lat 21°19′18″, long 157°51′03″, at Lusitana Street bridge and 1.1 mi northeast of Honolulu Post Office.	1.43	1958-98	01-01-98	0.81	431	05-14-63	4.65	2,200
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 downstream from confluence of Manoa and Palolo Streams, and 0.6 mi upstream from point of discharge into Ala Wai Canal.	10.6	1968-98	1998	<5.63	<1,470	12-18-67	12.6	10,100
16247500 Wailupe Gulch at Aina Haina	Lat 21°17′46″, long 157°45′29″, at Ani Street bridge and 1.0 mi upstream from Kalanianaole Highway in Aina Haina.	2.35	1958-98	10-09-97	-0.22	unknown	12-18-67	5.72	3,600
16247900 Kuliouou Valley at Kuliouou	Lat 21°17′50″, long 157°43′35″, at Kuliouou, 300 ft downstream of single-lane wooden bridge, and 0.6 mi upstream from Highway 72.	1.18	1958-59, 1970-98	1998	<27.40	<118	12-31-87	36.55	4,700

≠ Operated as a continuous-record gaging station
< Actual value is known to be less than the value shown

Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi^2)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft^3/s)	Date	Gage height (ft)	Dis-charge (ft^3/s)
			Island of Oahu--Continued						
16249000 Waimanalo Str at Waimanalo	Lat 21°21′14″, long 157°43′50″, on right bank 260 ft downstream from Highway 72 and 2.3 mi northeast of Waimanalo Post Office.	2.16	1967-70≠, 1971-98	01-05-98	2.47	unknown	02-14-85	10.82	-
16249100 Kaelepulu Str tributary at Kailua	Lat 21°21′44″, long 157°44′22″, 30 ft upstream from Kalanianaole Highway, 1.6 mi northwest of Waimanalo School, and 2.4 mi south of Kailua Post Office.	0.16	1963-98	1998	<1.75	<34	12-31-87	7.53	467
16265000 Kawa Str at Kaneohe	Lat 21°24′32″, long 157°47′36″, 50 ft upstream from bridge on Kaneohe Bay Drive at Kaneohe, 0.2 mi northeast of Castle High School, and 0.6 mi upstream from mouth.	1.19	1965, 1968-74, 1977-98	1998	<5.82	unknown	02-01-69	17.90	5,290
16274499 Keaahala Str at Kamehameha Highway, at Kaneohe	Lat 21°25′12″, long 157°48′15″, 35 ft upstream from bridge on Kamehameha Highway in Kaneohe.	0.62	1959-98	1998	<2.18	<288	05-02-65	11.50	2,750
16283480 Ahuimanu Str nr Kahaluu	Lat 21°27′04″, long 157°50′13″, at bridge on Ahuimanu Road and 0.8 mi south of Kahaluu.	2.31	1963-98	11-01-97	4.54	unknown	02-01-69	11.8	7,300
16304500 Kaluanui Stream at Hauula	Lat 21°35′57″, long 157°54′24″, Kaluanui on left downstream wingwall of Str at concrete bridge, 1.2 mi southeast Hauula of cemetery in Hauula, and 1.4 mi northeast of Sacred Falls.	2.12	1958-98	11-01-97	2.04	unknown	01-06-82	6.95	4,920
16308500 Kahawainui Stream at Laie	Lat 21°39′25″, long 157°55′57″, 800 ft northeast of Zion Cemetary on upstream side of bridge at Kamehameha Highway.	4.79	1997-98b	1998	21.13	-	1997	21.35	-
16310501 Malaekahana Str at altitude 30 ft, nr Kahuku	Lat 21°39′47″, long 157°57′11″, at abandoned plantation railroad bridge, 1.1 mi southwest of junction of plantation road and Highway 83, and 1.2 mi south of Kahuku Hospital.	4.05	1958-98	1998	<2.63	unknown	04-15-63	12.10	4,640
16317800 Kaunala Gulch nr Sunset Beach	Lat 21°40′59″, long 158°02′12″, on downstream left bank wingwall of road bridge on Highway 83 nr Sunset Beach and 2.9 mi northeast of Waimea.	1.98	1973-98	01-01-98	2.65	unknown	11-20-90	6.01	450
16318000 Paumalu Gulch at Sunset Beach	Lat 21°40′19″, long 158°02′28″ 0.4 mi upstream from Highway 83 at Sunset Beach and 2.2 mi northeast of Waimea.	2.59	1968-98	1998	<1.94	unknown	04-19-74 11-14-96	4.97 6.32	982 -
16331000 Waimea Gulch nr Kawailoa Camp	Lat 21°37′29″, long 158°04′58″, at culvert on Ashley Road, 0.1 mi upstream from Highway 83, and 1.1 mi north of Kawailoa Camp.	2.23	1968-98	1998	<1.44	<22	03-18-80	11.2	2,030

< Actual value is known to be less than the value shown
≠ Operated as a continuous-record gaging station
b Gage height only

Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi²)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Discharge (ft³/s)	Date	Gage height (ft)	Discharge (ft³/s)
			Island of Oahu--Continued						
16340000 Anahulu River nr Haleiwa	Lat 21°35′28″, long 158°04′45″, 1.7 mi southeast of junction of Emerson Road and Kamehameha Highway and 2.5 mi east of Waialua School at Haleiwa.	13.5	1958-98	01-01-98	2.74	482	04-19-74	15.8	15,900
16350000 Opaeula Str nr Haleiwa	Lat 21°35′09″, long 158°06′01″, 0.6 mi upstream from Kamehameha Highway and 2.1 mi northeast of Waialua.	5.96	1956-98	01-01-98	9.34	261	04-19-74	20.7	7,600
			Island of Molokai						
16411320 Kakaako Gulch abv Kamakahi Gulch, nr Mauna Loa	Lat 21°10′11″, long 157°11′56″, 0.1 mi upstream from Kamakahi Gulch, 1.7 mi downstream from Highway 46, and 2.5 mi northeast of Mauna Loa.	1.40	1964-98	12-02-97	1.15	unknown	11-12-65	4.80	670
16411400 Kakaako Gulch nr Mauna Loa	Lat 21°10′39″, long 157°12′31″, on left bank 1.0 mi downstream from Kamakahi Gulch, and 3.0 mi north of Mauna Loa School.	5.34	1963-72≠, 1973-98	12-02-97	-	unknown	02-11-89	8.47	2,860
16411600 Kaunala Gulch nr Mauna Loa	Lat 21°07′01″, long 157°15′43″, at Sand Haul Road, 3.2 mi east of Laau Point lighthouse, and 3.3 mi southwest of Mauna Loa.	0.28	1964-98	No flow.			12-25-84	3.87	151
16411640 Halena Gulch nr Mauna Loa	Lat 21°05′53″, long 157°13′47″, 2.7 mi southwest of Mauna Loa and 5.5 mi east of Laau Point.	2.07	1965-98	01-05-98	2.39	268	01-11-74	8.20	2,920
16411800 Kaluapeelua Gulch at Hoolehua	Lat 21°09′55″, long 157°04′22″, 0.4 mi south of Hoolehua and 2.1 mi west of Kualapuu.	1.46	1964-98	No flow.			12-08-73	3.30	86
16415400 Wawaia Gulch at Kamalo	Lat 21°03′25″, long 156°52′20″, at Highway 45, 0.3 mi upstream from mouth, and 0.5 mi northeast of Kamalo.	2.12	1964-98	03-02-98	1.03	224	04-13-65	2.61	1,250
16419000 Pohakupili Gulch nr Halawa	Lat 21°07′59″, long 156°44′15″, at Highway 45, 0.5 mi upstream from mouth, and 1.9 mi south of Halawa.	0.48	1964-98	01-01-98	2.96	15	11-04-66	8.93	989
			Island of Maui						
16500100 Kepuni Gulch nr Kahikinui House	Lat 20°37′21″, long 156°15′16″, on right bank 120 ft upstream from bridge on Highway 31, 400 ft upstream from Kamole Gulch, 1.1 mi east of Kahikinui House, and 8.5 mi west of Kaupo.	1.91	1963-72≠, 1973-98	No flow.			09-18-94	13.68	2,320
16500300 Hawelewele Gulch nr Kaupo	Lat 20°38′01″, long 156°11′08″, 700 ft upstream from Piilani Highway 31 and 3.9 mi west of Kaupo.	11.3	1967-98	01-05-98	<6.43	<1,100	01-08-80	15.10	13,600

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Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi²)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft³/s)	Date	Gage height (ft)	Dis-charge (ft³/s)
			Island of Maui--Continued						
16500800 Kukuiula Gulch nr Kipahulu	Lat 20°39′18″, long 156°04′44″, at Highway 31, 1.3 mi west of Kipahulu, and 3.2 mi east of Kaupo.	0.76	1963-68≠, 1969-98	05-20-98	<4.50	<270	03-31-82	13.76	5,950
16502400 Pukuilua Gulch nr Hana	Lat 20°42′00″, long 156°00′14″, at Highway 31, 0.4 mi southwest of Puuiki and 4.0 mi south of Hana.	0.48	1963-98	12-02-97	<1.96	<55	01-23-65	9.30	788
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 south of Hana.	0.90	1963-98	12-30-97	6.33	233	11-26-92	14.71	2,480
16502900 Kawaipapa Gulch at Hana	Lat 20°46′08″, long 156°00′04″, 1,000 ft upstream from Highway 36 and 0.3 mi northwest of Hana Hospital.	5.83	1965-98	12-30-97	<5.84	<1,730	08-01-82	11.03	16,880
16603300 Unnamed gulch at Maliko Bay	Lat 20°56′26″, long 156°21′04″, at Hana Highway, 0.5 mi west of Maliko Bay and 1.3 mi north of Hamakuapoko.	0.43	1963-98	No flow.			03-27-79	17.28	171
16603700 Kalialinui Gulch tributary nr Pukalani	Lat 20°49′02″, long 156°19′44″, at Lower Kula Road and 1.4 mi south of Pukalani.	1.17	1967-98	11-02-97	<2.12	<30	01-09-80	7.35	414
16603800 Kaluapulani Gulch tributary nr Pukalani	Lat 20°48′52″, long 156°18′32″, at Haleakala Highway, 1.5 mi west of Olinda Prison Camp and 2.3 mi southeast of Pukalani.	0.45	1963-98	11-02-97	<1.21	<14	07-23-64	9.90	306
16603850 Kalialinui Gulch nr Kahului	Lat 20°52′47″, long 156°26′06″, 600 ft upstream from Hansen Road, 0.5 mi northeast of Puunene Hospital and 2.5 mi southeast of Kahului Post Office.	17.9	1967-98	10-08-97	4.77	149	01-28-71	8.33	1,330
16607000 Iao Str at Wailuku	Lat 20°53′38″, long 156°30′27″, 560 ft upstream from Market Street bridge at Wailuku and 1.9 mi upstream from mouth.	8.24	1951≠, 1952-98	11-25-97	2.88	734	12-03-50	6.21	7,540
16616500 Unnamed gulch at Maluhia Camp	Lat 20°57′26″, long 156°31′41″, at Kahekili Highway, 0.6 mi east of Maluhia Camp and 1.8 mi northwest of Waihee.	0.12	1964-98	No flow.			01-12-75	7.29	e97
16619700 Poelua Gulch nr Kahakuloa	Lat 21°00′58″, long 156°34′58″, at Highway 30 (bypass), 1.3 mi southeast of Nakalele Point lighthouse and 2.2 mi northwest of Kahakuloa.	1.18	1965-98	11-25-97	4.66	67	03-16-68	15.22	1,760
16630200 Honokowai Str at Honokowai	Lat 20°56′58″, long 156°41′07″, 0.5 mi southeast of Honokowai and 1.1 mi northwest of Puukolii.	5.59	1962-63, 1965-98	11-25-97	3.27	e280	08-01-82	11.0	4,520
16638500 Kahoma Str at Lahaina	Lat 20°53′12″, long 156°40′36″, 0.2 mi west of Kelawea, 0.6 mi northeast of Lahaina, 0.6 mi downstream from Kanaha Str and 0.9 mi upstream from mouth.	5.22	1963-89≠ 1990-98	05-01-98	-	unknown	07-11-65	11.03	2,490

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e Estimated

Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi^2)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft^3/s)	Date	Gage height (ft)	Dis-charge (ft^3/s)
Island of Maui--Continued									
16643300 Kauaula Str nr mouth, nr Lahaina	Lat 20°52′09″, long 156°39′43″, 0.7 mi upstream from Honoapiilani Highway (bypass) and 1.3 mi southeast of Lahaina Lighthouse.	4.12	1960,1962, 1964-98	12-30-97	<2.92	<143	05-13-60	7.9	2,660
16646200 Olowalu Str at Olowalu	Lat 20°49′23″, long 156°37′15″, on downstream side of center pier of plantation road bridge, 0.6 mi northeast of Olowalu, and 5.5 mi southeast of Lahaina.	4.08	1962-72≠, 1973-98	11-16-97	2.66	103	03-24-67	5.40	1,300
16647500 Malalowaiaole Gulch nr Maalaea	Lat 20°46′56″, long 156°31′32″, at Honoapiilani Highway, 200 ft upstream from mouth, 0.2 mi north of McGregor Point, and 1.2 mi southwest of Maalaea.	0.64	1964-98	No flow.			01-10-80	12.95	350
16658500 Waiakoa Gulch tributary nr Waiakoa	Lat 20°44′56″, long 156°19′22″, at Upper Kula Road, 1.0 mi southeast of Waiakoa, and 1.0 mi northeast of junction of Lower and Upper Kula Roads.	0.98	1964-98	No flow.			01-28-71	8.23	409
16659000 Waiakoa Gulch at Kihei	Lat 20°47′14″, long 156°27′41″, 0.3 mi northeast of Kihei and 0.4 mi upstream from mouth.	10.1	1963-98	No flow.			01-28-71	9.66	1,560
16660000 Kulanihakoi Gulch nr Kihei	Lat 20°46′06″, long 156°27′03″, on right bank 0.5 mi northeast of Lihue Cemetery, 0.8 mi upstream from mouth, and 1.3 mi southeast of Kihei.	14.4	1963-70≠, 1971-98	No flow.			01-28-71	9.40	4,460
Island of Hawaii									
16701300 Waiakea Str at Hilo	Lat 19°42′38″, long 155°05′02″, 0.3 mi upstream from Kinoole Street bridge and 1.3 mi southeast of Hilo Post Office.	35.8	1968-91, 1993-98	10-08-97	4.18	346	08-12-94	10.90	3,670
16701400 Palai Str at Hilo	Lat 19°40′56″, long 155°04′04″, at Highway 11, 300 ft south of Palai Street intersection, and 3.5 mi southeast of Hilo Post Office.	5.08	1965-90, 1994-98	Records being reviewed.					
16701600 Alenaio Str at Hilo	Lat 19°43′10″, long 155°05′27″, 0.65 mi south of Hilo Post Office, 0.65 mi west of Kapiolani School, and 0.1 mi upstream of Kapiolani Street bridge.	8.62	1997-98	1998	<5.61	unknown	07-30-97	6.36	1,010
16717400 Kalaoa Mauka Str nr Hilo	Lat 19°48′07″, long 155°06′03″, at culvert on Highway 19, 1.0 mi north of Papaikou, and 5.1 mi north of Hilo Post Office.	0.24	1963-98	Records being reviewed.					
16717600 Alia Str nr Hilo	Lat 19°50′38″, long 155°06′21″, on left bank 10 ft downstream from culvert on Highway 19 at Pepeekeo 2.0 mi south of Honomu, and 8.0 mi north of Hilo.	0.58	1962-72≠, 1973-90, 1994-98	09-20-98	unknown	unknown	02-20-79	17.1	2,850

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Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location	Drainage area (mi^2)	Period of record	Water year 1998 maximum			Period of record max		
				Date	Gage height (ft)	Dis-charge (ft^3/s)	Date	Gage height (ft)	Dis-charge (ft^3/s)
			Island of Hawaii--Continued						
16717650 Kapehu Str nr Pepeekeo	Lat 19°51′52″, long 155°06′11″, at culvert on Highway 19, 1.0 mi southeast of Honomu, 2.2 mi north of Pepeekeo, and 9.4 mi north of Hilo.	1.09	1963-90, 1994-98	09-20-98	4.39	259	02-20-79	29.93	3,320
16717850 Keehia Gulch nr Ookala	Lat 20°01′08″, long 155°18′45″, at culvert on Highway 19, 1.7 mi west of Ookala, and 4.1 mi southeast of Paauilo.	0.62	1963-91, 1993-98	09-21-98	4.68	161	03-18-80	9.10	500
16717920 Ahualoa Gulch at Honokaa	Lat 20°05′12″, long 155°29′17″, at Highway 24, 1.1 mi northwest of Honokaa Hospital, and 1.5 mi upstream from mouth.	2.27	1963-90 1995-98	05-20-98	unknown	unknown	11-18-79	17.68	3,160
16752600 Hapahapai Gulch at Kapaau	Lat 20°14′00″, long 155°48′00″, at Highway 27, 300 ft east of Kapaau Post Office.	1.52	1963-90, 1995-98	12-31-97	7.58	195	01-09-80	11.42	426
16755800 Luahine Gulch nr Waimea	Lat 20°03′11″, long 155°44′35″, on culvert 5.1 mi northwest of Waimea and 5.7 mi east of Kawaihae.	0.32	1963-90 1994-98	01-05-98	2.31	55	04-07-89	5.33	277
16756500 Keanuiomano Str nr Kamuela	Lat 20°01′48″, long 155°42′05″, on left bank 150 ft upstream from Highway 25 at Waiaka and 2.0 mi west of Kamuela.	4.3	1964-72≠, 1973-90, 1995-98	04-10-98	4.98	482	04-20-68	10.02	3,540
16759040 Paiakuli Reservoir tributary nr Waimea	Lat 20°02′16″, long 155°38′08″, at Highway 19, 2.1 mi west of Puukapu Reservoir, and 2.6 northeast of Waimea.	0.27	1963-91, 1994-98	08-21-98	3.04	119	12-26-83	3.70	400
16759060 Kamakoa Gulch nr Waimea	Lat 19°57′32″, long 155°41′02″, at bridge, 1.4 mi north of Saddle Road Junction, and 4.5 mi south of Waimea.	50.6	1963-91, 1994-98	1998	<2.43 ft	unknown	04-20-68	6.71	1,210
16770500 Paauau Gulch at Pahala	Lat 19°12′39″, long 155°28′48″, on right bank 100 ft downstream from bridge on Wood Valley Road and 0.7 mi north of Pahala.	1.74	1962-79≠, 1980-97	1998	<3.32 ft	<92	-	-	-

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Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui			
16588000	Wailoa ditch at Honopou, near Huelo	Lat 20°53′20″, long 156°15′19″, on right bank 100 ft downstream from intake at Honopou Stream, 0.5 mi west of Lupi, and 2.2 mi southwest of Huelo.	1924-87≠, 1988-97	12-18-97 01-14-98 04-30-98 07-13-98	300 101 294 196
16589000	New Hamakua ditch at Honopou, near Huelo	Lat 20°53′28″, long 156°15′22″, on right bank 15 ft upstream from tunnel portal, 600 ft downstream from Honopou Stream crossing and 2.1 mi southwest of Huelo.	1919-85≠, 1986-97	12-08-97 01-14-98 04-30-98 07-13-98	141 1.92 13.2 18.7
16592000	Lowrie ditch at Honopou Gulch, near Huelo	Lat 20°54′57″, long 156°15′08″, on left bank 0.2 mi downstream from siphon across Honopou Stream, 1.6 mi west of Huelo, and 2.7 mi northwest of Kailua.	1911-26≠, 1931-85≠, 1986-97	11-17-97 01-14-98 05-11-98 07-15-98	14.1 17.5 30.3 28.7
16594000	Haiku ditch at Honopou Gulch, near Kailua	Lat 20°55′07″, long 156°14′58″, on right bank on west side of Honopou Gulch, 160 ft below Hana Highway, 2.5 mi northwest of Kailua, and 5.0 mi east of Haiku.	1911≠, 1914≠, 1916-28≠, 1931-85≠, 1986-97	11-17-97 02-26-98 05-28-98 07-14-98	1.77 1.32 2.81 3.14
205915156360001	Honokohau Stream 4.0	Lat 20°59′15″, long 156°36′00″, Honokohau Stream, upstream from Taro Gate release, at altitude 410 ft.	1995, 1997	10-23-97	1.89
205922156360101	Honokohau Stream 5.0	Lat 20°59′22″, long 156°36′01″, Honokohau Stream, downstream from Taro Gate release, at altitude 380 ft.	1995, 1997	10-23-97	3.19
205928156360601	Honokohau Stream 5.9	Lat 20°59′28″, long 156°36′06″, Honokohau Stream, 350 ft upstream from dam, at altitude 350 ft.	1997	10-23-97	3.61
205933156360801	Honokohau Stream 6.1	Lat 20°59′33″, long 156°36′08″, Honokohau Stream, 200 ft downstream from dam, at altitude 330 ft.	1997	10-23-97	2.61
205940156360901	Honokohau Stream 6.2	Lat 20°59′40″, long 156°36′09″, Honokohau Stream, 940 ft downstream from dam, at altitude 310 ft.	1997	10-23-97	3.04
210012156362801	Honokohau Stream 7.6	Lat 21°00′12″, long 156°36′28″, Honokohau Stream, downstream from return flow on right bank, at altitude 180 ft.	1997	10-23-97	3.12
210041156363001	Honokohau Stream 7.9	Lat 21°00′41″, long 156°36′30″, Honokohau Stream, 350 ft downstream from road ford, at altitude 100 ft.	1997	10-23-97	2.50
210045156363301	Honokohau Stream 8.0	Lat 21°00′45″, long 156°36′33″, Honokohau Stream, 15 ft downstream from Chun's dam, at altitude 80 ft.	1995, 1997	10-23-97	1.81

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Discharge measurements made at miscellaneons sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
210128156364201	Honokohau Stream 9.1	Lat 21°01′28″, long 156°36′42″, Honokohau Stream, 100 ft downstream of highway 340 bridge, at altitude 5 ft.	1997	10-23-97	1.81
205559156142901	Hoolawa Stream 1	Lat 20°55′59″, long 156°14′29″, Hoolawa Stream at altitude 15 ft.	--	02-05-98	0.30
205501156144001	Hoolawa Stream 2	Lat 20°55′01″, long 156°14′40″, Hoolawa Stream at altitude 315 ft.	--	02-05-98	0.12
205458156143801	Hoolawa Stream 3	Lat 20°54′58″, long 156°14′38″, Hoolawa Stream, downstream from Haiku Ditch diversion, at altitude 400 ft.	--	02-05-98	0.00
205443156144601	Hoolawa Stream 4	Lat 20°54′43″, long 156°14′46″, Hoolawa Stream, upstream from Haiku Ditch diversion, at altitude 450 ft.	--	02-05-98	0.39
205430156144701	Hoolawa Stream 5	Lat 20°54′30″, long 156°14′47″, Hoolawanui Stream, downstream from Lowrie Ditch diversion, at altitude 590 ft.	--	02-05-98	0.11
205427156144901	Hoolawa Stream 6	Lat 20°54′27″, long 156°14′49″, Hoolawanui Stream, upstream from Lowrie Ditch diversion, at altitude 600 ft.	--	02-05-98	0.38
205329156145801	Hoolawa Stream 7	Lat 20°53′29″, long 156°14′58″, Hoolawanui Stream, downstream from Wailoa Ditch diversion, at altitude 1,080 ft.	--	02-05-98	0.00
16585000	Hoolawanui Stream near Hnelo	Lat 20°53′15″, long 156°14′55″, Hoolawanui Stream, upstream from Wailoa Ditch diversion, at altitude 1,218 ft.	1910-71≠	02-05-98	1.92
205427156144001	Hoolawa Stream 9	Lat 20°54′27″, long 156°14′40″, Hoolawaliilii Stream, downstream from Lowrie Ditch diversion, at altitude 590 ft.	--	02-05-98	0.04
205424156144001	Hoolawa Stream 10	Lat 20°54′24″, long 156°14′40″, Hoolawaliilii Stream, upstream from Lowrie Ditch diversion, at altitude 620 ft.	--	02-05-98	0.82
205322156143501	Hoolawa Stream 11	Lat 20°53′22″, long 156°14′35″, Hoolawaliilii Stream, downstream from Wailoa Ditch diversion, at altitude 1,190 ft.	--	02-05-98	0.00
16586000	Hoolawaliilii Stream near Huelo	Lat 20°53′17″, long 156°14′35″, Hoolawaliilii Stream, upstream from Wailoa Ditch diversion, at altitude 1,245 ft.	1911-57≠	02-05-98	1.89
205324156144701	Hoolawa Stream 12.1	Lat 20°53′24″, long 156°14′47″, Unnamed tributary to Hoolawaliilii Stream, at altitude 1,200 ft.	--	02-05-98	0.01

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Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
205642156191601	Kuiaha Gulch 1	Lat 20°56′42″, long 156°19′16″, Kuiaha Gulch at altitude 5 ft.	--	10-29-97	0.00
205620156190101	Kuiaha Gulch 2	Lat 20°56′20″, long 156°19′01″, Kuiaha Gulch at altitude 110 ft.	--	10-29-97	0.00
205604156190101	Kuiaha Gulch 3	Lat 20°56′04″, long 156°19′01″, Kuiaha Gulch at altitude 180 ft.	--	10-29-97	0.00
205557156190001	Kuiaha Gulch 4	Lat 20°55′57″, long 156°19′00″, Kuiaha Gulch at altitude 200 ft.	--	10-29-97	0.00
205546156191401	Kuiaha Gulch 5	Lat 20°55′46″, long 156°19′14″, Lilikoi Gulch at altitude 305 ft.	--	10-29-97	0.00
205545156191601	Kuiaha Gulch 6	Lat 20°55′45″, long 156°19′16″, Lilikoi Gulch at altitude 310 ft.	--	10-29-97	0.36
205528156191901	Kuiaha Gulch 7.1	Lat 20°55′28″, long 156°19′19″, Lilikoi Gulch at altitude 360 ft.	--	10-29-97	0.29
205523156193001	Kuiaha Gulch 7.2	Lat 20°55′23″, long 156°19′30″, Lilikoi Gulch at altitude 380 ft.	--	10-29-97	0.14
205458156192601	Kuiaha Gulch 8	Lat 20°54′58″, long 156°19′26″, Lilikoi Gulch at altitude 490 ft.	--	10-29-97	0.00
205456156193001	Kuiaha Gulch 9	Lat 20°54′56″, long 156°19′30″, Lilikoi Gulch at altitude 530 ft.	--	10-29-97	0.15
205348156190001	Kuiaha Gulch 10	Lat 20°53′48″, long 156°19′00″, Lilikoi Gulch at altitude 930 ft.	--	10-29-97	0.01
205343156185801	Kuiaha Gulch 11	Lat 20°53′43″, long 156°18′58″, Lilikoi Gulch at altitude 960 ft.	--	10-29-97	0.27
205238156182701	Kuiaha Gulch 12	Lat 20°52′38″, long 156°18′27″, Lilikoi Gulch at altitude 1,400 ft.	--	10-28-97	0.00
205544156190001	Kuiaha Gulch 13.1	Lat 20°55′44″, long 156°19′00″, Pauwela Gulch at altitude 300 ft.	--	10-28-97	0.01
205529156190601	Kuiaha Gulch 14	Lat 20°55′29″, long 156°19′06″, Pauwela Gulch at altitude 375 ft.	--	10-28-97	0.41
205503156191001	Kuiaha Gulch 15	Lat 20°55′03″, long 156°19′10″, Pauwela Gulch at altitude 475 ft.	--	10-28-97	0.39
205452156185701	Kuiaha Gulch 16.1	Lat 20°54′52″, long 156°18′57″, Pauwela Gulch at altitude 560 ft.	--	10-28-97	0.06
205451156185701	Kuiaha Gulch 16.2	Lat 20°54′51″, long 156°18′57″, Pauwela Gulch at altitude 560 ft.	--	10-28-97	0.32
205410156185001	Kuiaha Gulch 17	Lat 20°54′10″, long 156°18′50″, Pauwela Gulch at altitude 840 ft.	--	10-28-97	0.00
205351156184601	Kuiaha Gulch 18	Lat 20°53′51″, long 156°18′46″, Pauwela Gulch at altitude 960 ft.	--	10-28-97	0.00

Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
205545156185701	Kuiaha Gulch 19	Lat 20°55′45″, long 156°18′57″, Ohia Gulch at altitude 240 ft.	--	10-29-97	0.00
205510156185301	Kuiaha Gulch 20	Lat 20°55′10″, long 156°18′53″, Ohia Gulch at altitude 400 ft.	--	10-28-97	0.00
205453156185401	Kuiaha Gulch 21	Lat 20°54′53″, long 156°18′54″, Ohia Gulch at altitude 490 ft.	--	10-28-97	0.00
205443156184501	Kuiaha Gulch 22	Lat 20°54′43″, long 156°18′45″, Ohia Gulch at altitude 575 ft.	--	10-28-97	0.15
205344156182301	Kuiaha Gulch 23	Lat 20°53′44″, long 156°18′23″, Ohia Gulch at altitude 930 ft.	--	10-28-97	0.02
205338156182001	Kuiaha Gulch 24	Lat 20°53′38″, long 156°18′20″, Ohia Gulch at altitude 960 ft.	--	10-28-97	2.07
205252156182101	Kuiaha Gulch 25	Lat 20°52′52″, long 156°18′21″, Kapuaahoohui Gulch at altitude 1,260 ft.	--	10-28-97	1.99
205222156181101	Kuiaha Gulch 26	Lat 20°52′22″, long 156°18′11″, Kapuaahoohui Gulch at altitude 1,420 ft.	--	10-28-97	0.00
205225156181001	Kuiaha Gulch 27	Lat 20°52′25″, long 156°18′10″, Kaluanui Ditch at altitude 1,520 ft.	--	10-28-97	1.85
205316156180701	Kuiaha Gulch 28	Lat 20°53′16″, long 156°18′07″, Huluhulunui Gulch at altitude 1,140 ft.	--	10-28-97	0.00
205636156180501	Kaupakulua Gulch 1	Lat 20°56′36″, long 156°18′05″, Kaupakulua Gulch at altitude 5 ft.	--	11-17-97	0.00
205547156180801	Kaupakulua Gulch 2	Lat 20°55′47″, long 156°18′08″, Kaupakulua Gulch at altitude 340 ft.	--	11-17-97	0.00
205524156175801	Kaupakulua Gulch 4	Lat 20°55′24″, long 156°17′58″, Kaupakulua Gulch at altitude 480 ft.	--	11-17-97	0.00
205445156175501	Kaupakulua Gulch 5.1	Lat 20°54′45″, long 156°17′55″, Unnamed tributary to Kaupakulua Gulch at altitude 630 ft.	--	11-17-97	0.00
205347156174701	Kaupakulua Gulch 6	Lat 20°53′47″, long 156°17′47″, Unnamed tributary to Kaupakulua Gulch, downstream from diversion, at altitude 1,010 ft.	--	11-17-97	0.00
205346156174701	Kaupakulua Gulch 7	Lat 20°53′46″, long 156°17′47″, Unnamed tributary to Kaupakulua Gulch, upstream from diversion, at altitude 1,015 ft.	--	11-17-97	0.17
205420156172901	Kaupakulua Gulch 8	Lat 20°54′20″, long 156°17′1129″, Opaepilau Gulch at altitude 790 ft.	--	11-17-97	0.00
205339156173001	Kaupakulua Gulch 9	Lat 20°53′39″, long 156°17′30″, Opaepilau Gulch at altitude 1,030 ft.	--	11-18-97	0.00

Discharge measurements made at miscellaneous sites during water year 1998

Station no.	Station name	Location	Measured previously (water years)	Date	Discharge (ft^3/s)
		Island of Maui--Continued			
205308156172301	Kaupakulua Gulch 10	Lat 20°53′08″, long 156°17′23″, Awalau Gulch at altitude 1,230 ft.	--	11-17-97	0.00
205156156170602	Kaupakulua Gulch 11.1	Lat 20°51′56″, long 156°17′06″, Awalau Gulch, downstream from diversion, at altitude 1,780 ft.	--	11-18-97	0.03
205156156170601	Kaupakulua Gulch 11	Lat 20°51′56″, long 156°17′06″, Awalau Gulch, upstream from diversion, at altitude 1,780 ft.	--	11-18-97	2.87
205133156164801	Kaupakulua Gulch 12	Lat 20°51′33″, long 156°16′48″, Awalau Gulch at altitude 2,030 ft.	--	11-18-97	3.19
205110156162401	Kaupakulua Gulch 13	Lat 20°51′10″, long 156°16′24″, Awalau Gulch at altitude 2,250 ft.	--	11-18-97	2.02
205248156170201	Kaupakulua Gulch 14	Lat 20°52′48″, long 156°17′02″, Kalakohi Gulch at altitude 1,400 ft.	--	11-18-97	0.41
205345156172201	Kaupakulua Gulch 15.1	Lat 20°53′45″, long 156°17′22″, Kalakohi Gulch at altitude 1,020 ft.	--	11-18-97	0.00

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Water-quality partial-record stations are particular sites where chemical-quality, and/or sediment data are collected systematically over a period of years for use in hydrologic analyses. A schematic diagram showing water-quality stations in Kamooalii Stream basin, Kaneohe, Oahu is shown in figure 15 and the data are listed in downstream order.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU

16227100 HALAWA STREAM BELOW H1 (LAT 21°23′46″ LONG 157°55′57″)

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)
NOV 1997							
13...	0855	23.0	25.5	770	4.11	4.6	195
DEC							
17...	0925	22.5	24.0	770	.190	.7	503
FEB 1998							
03...	0955	24.0	22.0	770	E.01	2.0	770
JUL							
23...	0920	23.5	25.5	765	.13	1.5	912

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
NOV 1997							
13...	10	9.0	--	--	--	--	--
DEC							
17...	12	9.1	8	.5	<.05	.02	2800
FEB 1998							
03...	12	8.7	4	.5	<.05	<.01	1800
JUL							
23...	9.7	8.9	--	--	--	--	--

< Actual value is known to be less than the value shown
E Estimated

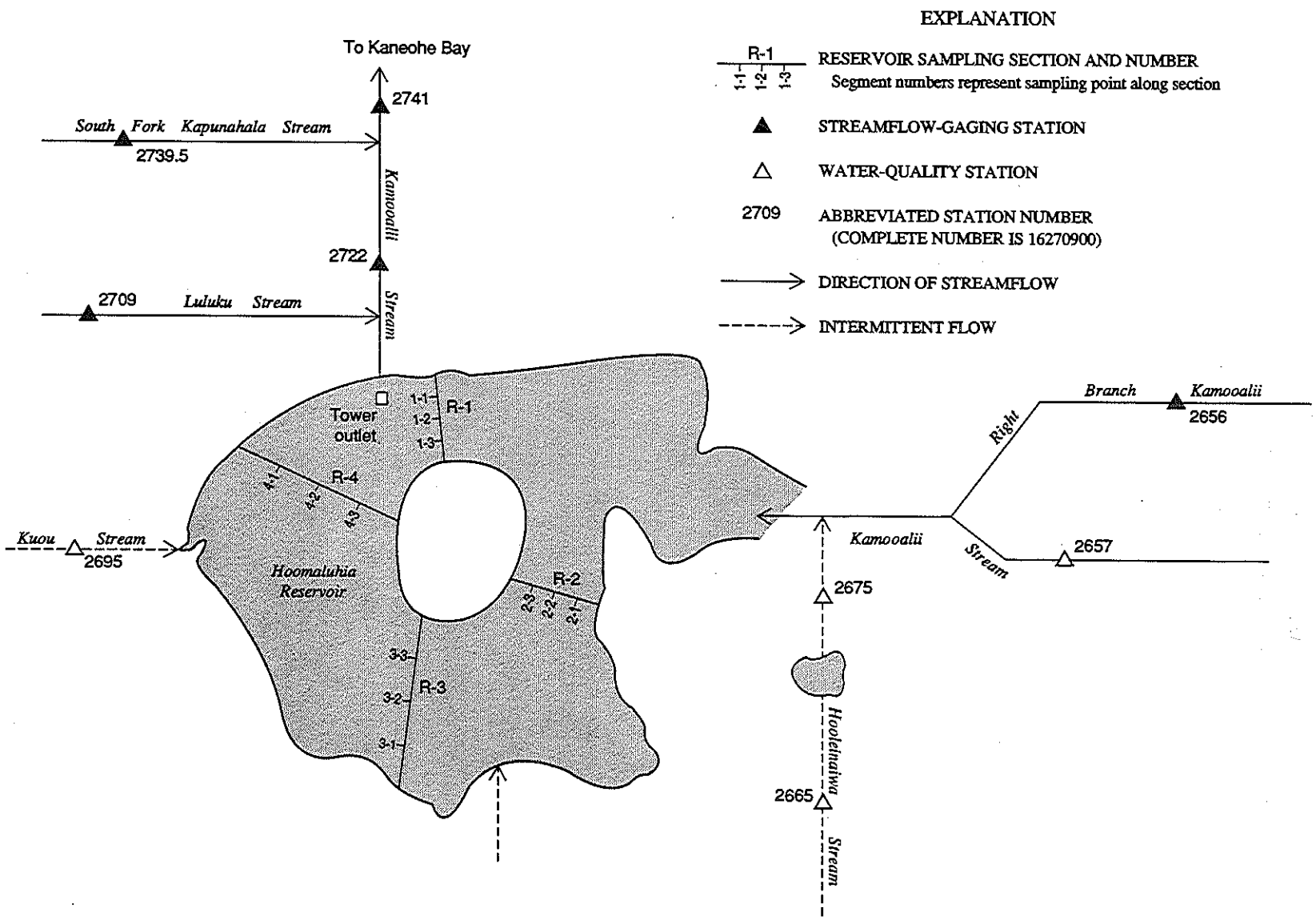


Figure 15. Diagram showing water-quality stations in Kamooalii Stream basin, Kaneohe, Oahu.

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16265700 KAMOOALII STREAM AT ALTITUDE 200 FT, NEAR KANEOHE (LAT 21°23'12" LONG 157°47'56")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)
DEC 1997							
22...	0950	21.5	24.5	760	.72	1.1	225
JAN 1998							
27...	1040	20.0	21.5	760	1.22	.6	223

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
DEC 1997							
22...	7.5	6.9	4	<.1	.35	.01	160
JAN 1998							
27...	8.1	E6.5	<1	<.1	.30	<.01	70

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16267500 HOOLEINAIWA STREAM ABOVE CONFLUENCE WITH KAMOOALII STREAM, NEAR KANEOHE, OAHU

(LAT 21°23'18" LONG 157°48'18")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)
DEC 1997							
22...	1125	22.0	22.5	760	.80	3.1	186
JAN 1998							
27...	0920	20.0	18.0	760	.780	.4	186

DATE	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
DEC 1997							
22...	7.2	7.1	6	<.1	<.05	<.01	33
JAN 1998							
27...	7.4	6.9	1	<.1	.07	<.01	16

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16269500 KUOU STREAM AT ALTITUDE 220 FT NEAR KANEOHE, OAHU

(LAT 21°23'30" LONG 157°48'44")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)
DEC 1997							
22...	1040	22.0	22.0	760	1.0	305	7.0
JAN 1998							
27...	1120	21.5	20.5	760	1.4	313	6.0

DATE	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
DEC 1997						
22...	7.3	4	<.1	.17	.01	180
JAN 1998						
27...	E6.5	1	<.1	.28	<.01	61

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16274100 KANEOHE STREAM BELOW KAMEHAMEHA HWY, OAHU (LAT 21°24'54" LONG 157°48'03")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	TEMPERATURE AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	OIL AND GREASE, TOTAL RECOV. GRAVIMETRIC (MG/L) (00556)
NOV 1997												
13...	1040	24.5	27.0	765	12.8	2.0	194	9.9	9.0	--	--	--
DEC												
29...	0938	21.5	20.5	760	25	5.1	195	9.1	7.9	--	6	--
FEB 1998												
03...	0950	21.0	23.0	765	12.5	2.5	197	9.9	8.5	8.3	5	<1
APR												
21...	0940	24.0	30.0	770	13.4	4.8	196	9.8	8.6	--	--	--

DATE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	.2	.40	.05	--	--	--	--	--	--	--	--	--
FEB 1998												
03...	.2	.27	<.01	2.2	11	8.2	16	1.0	20	6.5	<.1	22
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE) (01012)	CADMIUM WATER UNFLTRD TOTAL (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
03...	<1	4	<100	<10	<1	2.3	<12	1	3	1200	65	1
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

DATE	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SILVER, DISSOLVED (UG/L AS AG) (01075)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL) (01105)
NOV 1997												
13...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
29...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 1998												
03...	60	11	<60	<1.0	<1	3	<1	<1	83	<10	10	700
APR												
21...	--	--	--	--	--	--	--	--	--	--	--	--

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16274100 KANEOHE STREAM BELOW KAMEHAMEHA HWY, OAHU (LAT 21°24'54" LONG 157°48'03")

DATE	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	LITHIUM TOTAL RECOVERABLE (UG/L AS LI) (01132)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SELENIUM, TOTAL (UG/L AS SE) (01147)	DEBRIS, FLOATING (SEVERITY) (01345)	TURBIDITY (SEVERITY) (01350)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CHLORPYRIFOS TOTAL RECOVER (UG/L) (38932)	DISULFOTON UNFILT RECOVER (UG/L) (39011)	PHORATE TOTAL (UG/L) (39023)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<10.0	<4	<10	<1	<1	--	--	K1100	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	1	3	--	--	--	--

DATE	PERTHANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN I TOTAL (UG/L) (39388)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01	.02	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOXAPHENE, TOTAL (UG/L) (39400)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	METHOXYCHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALATHION, TOTAL (UG/L) (39530)	PARATHION, TOTAL (UG/L) (39540)	DIAZINON, TOTAL (UG/L) (39570)	METHYL PARATHION, TOTAL (UG/L) (39600)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01	<.01	<.01	<.01
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRITHION (UG/L) (39786)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DYFONATE) WATER WHOLE TOT.REC (UG/L) (82614)	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
NOV 1997											
13...	--	--	--	--	--	--	--	--	--	--	--
DEC											
29...	--	--	--	--	--	--	--	--	--	--	--
FEB 1998											
03...	<.01	<.01	<.01	<.01	<.01	132	<.1	<.01	<.010	207	63
APR											
21...	--	--	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown
K Results based on colony count outside the acceptance range (non-ideal colony count)

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157482601 HOOMALUHIA RES SEC 1-1 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'26")

DATE	TIME	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
JAN 1998						
28...	1017	1.0	22.5	196	7.1	7.5
28...	1018	3.0	22.5	196	7.2	7.5
28...	1019	5.0	22.5	196	7.2	7.5
28...	1020	7.0	22.5	196	7.1	7.5
28...	1021	8.0	22.5	196	7.0	7.4

212335157482602 HOOMALUHIA RES SEC 1-2 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'26")

DATE	TIME	SAM-PLING DEPTH (FEET) (00003)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
JAN 1998						
28...	1009	1.0	22.5	196	7.1	7.5
28...	1010	3.0	22.5	196	7.1	7.5
28...	1011	5.0	22.5	196	7.1	7.5
28...	1012	7.00	22.5	196	7.1	7.5
28...	1013	9.0	22.5	196	7.1	7.5

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157482603 - HOOMALUHIA RES SEC 1-3 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'26")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CHLORPYRIFOS TOTAL RECOVER (UG/L) (38932)	DISULFOTON UNFILT RECOVER (UG/L) (39011)
JAN 1998											
28...	0956	1.0	22.5	8.2	196	7.1	7.5	<1	64	--	--
28...	0957	3.0	22.5	--	196	7.1	7.5	--	--	--	--
28...	0958	5.0	22.5	--	196	7.1	7.5	--	--	--	--
28...	0959	7.0	22.5	1.2	196	7.1	7.5	<1	38	--	--
28...	1000	9.0	22.5	--	196	7.1	7.5	--	--	--	--
28...	1001	11	22.0	1.4	204	5.7	7.3	<1	K85	--	--
28...	1130	--	--	--	--	--	--	--	--	<.01	<.01

DATE	PHORATE TOTAL (UG/L) (39023)	PERTHANE TOTAL (UG/L) (39034)	DEF TOTAL (UG/L) (39040)	PCNS UNFILT RECOVER (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	LINDANE TOTAL (UG/L) (39340)	CHLORDANE, TECHNICAL TOTAL (UG/L) (39350)	P,P'-DDD UNFILT RECOVER (UG/L) (39360)	P,P'-DDE, TOTAL (UG/L) (39365)	P,P'-DDT UNFILT RECOVER (UG/L) (39370)
JAN 1998										
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	<.01	<.1	<.01	<.1	<.01	<.01	<.1	<.01	<.01	<.01

DATE	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN I TOTAL (UG/L) (39388)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	TOXAPHENE, TOTAL (UG/L) (39400)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	METHOXYCHLOR, TOTAL (UG/L) (39480)	PCB, TOTAL (UG/L) (39516)	MALATHION, TOTAL (UG/L) (39530)
JAN 1998										
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.1	<.01

DATE	PARATHION, TOTAL (UG/L) (39540)	DIAZINON, TOTAL (UG/L) (39570)	METHYL PARATHION, TOTAL (UG/L) (39600)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	MIREX, TOTAL (UG/L) (39755)	SILVEX, TOTAL (UG/L) (39760)	TOTAL TRITHION (UG/L) (39786)	2,4-DP TOTAL (UG/L) (82183)	FONOFOS (DYFONATE) WATER WHOLE TOT.REC (UG/L) (82614)
JAN 1998										
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
28...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212331157482501 HOOMALUHIA RES SEC 2-1 NR KANEOHE, OAHU (LAT 21°23′31″ LONG 157°48′25″)

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1146	1.0	23.0	194	7.0	7.6
28...	1147	3.0	22.5	196	7.0	7.6
28...	1148	5.0	22.5	194	7.0	7.6
28...	1149	7.0	22.5	196	6.4	7.5
28...	1150	8.0	22.5	196	6.2	7.4

212331157482502 - HOOMALUHIA RES SEC 2-2 NR KANEOHE, OAHU (LAT 21°23′31″ LONG 157°48′25″)

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
JAN 1998							
28...	1138	1.0	23.0	194	7.0	7.6	--
28...	1139	3.0	22.5	196	7.1	7.6	--
28...	1140	5.0	22.5	196	7.0	7.6	--
28...	1141	7.0	22.5	196	6.9	7.6	--
28...	1142	9.0	22.0	204	6.0	7.4	<65
28...	1143	11	22.0	204	5.6	7.3	--

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

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212331157482503 HOOMALUHIA RES SEC 2-3 NR KANEOHE, OAHU (LAT 21°23'31" LONG 157°48'25")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1129	1.0	23.0	196	7.0	7.6
28...	1131	5.0	22.5	196	6.8	7.6
28...	1132	7.0	22.5	196	6.9	7.5
28...	1133	9.0	22.0	204	5.8	7.3
28...	1130	3.0	23.0	196	7.0	7.6

212329157483101 HOOMALUHIA RES SEC 3-1 NR KANEOHE, OAHU (LAT 21°23'29" LONG 157°48'31")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1055	1.0	23.0	196	6.9	7.5
28...	1056	3.0	23.0	196	6.9	7.5
28...	1057	5.0	22.5	198	6.9	7.5
28...	1058	7.0	22.5	196	6.8	7.5
28...	1059	8.0	22.5	196	6.8	7.5

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212329157483102 - HOOMALUHIA RES SEC 3-2 NR KANEOHE, OAHU (LAT 21°23'29" LONG 157°48'31")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	RESIDUE TOTAL AT 105 DEG. C, SUSPENDED (MG/L) (00530)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
JAN 1998									
28...	1046	1.0	23.0	1.0	196	6.9	7.5	2	K5
28...	1047	3.0	22.5	--	196	6.9	7.5	--	--
28...	1048	5.0	22.5	.9	196	6.8	7.5	<1	K11
28...	1049	7.0	22.5	--	196	6.9	7.5	--	--
28...	1050	9.0	22.5	--	194	6.7	7.5	--	--
28...	1051	10	22.5	1.2	194	6.8	7.5	<1	24

212329157483103 HOOMALUHIA RES SEC 3-3 NR KANEOHE, OAHU (LAT 21°23'29" LONG 157°48'31")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1034	1.0	23.0	194	6.9	7.5
28...	1035	3.0	22.5	196	7.0	7.5
28...	1037	5.0	22.5	198	6.7	7.5
28...	1038	7.0	22.5	194	6.9	7.5
28...	1039	9.0	22.5	194	6.8	7.5
28...	1040	11	22.5	196	5.7	7.3

< Actual value is known to be less than the value shown
K Results based on colony count outside the acceptance range (non-ideal colony count)

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157483001 HOOMALUHIA RES SEC 4-1 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'30")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1319	1.0	24.0	198	6.9	7.6
28...	1320	3.0	23.5	198	6.9	7.6
28...	1321	5.0	23.0	196	6.9	7.6
28...	1322	7.00	22.5	196	6.7	7.6
28...	1323	8.0	22.5	198	6.6	7.5

212335157483002 - HOOMALUHIA RES SEC 4-2 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'30")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1311	1.0	23.5	196	7.0	7.6
28...	1312	3.0	23.0	198	7.0	7.6
28...	1313	5.0	23.0	198	7.1	7.6
28...	1314	7.0	23.0	196	7.0	7.6
28...	1315	8.0	22.5	196	7.0	7.6

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

212335157483003 HOOMALUHIA RES SEC 4-3 NR KANEOHE, OAHU (LAT 21°23'35" LONG 157°48'30")

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)
JAN 1998						
28...	1302	1.0	23.5	198	7.0	7.5
28...	1303	3.0	23.0	196	7.0	7.5
28...	1304	5.0	23.0	196	6.9	7.5
28...	1305	7.0	22.5	196	7.0	7.5
28...	1306	9.0	22.5	198	6.8	7.5
28...	1307	11	22.5	198	6.4	7.4

212336157482601 - HOOMALUHIA RESERVOIR AT OUTLET, NEAR KANEOHE (LAT 21°23'36" LONG 157°48'26")

DATE	TIME	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)	OXYGEN, DISSOLVED (MG/L) (00300)
FEB 1998				
03...	1200	21.5	188	7.8
03...	1300	21.5	188	7.7
03...	1400	21.5	190	7.8
03...	1500	22.0	190	7.9
03...	1600	22.0	191	7.9
03...	1700	22.0	193	8.0
03...	1800	22.0	192	8.0
03...	1900	22.0	194	8.1
03...	2000	22.0	196	8.0
03...	2100	22.0	196	7.9
03...	2200	22.0	196	7.8
03...	2300	22.0	196	7.8
03...	2400	21.5	199	7.9
04...	0100	21.5	198	7.9
04...	0200	21.5	198	7.9
04...	0300	21.5	197	7.9
04...	0400	21.5	200	7.9
04...	0500	21.5	197	7.9
04...	0600	21.5	199	7.8
04...	0700	21.5	196	7.8
04...	0800	21.5	198	7.8
04...	0900	21.5	198	7.8
04...	1000	21.5	196	7.8
04...	1100	21.5	198	7.7
04...	1200	21.5	202	7.7
04...	1300	21.5	196	7.8

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET (LAT 21°24'44" LONG 157°45'25")

WATER TEMPERATURE, DEGREES CELSIUS

DAY	OCTOBER MAX	OCTOBER MIN	OCTOBER MEAN	NOVEMBER MAX	NOVEMBER MIN	NOVEMBER MEAN	DECEMBER MAX	DECEMBER MIN	DECEMBER MEAN	JANUARY MAX	JANUARY MIN	JANUARY MEAN
1	---	---	---	27.1	23.3	25.7	24.6	22.4	24.0	23.9	21.2	22.8
2	---	---	---	25.3	22.0	23.7	23.4	21.6	22.2	23.1	21.0	22.0
3	---	---	---	25.9	22.7	24.7	22.4	21.0	21.6	23.0	20.9	21.9
4	---	---	---	26.2	23.2	24.9	22.0	20.7	21.4	23.6	21.3	22.7
5	---	---	---	26.8	23.6	25.0	21.6	20.4	21.2	24.0	21.4	23.0
6	---	---	---	26.8	23.5	25.8	22.5	21.0	21.8	23.9	20.6	22.6
7	---	---	---	26.5	25.5	26.1	23.7	21.7	22.6	23.5	20.0	21.8
8	---	---	---	28.8	25.4	26.7	23.8	22.0	23.1	23.8	20.4	22.3
9	---	---	---	26.9	23.1	25.3	25.4	21.8	23.7	24.1	19.9	22.8
10	---	---	---	26.7	22.5	25.0	24.9	21.6	24.2	24.4	19.9	23.1
11	---	---	---	26.7	22.9	25.1	24.9	21.5	23.8	24.3	19.4	22.7
12	---	---	---	26.7	22.9	24.7	24.3	21.1	22.4	24.3	19.5	22.5
13	---	---	---	26.9	22.9	25.3	23.6	19.8	22.0	24.5	19.2	22.9
14	---	---	---	27.1	24.0	25.7	24.0	21.2	22.8	---	---	---
15	---	---	---	27.4	23.2	25.9	25.2	21.7	23.6	25.6	19.8	24.1
16	---	---	---	27.6	23.6	26.3	25.0	22.6	24.0	25.9	23.1	25.1
17	---	---	---	27.2	23.4	26.4	24.4	21.8	23.5	25.5	20.5	23.1
18	---	---	---	27.3	25.2	26.6	---	---	---	23.6	20.4	22.0
19	---	---	---	26.9	25.7	26.6	25.1	21.8	23.7	25.0	20.8	23.8
20	---	---	---	27.0	26.0	26.5	25.2	21.6	23.6	24.5	22.9	24.0
21	---	---	---	27.0	25.7	26.4	25.9	22.5	24.4	24.6	23.9	24.3
22	---	---	---	26.6	24.3	25.6	25.3	22.6	24.1	25.0	24.0	24.5
23	---	---	---	25.0	22.7	23.7	25.1	22.2	24.2	25.1	23.2	24.6
24	---	---	---	24.3	21.9	22.8	25.0	22.5	23.9	26.1	22.8	24.7
25	---	---	---	---	---	---	24.9	21.5	23.4	25.3	22.0	24.4
26	---	---	---	24.2	20.9	22.6	25.0	21.6	23.8	26.0	20.6	24.5
27	---	---	---	24.7	22.1	23.6	24.9	22.4	23.7	26.7	21.8	24.9
28	---	---	---	24.2	22.0	23.1	24.6	22.0	23.7	26.2	19.6	24.1
29	---	---	---	24.3	22.0	22.6	25.3	22.5	24.1	25.6	20.2	23.7
30	---	---	---	24.6	22.0	23.6	24.5	21.1	22.4	25.8	21.4	23.9
31	27.1	25.2	26.6	---	---	---	23.9	21.0	22.7	25.7	22.8	24.6
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	FEBRUARY MAX	FEBRUARY MIN	FEBRUARY MEAN	MARCH MAX	MARCH MIN	MARCH MEAN	APRIL MAX	APRIL MIN	APRIL MEAN	MAY MAX	MAY MIN	MAY MEAN
1	25.0	20.4	23.5	28.4	24.9	26.9	26.3	23.5	24.9	---	---	---
2	24.4	19.4	21.8	28.7	26.0	27.5	24.7	23.2	23.9	---	---	---
3	24.9	22.7	24.2	29.8	26.0	28.1	---	---	---	---	---	---
4	24.7	22.7	24.1	30.0	27.1	28.8	24.9	22.0	23.4	---	---	---
5	24.7	20.2	22.7	29.6	27.7	29.0	25.1	22.1	23.5	---	---	---
6	25.5	21.7	23.9	29.9	28.4	29.2	25.3	22.3	23.8	---	---	---
7	26.3	23.3	24.7	29.2	27.8	28.6	26.0	22.5	24.6	---	---	---
8	26.3	23.0	24.8	28.6	27.3	28.2	25.8	23.3	24.7	---	---	---
9	26.4	21.8	25.1	29.8	26.2	28.6	25.0	22.9	24.1	---	---	---
10	26.2	23.5	25.5	29.8	26.2	28.8	24.9	22.5	23.8	---	---	---
11	---	---	---	29.8	27.0	28.8	25.3	22.3	23.7	---	---	---
12	26.2	24.8	25.8	29.9	25.2	28.4	23.5	21.9	22.8	---	---	---
13	27.7	24.4	26.1	---	---	---	23.9	21.2	22.4	---	---	---
14	28.0	24.7	26.8	30.6	27.1	29.8	24.9	21.4	23.1	---	---	---
15	27.7	24.5	26.7	30.5	28.0	29.9	25.6	22.0	24.0	---	---	---
16	26.4	22.6	24.0	31.0	27.6	30.0	26.4	22.5	24.6	---	---	---
17	26.8	21.3	24.2	30.7	24.2	28.8	26.9	23.3	25.2	---	---	---
18	26.6	22.3	25.4	30.2	24.3	28.5	26.8	23.5	25.2	---	---	---
19	26.5	23.0	25.1	30.7	27.5	29.8	27.0	23.8	25.6	---	---	---
20	26.2	23.0	25.0	30.5	28.5	30.0	27.8	24.7	26.6	---	---	---
21	26.2	22.2	23.8	30.3	24.6	27.9	28.3	24.8	27.1	---	---	---
22	24.7	21.3	22.2	29.1	22.7	25.5	28.0	23.9	25.2	---	---	---
23	23.5	20.3	21.8	27.4	20.8	23.6	27.9	22.5	25.6	---	---	---
24	24.9	20.9	23.3	24.5	22.2	23.4	27.9	23.4	26.1	---	---	---
25	24.7	21.7	23.7	24.4	21.6	23.3	28.4	24.0	27.0	---	---	---
26	26.0	23.4	24.7	25.7	21.8	24.1	28.9	24.7	27.9	---	---	---
27	27.0	23.4	25.4	25.1	22.5	24.0	29.1	25.3	28.0	---	---	---
28	27.2	22.7	25.8	25.7	22.2	24.3	26.9	21.7	25.2	---	---	---
29	---	---	---	26.2	23.3	24.8	26.4	20.3	23.4	---	---	---
30	---	---	---	26.2	23.5	24.8	---	---	---	---	---	---
31	---	---	---	26.5	23.4	24.9	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	50600	14600	35600	48000	6420	23100	47800	5710	26400
2	---	---	---	38500	5410	16800	22000	5240	8180	33300	2800	11500
3	---	---	---	44000	5440	16100	17100	5430	7730	33100	2960	12700
4	---	---	---	48800	4790	17000	11900	4880	7590	43400	4930	25800
5	---	---	---	48500	6580	25100	12600	5160	7940	46100	11200	32200
6	---	---	---	49700	8020	38000	24300	3970	6630	45900	2640	26100
7	---	---	---	50900	39000	48400	20500	3920	7410	42400	1850	15100
8	---	---	---	51100	13200	34600	31800	8020	13800	45700	2960	24600
9	---	---	---	47100	4500	16500	44900	5530	16000	46800	2650	29800
10	---	---	---	47700	3400	16800	46900	12800	36900	47900	6940	35300
11	---	---	---	47200	3770	20100	46800	396	34700	46600	3480	27500
12	---	---	---	47600	3600	13700	43600	189	24700	45400	4150	25200
13	---	---	---	46900	4690	18600	42000	202	22200	46600	4450	26500
14	---	---	---	48900	9540	27300	45800	310	22500	---	---	---
15	---	---	---	49200	8910	34700	48200	7150	23600	49600	6850	34800
16	---	---	---	49200	16100	36600	49300	7220	27900	50900	31900	45600
17	---	---	---	48100	16200	37200	47100	5970	17000	49300	6030	28600
18	---	---	---	48800	29700	44000	---	---	---	38700	4350	13500
19	---	---	---	48800	34100	43400	46300	4840	17900	47300	4190	26900
20	---	---	---	49300	19800	39700	43500	4890	21200	46800	31200	43000
21	---	---	---	49700	25000	39600	43100	11900	27700	49200	37500	47300
22	---	---	---	46300	23400	34700	39000	9860	21600	50400	34400	47700
23	---	---	---	33500	8920	17100	45400	10700	26300	49800	22900	44500
24	---	---	---	12500	6040	7990	45400	7820	20900	48500	8740	34100
25	---	---	---	---	---	---	46200	3920	13300	49300	8830	34500
26	---	---	---	16000	4690	8760	48400	4820	19000	48500	5860	34800
27	---	---	---	33400	8020	12700	48800	7060	24400	49400	9040	35200
28	---	---	---	18100	5930	8610	48100	8410	26900	48300	6960	34500
29	---	---	---	39500	7560	13100	48000	10600	33500	43700	7620	29600
30	---	---	---	44100	8340	20800	44600	298	17800	45600	18300	32700
31	50200	11600	30800	---	---	---	47300	4850	26300	44800	23100	37400
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

		FEBRUARY			MARCH			APRIL			MAY	
1	45200	17300	32700	49500	21700	43400	24000	17200	19500	---	---	---
2	39700	10300	20600	50500	38000	47000	22200	14500	16800	---	---	---
3	45100	33600	41200	50800	36700	46500	---	---	---	---	---	---
4	48300	24100	40200	51200	32800	45600	26800	15100	16700	---	---	---
5	44000	16400	28000	51200	36700	48500	30600	12700	16000	---	---	---
6	42200	16800	33400	51400	37100	47800	38500	11900	16800	---	---	---
7	45900	14200	36700	51600	37600	47600	44200	12700	20500	---	---	---
8	47500	15400	37400	51500	29700	47300	43700	14000	21700	---	---	---
9	47400	14600	37100	51400	15200	43500	26800	15600	18400	---	---	---
10	47400	34200	44100	50900	13600	41100	27500	16200	19500	---	---	---
11	---	---	---	50900	15000	38800	25000	18100	21200	---	---	---
12	49900	40100	47000	50000	12700	37200	24300	17700	20600	---	---	---
13	48700	23600	40700	---	---	---	27300	16600	19700	---	---	---
14	47500	26400	38700	50900	39100	45900	26800	16300	19800	---	---	---
15	48200	21300	38100	50900	40700	46800	40400	14700	21400	---	---	---
16	37000	11800	19800	50400	37000	45700	44500	14100	23000	---	---	---
17	43400	11400	22000	48000	20300	37500	47700	14200	24100	---	---	---
18	47200	18100	33200	49700	17400	36700	43800	16400	24000	---	---	---
19	48800	14900	33500	50700	33100	44500	46700	26400	32500	---	---	---
20	48800	16700	30500	51400	41100	47900	48700	26900	36000	---	---	---
21	47900	14500	20500	49900	26700	40400	49000	23000	33700	---	---	---
22	20500	9280	13300	49600	25100	36200	47200	19000	26900	---	---	---
23	31400	8580	12200	44800	23100	29900	47700	14600	26400	---	---	---
24	41100	10000	19500	37600	25900	30300	49300	15900	29600	---	---	---
25	46100	12900	26900	35200	19400	25300	48300	23000	35200	---	---	---
26	48100	20000	36800	39400	14700	23000	49000	26000	42600	---	---	---
27	48600	14500	35600	40300	13700	23200	49600	31800	44300	---	---	---
28	48900	15200	34600	42300	15800	24100	44500	24500	36700	---	---	---
29	---	---	---	36100	17400	22700	44900	19600	30300	---	---	---
30	---	---	---	35700	16700	21400	---	---	---	---	---	---
31	---	---	---	32900	16500	21000	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	8.3	7.8	8.1	7.7	6.8	7.2	8.0	6.9	7.4
2	---	---	---	8.2	7.8	7.9	7.2	6.9	7.1	7.4	6.8	7.0
3	---	---	---	8.2	7.5	7.8	7.3	7.0	7.2	7.4	6.8	7.0
4	---	---	---	8.1	7.3	7.7	7.3	7.1	7.2	7.8	6.8	7.3
5	---	---	---	8.2	7.3	7.7	7.3	6.9	7.1	8.1	7.0	7.6
6	---	---	---	8.2	7.3	7.8	7.1	6.8	7.0	8.1	6.8	7.5
7	---	---	---	8.2	7.8	8.1	7.0	6.8	6.9	7.8	6.8	7.1
8	---	---	---	8.2	7.5	7.9	7.1	6.8	6.9	7.9	6.9	7.4
9	---	---	---	8.1	7.3	7.6	7.6	6.6	6.9	8.1	6.8	7.6
10	---	---	---	8.0	7.4	7.6	7.7	6.7	7.3	8.1	6.9	7.7
11	---	---	---	8.0	7.3	7.6	7.7	7.1	7.4	8.1	6.8	7.5
12	---	---	---	8.0	7.3	7.6	7.6	6.9	7.2	8.1	6.8	7.4
13	---	---	---	8.0	7.3	7.6	7.6	6.8	7.1	8.1	6.8	7.4
14	---	---	---	8.0	7.4	7.7	7.6	6.8	7.1	---	---	---
15	---	---	---	8.1	7.4	7.8	7.7	6.7	7.1	8.1	6.2	7.6
16	---	---	---	8.1	7.4	7.8	7.7	6.7	7.2	8.1	7.3	7.9
17	---	---	---	8.1	7.4	7.8	7.6	6.6	7.0	8.2	4.5	7.6
18	---	---	---	8.1	7.5	7.9	---	---	---	7.9	7.2	7.4
19	---	---	---	8.1	7.7	7.9	7.9	6.9	7.3	8.1	7.1	7.6
20	---	---	---	8.0	7.5	7.8	7.8	7.0	7.3	8.2	7.7	8.0
21	---	---	---	8.0	7.5	7.8	7.8	7.1	7.4	8.3	8.0	8.2
22	---	---	---	8.0	7.4	7.7	7.7	7.1	7.3	8.3	7.8	8.2
23	---	---	---	7.6	7.2	7.4	7.9	7.0	7.4	8.2	7.5	8.0
24	---	---	---	7.7	7.2	7.5	7.9	7.0	7.3	8.2	7.1	7.8
25	---	---	---	---	---	---	7.9	6.8	7.1	8.1	7.2	7.7
26	---	---	---	7.2	6.7	7.0	8.0	6.8	7.2	8.0	7.2	7.7
27	---	---	---	7.3	6.8	7.1	8.0	7.0	7.3	8.1	7.6	7.9
28	---	---	---	7.3	6.9	7.1	8.0	7.0	7.4	8.2	7.8	8.0
29	---	---	---	7.4	6.9	7.2	8.1	7.1	7.6	8.1	7.8	8.0
30	---	---	---	7.6	6.8	7.1	8.0	7.1	7.4	8.3	7.7	8.0
31	8.1	7.1	7.6	---	---	---	8.0	7.0	7.4	8.1	7.7	8.0
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

	FEBRUARY			MARCH			APRIL			MAY		
1	8.1	7.8	7.9	---	---	---	7.9	7.7	7.8	---	---	---
2	7.9	7.6	7.7	---	---	---	8.0	7.7	7.8	---	---	---
3	8.1	7.8	7.9	---	---	---	---	---	---	---	---	---
4	8.2	7.9	8.1	---	---	---	7.9	7.7	7.8	---	---	---
5	8.2	7.6	7.9	---	---	---	7.9	7.5	7.7	---	---	---
6	7.9	7.5	7.7	---	---	---	7.8	7.4	7.7	---	---	---
7	7.9	7.4	7.7	---	---	---	7.9	7.3	7.6	---	---	---
8	7.9	7.4	7.7	---	---	---	8.0	7.2	7.6	---	---	---
9	7.9	7.3	7.6	---	---	---	7.8	7.4	7.7	---	---	---
10	7.9	7.7	7.8	---	---	---	7.8	7.5	7.7	---	---	---
11	---	---	---	---	---	---	7.8	7.6	7.7	---	---	---
12	---	---	---	---	---	---	7.9	7.6	7.7	---	---	---
13	---	---	---	---	---	---	7.8	7.6	7.7	---	---	---
14	---	---	---	8.2	7.7	8.0	7.8	7.5	7.7	---	---	---
15	---	---	---	8.2	7.8	8.0	7.9	7.4	7.7	---	---	---
16	---	---	---	8.1	7.5	7.9	8.0	7.4	7.7	---	---	---
17	---	---	---	8.1	7.2	7.8	8.1	7.3	7.7	---	---	---
18	---	---	---	8.1	7.0	7.8	8.1	7.3	7.7	---	---	---
19	---	---	---	8.1	7.4	7.9	8.2	7.3	7.7	---	---	---
20	---	---	---	8.1	7.8	8.0	8.2	7.4	7.8	---	---	---
21	---	---	---	8.2	7.8	8.0	8.1	7.3	7.7	---	---	---
22	---	---	---	8.2	7.7	7.9	8.1	7.3	7.7	---	---	---
23	---	---	---	8.1	7.6	7.8	8.1	7.2	7.6	---	---	---
24	---	---	---	8.0	7.8	7.8	8.1	7.1	7.6	---	---	---
25	---	---	---	8.0	7.6	7.8	8.0	7.1	7.6	---	---	---
26	---	---	---	8.1	7.4	7.8	8.0	7.1	7.8	---	---	---
27	---	---	---	8.0	7.4	7.7	7.9	7.2	7.7	---	---	---
28	---	---	---	8.0	7.4	7.7	7.9	7.3	7.6	---	---	---
29	---	---	---	8.0	7.5	7.7	7.8	7.2	7.6	---	---	---
30	---	---	---	8.0	7.6	7.8	---	---	---	---	---	---
31	---	---	---	8.0	7.5	7.7	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF OAHU--Continued

16264850 - KAWAINUI CANAL AT ONEAWA STREET--Continued

OXYGEN DISSOLVED (MG/L)

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	6.9	3.2	5.2	---	---	---	---	---	---
2	---	---	---	6.8	3.0	5.9	---	---	---	---	---	---
3	---	---	---	6.4	1.3	4.7	---	---	---	---	---	---
4	---	---	---	5.6	.7	3.3	---	---	---	---	---	---
5	---	---	---	5.1	1.5	2.8	---	---	---	---	---	---
6	---	---	---	4.2	1.4	2.8	---	---	---	---	---	---
7	---	---	---	4.7	2.2	3.8	---	---	---	---	---	---
8	---	---	---	4.7	2.1	3.8	---	---	---	---	---	---
9	---	---	---	3.8	.5	2.3	---	---	---	---	---	---
10	---	---	---	3.5	.2	1.6	---	---	---	---	---	---
11	---	---	---	3.9	.2	1.8	---	---	---	---	---	---
12	---	---	---	4.5	.6	2.5	---	---	---	---	---	---
13	---	---	---	3.4	.2	1.5	---	---	---	---	---	---
14	---	---	---	3.7	.3	1.8	---	---	---	---	---	---
15	---	---	---	4.3	.2	2.5	---	---	---	---	---	---
16	---	---	---	5.1	.9	3.2	---	---	---	---	---	---
17	---	---	---	5.3	.9	3.7	---	---	---	---	---	---
18	---	---	---	5.1	2.0	3.6	---	---	---	---	---	---
19	---	---	---	4.0	2.2	3.0	---	---	---	---	---	---
20	---	---	---	4.4	1.7	3.1	---	---	---	---	---	---
21	---	---	---	5.3	2.5	3.9	---	---	---	---	---	---
22	---	---	---	5.6	3.1	4.5	---	---	---	---	---	---
23	---	---	---	6.2	1.8	4.1	---	---	---	---	---	---
24	---	---	---	7.1	2.0	5.8	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	5.3	1.5	3.8	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	5.3	1.9	4.2	8.9	7.4	8.1	---	---	---
2	---	---	---	6.1	3.0	4.8	9.2	6.2	8.0	---	---	---
3	---	---	---	6.7	3.2	5.2	---	---	---	---	---	---
4	---	---	---	6.8	3.6	5.6	---	---	---	---	---	---
5	---	---	---	6.7	3.5	5.4	---	---	---	---	---	---
6	---	---	---	6.8	3.7	5.2	---	---	---	---	---	---
7	---	---	---	6.5	4.1	5.0	---	---	---	---	---	---
8	---	---	---	5.9	3.7	4.6	---	---	---	---	---	---
9	---	---	---	6.6	3.6	4.8	---	---	---	---	---	---
10	---	---	---	6.5	3.7	4.9	---	---	---	---	---	---
11	---	---	---	6.1	2.6	4.6	---	---	---	---	---	---
12	6.8	4.7	5.9	5.7	1.4	3.6	---	---	---	---	---	---
13	6.4	3.7	5.4	---	---	---	---	---	---	---	---	---
14	6.0	3.7	4.9	6.6	4.0	5.6	---	---	---	---	---	---
15	5.9	3.3	4.9	6.4	4.0	5.6	---	---	---	---	---	---
16	6.6	3.0	5.0	7.0	3.9	5.7	---	---	---	---	---	---
17	5.8	2.1	4.0	7.0	3.0	5.8	---	---	---	---	---	---
18	6.3	2.2	4.3	7.1	3.0	5.6	---	---	---	---	---	---
19	4.9	2.3	3.8	7.1	4.1	5.8	---	---	---	---	---	---
20	5.4	1.5	3.8	7.0	4.9	6.3	---	---	---	---	---	---
21	6.7	1.9	5.1	8.1	3.8	6.2	---	---	---	---	---	---
22	7.3	3.6	6.4	7.8	5.0	6.5	---	---	---	---	---	---
23	7.4	2.6	6.4	7.1	4.9	6.3	---	---	---	---	---	---
24	6.6	2.3	4.9	7.6	5.6	6.6	---	---	---	---	---	---
25	5.5	2.4	4.2	8.2	5.6	7.0	---	---	---	---	---	---
26	6.0	2.8	4.3	8.4	5.4	7.2	---	---	---	---	---	---
27	5.8	2.7	4.4	7.9	5.2	6.8	---	---	---	---	---	---
28	5.8	1.8	4.3	8.1	5.2	6.8	---	---	---	---	---	---
29	---	---	---	8.8	5.8	7.2	---	---	---	---	---	---
30	---	---	---	8.8	6.6	7.8	---	---	---	---	---	---
31	---	---	---	9.0	6.1	7.6	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI

205110156162401 - KAUPAKULUA 13, MAUI (LAT 20°51'10" LONG 156°16'24")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	1445	18.5	47	7.00

205133156164801 - KAUPAKULUA 12, MAUI (LAT 20°51'33" LONG 156°16'48")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	1445	18.5	54	7.00

205156156170601 - KAUPAKULUA 11, MAUI (LAT 20°51'56" LONG 156°17'06")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	0935	17.5	54	7.00

205156156170602 - KAUPAKULUA 11.1, MAUI (LAT 20°51'56" LONG 156°17'06")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
NOV 1997			
18...	1050	19.0	68

205225156181001 - KUIAHA 27, MAUI (LAT 20°52'25" LONG 156°18'10")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	0935	19.5	81	11.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI--CONTINUED

205248156170201 - KAUPAKULUA 14, MAUI (LAT 20°52'48" LONG 156°17'02")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
18...	1455	19.0	60	11.0

205252156182101 - KUIAHA 25, MAUI (LAT 20°52'52" LONG 156°18'10")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1055	20.5	89	12.0

205315156145301 - HOOLAWA 8, MAUI (LAT 20°53'15" LONG 156°14'53")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1215	16.0	54	9.00

205318156143601 - HOOLAWA 12, MAUI (LAT 20°53'18" LONG 156°14'36")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1015	15.0	55	10.0

205338156182001 - KUIAHA 24, MAUI (LAT 20°53'38" LONG 156°18'20")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1343	23.5	87	12.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI--CONTINUED

205343156185801 - KUIAHA 11, MAUI (LAT 20°53'43" LONG 156°18'58")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	0855	20.5	140	20.0

205346156174701 - KAUPAKULUA 7, MAUI (LAT 20°53'46" LONG 156°17'47")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
NOV 1997			
17...	1650	21.0	81

205424156144001 - HOOLAWA 10, MAUI (LAT 20°54'24" LONG 156°14'40")

DATE	TIME	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998		
05...	1518	15.0

205427156144901 - HOOLAWA 6, MAUI (LAT 20°54'27" LONG 156°14'49")

DATE	TIME	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998		
05...	1410	16.0

205443156184501 - KUIAHA 22, MAUI (LAT 20°54'43" LONG 156°18'45")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1030	22.0	135	22.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF MAUI--CONTINUED

205446156175401 - KAUPAKULUA 5, MAUI (LAT 20°54'46" LONG 156°17'54")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
17...	1400	21.0	63	10.0

205452156185701 - KUIAHA 16.1, MAUI (LAT 20°54'52" LONG 156°18'57")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1245	22.0	135	23.0

205456156193001 - KUIAHA 9, MAUI (LAT 20°54'56" LONG 156°19'30")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	1050	21.0	84	11.0

205458156143801 - HOOLAWA 3, MAUI (LAT 20°54'58" LONG 156°14'38")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1350	19.5	97	19.0

205501156144001 - HOOLAWA 2, MAUI (LAT 20°55'01" LONG 156°14'40")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1205	21.0	126	25.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
HAWAII, ISLAND OF MAUI--CONTINUED

205503156191001 - KUIAHA 15, MAUI (LAT 20°55'03" LONG 156°19'10")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1700	22.0	159	23.0

205523156193001 - KUIAHA 7.2, MAUI (LAT 20°55'23" LONG 156°19'30")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	1215	24.0	147	20.0

205528156191901 - KUIAHA 7.1, MAUI (LAT 20°55'28" LONG 156°19'19")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	1256	25.0	172	22.0

205529156190601 - KUIAHA 14, MAUI (LAT 20°55'29" LONG 156°19'06")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
28...	1455	23.0	167	24.0

205540156190301 - KUIAHA 13.2, MAUI (LAT 20°55'40" LONG 156°19'03")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
OCT 1997			
28...	1430	23.0	175

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

HAWAII, ISLAND OF MAUI--CONTINUED

205544156190001 - KUIAHA 13.1, MAUI (LAT 20°55'44" LONG 156°19'00")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
OCT 1997			
28...	1600	22.5	188

205545156191601 - KUIAHA 6, MAUI (LAT 20°55'45" LONG 156°19'16")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
OCT 1997				
29...	0840	22.0	189	23.0

205546156180801 - KAUPAKULUA 3, MAUI (LAT 20°55'46" LONG 156°18'08")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
17...	1215	22.0	129	21.0

205559156142901 - HOOLAWA 1, MAUI (LAT 20°55'59" LONG 156°14'29")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
FEB 1998				
05...	1030	18.5	161	34.0

205636156180501 - KAUPAKULUA 1, MAUI (LAT 20°56'36" LONG 156°18'05")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
NOV 1997				
17...	1035	21.5	53	8.00

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
HAWAII, ISLAND OF MAUI

204823156140201 - WAIKAMOI 65, MAUI (LAT 20°48'23" LONG 156°14'02")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 09...	0950	16.0	17	4.00

204919156100001 - KANO STREAM AT 1040 FT (LAT 20°49'19" LONG 156°10'00")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 11...	1530	22.5	38	7.00

204948156094401 - PALAUHULU STR AT 880 FT (LAT 20°49'48" LONG 156°09'44")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 11...	1245	22.0	85	7.00

204950156133101 - WAIKAMOI 56, MAUI (LAT 20°49'50" LONG 156°13'31")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 09...	1410	19.0	44	5.00

205051156085501 - PALAUHULU STR AT 390 FT (LAT 20°50'51" LONG 156°08'55")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997 11...	1630	27.0	95	7.00

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS
WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
HAWAII, ISLAND OF MAUI--CONTINUED

205133156085801 - PALAUHULU STR AT 100 FT (LAT 20°51'33" LONG 156°08'58")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
11...	1655	21.0	121	7.00

205143156115801 - WAIKAMOI 33, MAUI (LAT 20°51'43" LONG 156°11'58")

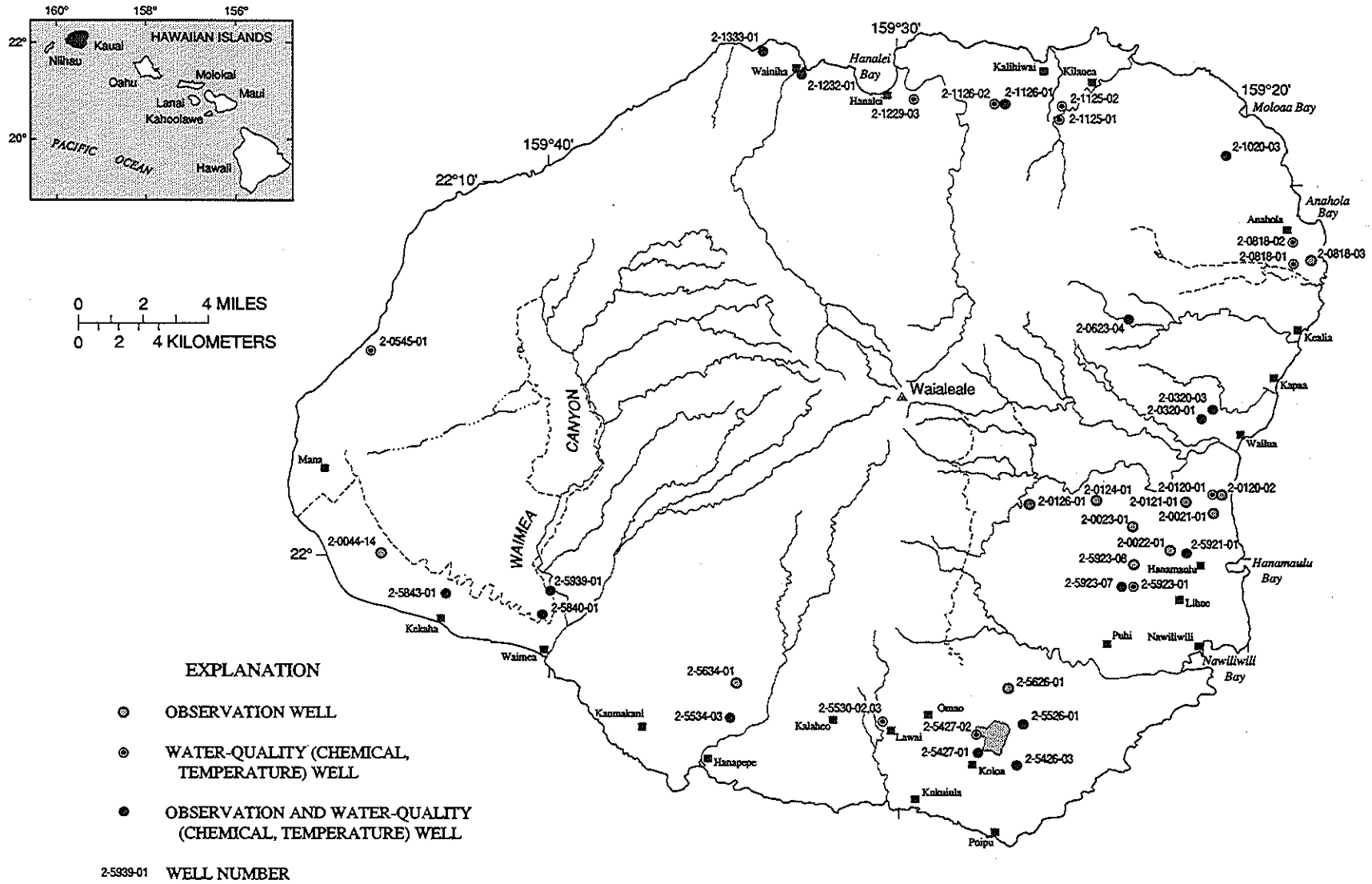
DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
10...	0900	21.0	41	7.00

205224156113101 - WAIKAMOI 14, MAUI (LAT 20°52'24" LONG 156°11'31")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
10...	1210	26.0	65	11.0

205230156112501 - WAIKAMOI 10, MAUI (LAT 20°52'30" LONG 156°11'25")

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, (MG/L AS CL) (99905)
SEP 1997				
10...	1305	23.5	103	14.0



EXPLANATION

- OBSERVATION WELL
- WATER-QUALITY (CHEMICAL, TEMPERATURE) WELL
- OBSERVATION AND WATER-QUALITY (CHEMICAL, TEMPERATURE) WELL

2-5939-01 WELL NUMBER

Figure 16. Locations of observation wells and ground-water quality sampling wells on Kauai.

GROUND-WATER LEVELS

HAWAII, ISLAND OF KAUAI

220057159210301. Local number 2-0021-01.

LOCATION.--Lat 22°00′57″, long 159°21′03″, Hydrologic Unit 20070000, 1.0 mi southwest of Wailua County Golf Course, and 1.3 mi north of Hanamaulu Park. Owner: State of Hawaii, DOWALD.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 277 ft, casing diameter 8-in., cased to 196 ft.

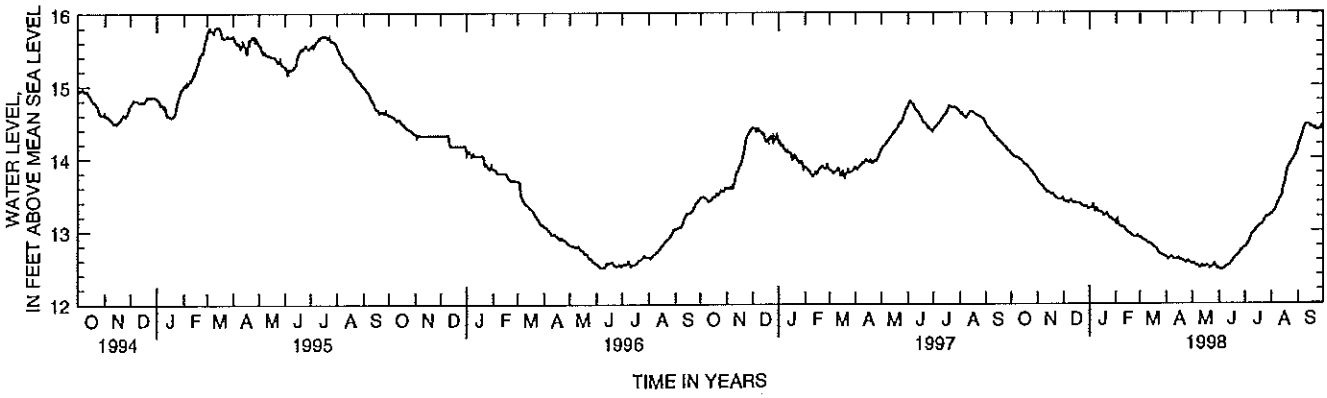
DATUM.--Elevation of land-surface datum is 166 ft. Measuring point is the top of 4-in. galvanized coupling, 166.70 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, June 1980 to June 1993. Water-level recorder, June 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.86 ft above mean sea level, March 3, 1995; lowest water level measured, 12.47 ft above mean sea level, June 2-5, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.05	13.69	13.44	13.31	13.10	12.91	12.64	12.54	12.48	12.77	13.23	14.14
2	14.04	13.67	13.41	13.32	13.11	12.91	12.62	12.55	12.47	12.78	13.23	14.19
3	14.03	13.66	13.40	13.33	13.14	12.89	12.61	12.55	12.47	12.80	13.25	14.22
4	14.03	13.64	13.40	13.32	13.09	12.88	12.62	12.53	12.47	12.81	13.26	14.25
5	14.01	13.63	13.41	13.37	13.07	12.88	12.63	12.52	12.47	12.84	13.27	14.29
6	14.01	13.63	13.41	13.32	13.06	12.87	12.64	12.52	12.48	12.86	13.30	14.32
7	14.01	13.62	13.39	13.28	13.06	12.86	12.64	12.53	12.48	12.89	13.33	14.37
8	14.01	13.59	13.40	13.30	13.05	12.86	12.63	12.52	12.49	12.92	13.36	14.41
9	14.00	13.57	13.41	13.31	13.05	12.84	12.62	12.50	12.51	12.95	13.38	14.44
10	13.99	13.56	13.42	13.28	13.05	12.83	12.61	12.49	12.51	12.96	13.41	14.45
11	13.98	13.55	13.40	13.26	13.04	12.83	12.61	12.50	12.52	12.97	13.44	14.46
12	13.97	13.53	13.39	13.26	13.02	12.83	12.61	12.52	12.52	12.98	13.45	14.46
13	13.97	13.54	13.38	13.26	13.00	12.82	12.61	12.51	12.53	13.00	13.47	14.46
14	13.95	13.54	13.38	13.26	12.99	12.81	12.61	12.50	12.54	13.02	13.52	14.46
15	13.93	13.52	13.39	13.25	12.97	12.80	12.62	12.50	12.56	13.03	13.59	14.44
16	13.92	13.51	13.38	13.24	12.97	12.80	12.61	12.51	12.57	13.05	13.63	14.43
17	13.92	13.50	13.38	13.21	12.97	12.78	12.60	12.52	12.59	13.06	13.67	14.44
18	13.91	13.51	13.38	13.21	12.96	12.77	12.60	12.52	12.61	13.07	13.73	14.43
19	13.90	13.51	13.38	13.22	12.94	12.76	12.60	12.52	12.63	13.08	13.80	14.41
20	13.89	13.48	13.38	13.24	12.93	12.76	12.59	12.51	12.64	13.08	13.85	14.41
21	13.87	13.46	13.37	13.24	12.93	12.74	12.58	12.49	12.65	13.08	13.87	14.40
22	13.86	13.46	13.36	13.21	12.92	12.72	12.58	12.50	12.66	13.10	13.90	14.41
23	13.84	13.45	13.35	13.20	12.92	12.69	12.57	12.50	12.67	13.13	13.91	14.39
24	13.83	13.44	13.34	13.18	12.92	12.68	12.56	12.51	12.68	13.15	13.94	14.39
25	13.82	13.44	13.34	13.17	12.92	12.68	12.57	12.52	12.70	13.17	13.96	14.39
26	13.80	13.44	13.33	13.18	12.93	12.67	12.58	12.54	12.72	13.19	13.97	14.39
27	13.78	13.44	13.33	13.16	12.92	12.67	12.57	12.54	12.74	13.19	13.99	14.40
28	13.76	13.44	13.34	13.15	12.91	12.66	12.56	12.50	12.74	13.20	14.02	14.42
29	13.75	13.44	13.33	13.14	---	12.65	12.56	12.49	12.76	13.20	14.04	14.44
30	13.73	13.45	13.31	13.13	---	12.65	12.55	12.48	12.77	13.21	14.06	14.43
31	13.72	---	13.31	13.14	---	12.64	---	12.49	---	13.22	14.09	---
MEAN	13.91	13.53	13.38	13.24	13.00	12.78	12.60	12.51	12.59	13.02	13.64	14.38
MAX	14.05	13.69	13.44	13.37	13.14	12.91	12.64	12.55	12.77	13.22	14.09	14.46
MIN	13.72	13.44	13.31	13.13	12.91	12.64	12.55	12.48	12.47	12.77	13.23	14.14



220013159224001. Local number 2-0022-01.

LOCATION.--Lat 22°00′13″, long 159°22′40″, Hydrologic Unit 20070000, 3.2 mi north of Lihue, and 1.4 mi west of the nearest shoreline. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 700 ft; 20-in. solid casing: 0–58 ft; grouted: 0–58 ft; open hole: 58 ft to bottom.

DATUM.--Elevation of land-surface datum is 273 ft. Measuring point is the top of 4-in. stem welded to 20-in. casing, 277.67 ft above mean sea level.

PERIOD OF RECORD.--Water-level: occasional measurements, February 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 250.50 ft above mean sea level, May 16, 1997; lowest water level measured, 243.65 ft above mean sea level, July 1, 1998.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai, Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	248.27	DEC 1	246.40	JAN 26	249.90	APR 8	245.76	JUL 1	243.65
OCT 30	247.10	DEC 29	248.51	FEB 9	248.61	APR 30	244.88	JUL 31	245.36
NOV 17	246.64	JAN 15	249.86	MAR 6	248.48	MAY 27	243.82	SEP 8	247.19

220051159231801. Local number 2-0023-01.

LOCATION.--Lat 22°00′51″, long 159°23′18″, Hydrologic Unit 20070000, 2.5 mi northwest of Lihue, and 2.8 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics and Waimea Canyon Basalt, Miocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,147 ft; 10-in. solid steel outer casing: 0–156 ft, 4-in. solid pvc casing: 0–20 ft, annular space grouted: 0–156 ft, open hole: 156 ft to bottom.

DATUM.--Elevation of land-surface datum is 319 ft. Measuring point is the top of 4-in. well casing, 319.88 ft above mean sea level.

PERIOD OF RECORD.--Water-level: occasional measurements, November 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 173.67 ft above mean sea level, September 08, 1998; lowest water level measured, 163.85 ft above mean sea level, November 14, 1996.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai, Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	169.74	DEC 29	170.05	JAN 26	170.26	MAR 6	170.57	APR 30	170.68	JUL 31	163.90
NOV 17	169.70	JAN 15	170.19	FEB 9	170.40	APR 7	170.78	MAY 27	170.59	SEP 8	173.67
DEC 1	169.64										

220019159444801. Local number 2-0044-14.

LOCATION.--Lat 22°00'19", long 159°44'48", Hydrologic Unit 20070000, 1.8 mi northeast of Kokole Point, and 2.8 mi northwest of Kekaha School. Owner: Kekaha Sugar Co.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 245 ft, casing diameter 13-in., cased to 164 ft.

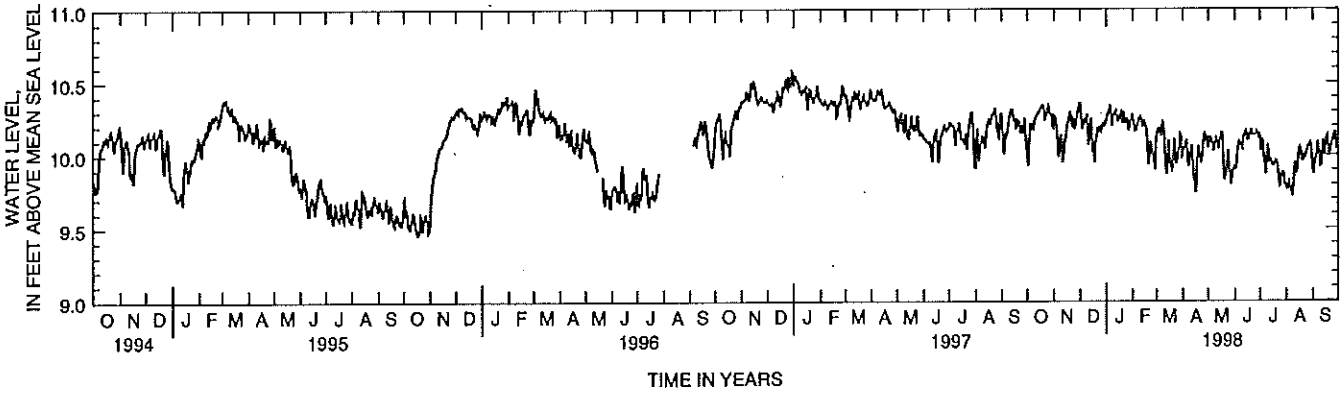
DATUM.--Elevation of land-surface datum is 8 ft. Measuring point is the top of standpipe, 11.49 ft until February 9, 1997; changed measuring point to top of recorder shelf on February 10, 1997, 11.57 ft above mean sea level. Prior to June 1979, nonrecording gage at datum 0.25 ft lower.

PERIOD OF RECORD.--Occasional measurements 1937 to 1962 (measured by Kekaha Sugar Company). Water-level recorder, June 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.07 ft above mean sea level, December 20, 1937; lowest water level measured, 7.52 ft above mean sea level, August 15, 1947.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.00	10.27	10.36	10.24	10.25	10.14	10.00	10.05	9.92	10.12	9.78	9.91
2	9.93	10.26	10.30	10.27	10.22	10.17	10.05	10.12	9.90	10.03	9.77	9.87
3	10.06	10.25	10.21	10.29	10.16	10.16	10.05	10.12	9.94	10.05	9.78	9.93
4	10.20	10.18	10.18	10.29	10.19	10.18	10.08	10.08	10.03	10.11	9.83	9.97
5	10.22	10.11	10.20	10.34	10.17	10.18	10.10	10.11	10.07	10.02	9.78	9.98
6	10.18	10.00	10.24	10.30	10.20	10.13	10.07	10.07	10.09	9.96	9.76	10.05
7	10.20	9.99	10.23	10.23	10.22	10.20	9.95	10.03	10.08	9.93	9.77	10.09
8	10.17	10.11	10.25	10.20	10.25	10.22	9.92	10.05	10.07	9.87	9.72	10.06
9	10.23	10.14	10.28	10.27	10.25	10.20	9.96	10.09	10.06	9.99	9.77	9.99
10	10.25	10.10	10.20	10.29	10.26	10.13	10.02	10.11	10.05	10.07	9.87	9.92
11	10.26	9.95	10.07	10.29	10.24	9.97	10.06	10.09	10.12	10.03	9.95	9.94
12	10.27	9.99	10.13	10.30	10.19	9.89	10.06	10.09	10.13	9.96	9.89	10.05
13	10.29	10.02	10.20	10.27	10.21	9.87	9.96	10.04	10.15	9.97	9.88	10.10
14	10.29	10.12	10.25	10.25	10.24	9.95	9.83	10.10	10.16	9.96	9.90	10.06
15	10.30	10.12	10.17	10.23	10.22	10.10	9.84	10.13	10.14	9.94	10.00	10.00
16	10.32	10.20	10.02	10.27	10.20	10.07	9.75	10.15	10.10	9.93	10.04	10.08
17	10.33	10.22	10.07	10.28	10.18	9.95	9.75	10.15	10.13	9.93	10.05	10.12
18	10.34	10.24	9.95	10.29	10.10	9.92	9.95	10.06	10.12	9.95	10.03	10.13
19	10.34	10.29	10.08	10.24	9.94	9.90	10.04	9.87	10.15	9.96	9.96	10.08
20	10.31	10.29	10.11	10.22	9.94	9.92	10.06	9.83	10.17	9.96	10.02	10.01
21	10.24	10.23	10.16	10.30	10.01	10.09	9.98	9.86	10.17	9.94	9.96	10.02
22	10.29	10.19	10.19	10.24	10.08	10.11	10.00	9.87	10.14	9.90	10.00	10.03
23	10.27	10.25	10.17	10.22	10.07	10.02	9.96	9.99	10.14	9.85	9.98	10.09
24	10.32	10.24	10.18	10.25	10.02	9.94	9.97	10.03	10.14	9.79	10.02	10.11
25	10.34	10.18	10.19	10.25	9.98	9.96	10.07	9.96	10.14	9.80	10.00	10.12
26	10.33	10.21	10.17	10.24	9.96	9.97	10.13	9.87	10.15	9.87	10.06	10.14
27	10.28	10.25	10.19	10.17	9.90	10.03	10.14	9.80	10.16	9.88	10.06	10.15
28	10.28	10.29	10.22	10.19	10.09	10.11	10.11	9.82	10.15	9.88	10.07	10.10
29	10.28	10.32	10.20	10.24	---	10.14	10.12	9.87	10.13	9.87	10.08	10.04
30	10.20	10.34	10.20	10.25	---	10.13	10.09	9.90	10.15	9.80	10.07	10.08
31	10.19	---	10.23	10.28	---	9.99	---	9.92	---	9.80	9.99	---
MEAN	10.24	10.18	10.18	10.26	10.13	10.06	10.00	10.01	10.10	9.94	9.93	10.04
MAX	10.34	10.34	10.36	10.34	10.26	10.22	10.14	10.15	10.17	10.12	10.08	10.15
MIN	9.93	9.95	9.95	10.17	9.90	9.87	9.75	9.80	9.90	9.79	9.72	9.87



220134159205401. Local number 2-0120-02.

LOCATION.--Lat 22°01′34″, long 159°20′54″, Hydrologic unit 20070000, 0.3 mi southwest of Wailua County Golf Course, and 1.6 mi south southwest of Wailua River Mouth. Owner: State of Hawaii, DOWALD.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well; depth 312 ft, casing diameter 6-in., cased to 60 ft.

DATUM.--Elevation of land-surface datum is 11 ft. Measuring point is the top of 10-in. plastic pipe, 11.36 ft above mean sea level. Prior to June 24, 1980 measuring point was the top of 6-in. steel casing, 11.93 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1973 to 1980, 1987 to current year.
Water quality: occasional measurements, 1982 to 1987.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.79 ft above mean sea level, February 21, 1974; lowest water level measured, 8.08 ft above mean sea level, October 12, 1978.

REMARKS.--Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	10.76	DEC 1	10.53	FEB 3	10.24	APR 1	9.58	JUN 5	9.51	AUG 3	10.15

220131159214701. Local number, 2-0121-01.

LOCATION.--Lat 22°01′31″, long 159°21′47″, Hydrologic unit 20070000, 3.2 mi north of Lihue, and 1.4 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,143 ft, 10-in. solid steel outer casing: 0–160 ft, 4-in. solid steel casing: 0–80 ft, 4-in. alternating perforated/solid steel casing: 80 ft to bottom, annular space grouted: 0–160 ft, annular space open: 160 ft to bottom.

DATUM.--Elevation of land-surface datum is 289 ft. Measuring point is the top of 4-in. well casing, 290.16 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, January 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.15 ft above mean sea level, September 08, 1998; lowest water level measured, 31.11 ft above mean sea level, January 26, 1997.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai, Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	32.66	DEC 1	33.62	JAN 26	34.05	APR 7	34.37	MAY 27	34.84	AUG 11	36.28
OCT 30	32.64	DEC 29	33.60	FEB 9	33.86	APR 30	34.95	JUL 1	35.14	SEP 8	37.15
NOV 17	33.26	JAN 15	34.01	MAR 6	34.35						

220133159242001. Local number, 2-0124-01.

LOCATION.--Lat 22°01′33″, long 159°24′20″, Hydrologic unit 20070000, 3.7 mi northwest of Lihue, and 3.8 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,047 ft, 10-in. solid steel outer casing: 0–161 ft; 4-in. solid steel casing: 0–80 ft; 4-in. alternating perforated/solid steel casing: 80-1,032 ft; annular space grouted: 0–160 ft; annular space open: 160-726 ft.

DATUM.--Elevation of land-surface datum is 466 ft. Measuring point is the top of 4-in. well casing, 467.12 ft above mean sea level.

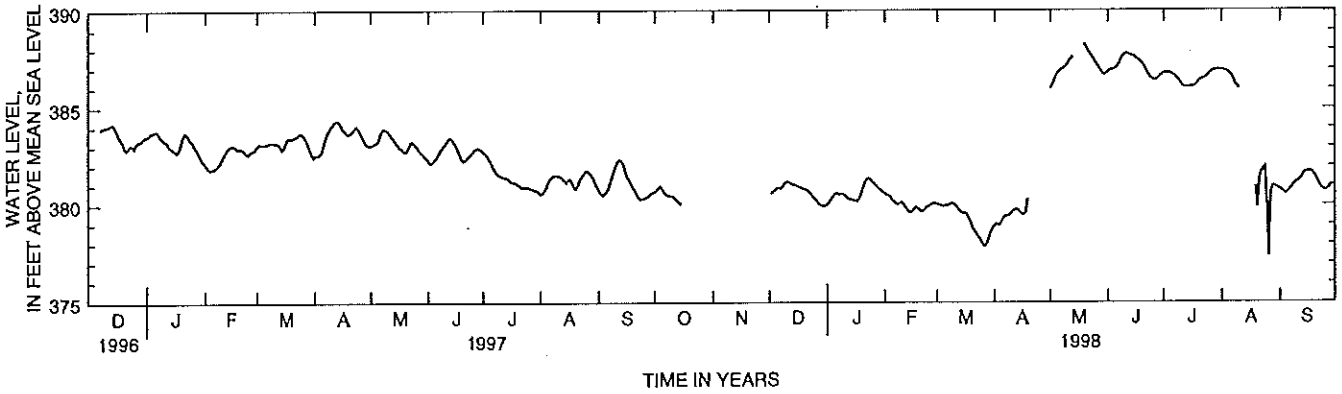
PERIOD OF RECORD.--Water level: occasional measurements, November 1996. Continuous water level recorder, December 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 388.31 ft above mean sea level, May 19, 1998; lowest water level measured, 371.33 ft above mean sea level, August 26, 1998.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380.68	---	---	380.00	380.57	380.02	378.94	386.00	386.87	386.76	386.93	380.77
2	380.75	---	380.60	380.14	380.50	380.00	379.00	386.16	386.91	386.79	386.91	380.70
3	380.89	---	380.69	380.29	380.48	379.97	378.94	386.41	386.95	386.79	386.88	380.63
4	380.94	---	380.76	380.39	380.38	379.93	378.99	386.63	386.99	386.78	386.85	380.59
5	380.80	---	380.84	380.56	380.21	379.95	379.16	386.80	387.04	386.75	386.77	380.64
6	380.62	---	380.86	380.59	380.12	379.96	379.36	386.90	387.14	386.69	386.65	380.74
7	380.54	---	380.85	380.53	380.06	379.98	379.41	386.99	387.30	386.63	386.49	380.87
8	380.49	---	380.94	380.54	380.04	380.04	379.41	387.01	387.51	386.51	386.21	381.01
9	380.46	---	381.08	380.56	380.09	380.07	379.44	387.08	387.67	386.40	386.11	381.11
10	380.45	---	381.16	380.49	380.10	380.02	379.55	387.21	387.76	386.28	385.98	381.16
11	380.40	---	381.17	380.39	380.01	379.93	379.65	387.39	387.78	386.14	---	381.22
12	380.30	---	381.12	380.31	379.86	379.82	379.70	387.52	387.73	386.06	---	381.32
13	380.17	---	381.06	380.28	379.71	379.68	379.74	387.61	387.70	386.05	---	381.47
14	380.08	---	381.03	380.26	379.63	379.59	379.71	---	387.69	386.05	---	381.61
15	380.06	---	381.01	380.23	379.63	379.56	379.62	---	387.65	386.07	---	381.66
16	---	---	380.96	380.21	379.72	379.57	379.53	---	387.55	386.08	---	381.68
17	---	---	380.91	380.20	379.85	379.50	379.49	---	387.49	386.09	---	381.70
18	---	---	380.88	380.33	379.84	379.30	379.58	---	387.41	386.14	---	381.67
19	---	---	380.83	380.59	379.76	379.05	380.29	388.28	387.31	386.22	380.95	381.55
20	---	---	380.80	380.90	379.68	378.80	---	388.15	387.20	386.36	379.88	381.39
21	---	---	380.76	381.17	379.67	378.64	---	387.96	387.05	386.43	381.39	381.21
22	---	---	380.68	381.31	379.72	378.50	---	387.82	386.85	386.47	381.67	381.01
23	---	---	380.58	381.34	379.86	378.37	---	387.68	386.66	386.52	381.85	380.85
24	---	---	380.45	381.29	379.92	378.21	---	387.53	386.53	386.57	381.93	380.79
25	---	---	380.34	381.17	379.96	378.06	---	387.37	386.46	386.66	380.05	380.74
26	---	---	380.22	381.08	380.03	377.90	---	387.22	386.43	386.80	377.36	380.79
27	---	---	380.10	381.00	380.07	377.88	---	387.09	386.45	386.89	380.61	380.86
28	---	---	380.01	380.90	380.06	378.07	---	386.92	386.51	386.92	380.93	380.96
29	---	---	379.97	380.80	---	378.37	---	386.76	386.62	386.94	380.93	381.00
30	---	---	379.93	380.72	---	378.65	---	386.70	386.72	386.95	380.88	381.01
31	---	---	379.94	380.65	---	378.81	---	386.77	---	386.95	380.83	---
MEAN	---	---	---	380.62	379.98	379.23	---	---	387.13	386.51	---	381.09
MAX	---	---	---	381.34	380.57	380.07	---	---	387.78	386.95	---	381.70
MIN	---	---	---	380.00	379.63	377.88	---	---	386.43	386.05	---	380.59



220126159261501. Local number, 2-0126-01.

LOCATION.--Lat 22°01'26", long 159°26'15", Hydrologic unit 20070000, 5.3 northwest of Lihue, and 6.2 mi west of the nearest shoreline. Owner: U. S. Geological Survey.

AQUIFER.--Koloa Volcanics and Waimea Canyon Basalt, Miocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,004 ft, 10-in. solid steel outer casing: 0-198 ft; 4-in. solid pvc casing: 0-126 ft; 4.5-in. perforated pvc casing: 126 ft to bottom; annular space grouted: 0-198 ft; annular space open: 198 ft to bottom.

DATUM.--Elevation of land-surface datum is 678 ft. Measuring point is the top of 4-in. well casing, 679.06 ft above mean sea level.

PERIOD OF RECORD.--

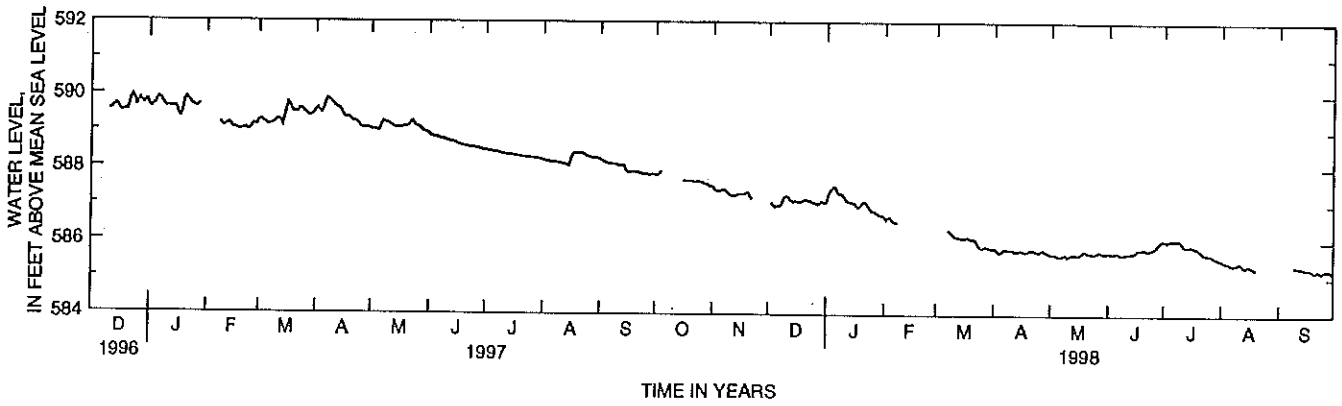
Water level: occasional measurements started in November 1996.
Continuous water-level recorder, December 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 589.96 ft above mean sea level, December 23, 1996; lowest water level measured, 585.18 ft above mean sea level, September 30, 1998.

REMARKS.--Well part of network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	587.81	587.48	---	587.09	586.67	---	585.82	585.67	585.70	586.04	585.52	---
2	587.81	587.42	587.05	587.28	586.61	---	585.80	585.66	585.69	586.03	585.48	---
3	587.84	587.38	586.99	587.39	586.65	---	585.74	585.67	585.68	586.01	585.46	---
4	587.90	587.38	586.95	587.42	586.66	---	585.71	585.64	585.69	586.04	585.45	---
5	---	587.38	586.96	587.49	586.58	---	585.74	585.62	585.70	586.05	585.44	---
6	---	587.39	586.97	587.47	586.55	---	585.79	585.61	585.70	586.04	585.40	---
7	---	587.41	586.97	587.34	586.53	586.29	585.80	585.62	585.67	586.05	585.39	---
8	---	587.38	587.05	587.30	586.51	586.29	585.79	585.63	585.66	586.06	585.39	---
9	---	587.32	587.16	587.30	---	586.24	585.77	585.64	585.66	586.06	585.40	585.34
10	---	587.28	587.22	587.26	---	586.18	585.78	585.61	585.67	586.03	585.41	585.34
11	---	587.25	587.22	587.16	---	586.13	585.77	585.62	585.68	585.96	585.44	585.33
12	---	587.24	587.17	587.11	---	586.13	585.74	585.65	585.68	585.90	585.42	585.33
13	---	587.23	587.12	587.09	---	586.12	585.74	585.66	585.69	585.88	585.35	585.32
14	---	587.26	587.09	587.07	---	586.10	585.75	585.66	585.69	585.88	585.33	585.31
15	---	587.28	587.10	587.06	---	586.09	585.76	585.65	585.71	585.89	585.35	585.29
16	587.65	587.28	587.09	587.05	---	586.09	585.75	585.65	585.74	585.89	585.37	585.27
17	587.64	587.28	587.07	586.99	---	586.11	585.74	585.67	585.79	585.87	585.34	585.27
18	587.64	587.29	587.09	586.94	---	586.11	585.73	585.70	585.79	585.85	585.32	585.27
19	587.64	587.32	587.10	586.97	---	586.08	585.74	585.74	585.80	585.84	585.29	585.24
20	587.64	587.31	587.12	587.02	---	586.07	585.77	585.74	585.81	585.80	585.28	585.21
21	587.63	587.22	587.13	587.08	---	586.08	585.77	585.70	585.80	585.75	---	585.21
22	587.62	587.16	587.11	587.06	---	586.04	585.77	585.69	585.77	585.70	---	585.23
23	587.62	---	587.11	586.99	---	585.94	585.75	585.69	585.77	585.68	---	585.22
24	587.63	---	587.07	586.92	---	585.87	585.74	585.68	585.80	585.67	---	585.20
25	587.62	---	587.06	586.84	---	585.84	585.72	585.68	585.81	585.66	---	585.22
26	587.61	---	587.05	586.83	---	585.84	585.75	585.71	585.84	585.66	---	585.24
27	587.58	---	587.02	586.80	---	585.86	585.77	585.73	585.87	585.63	---	585.23
28	587.55	---	587.03	586.76	---	585.85	585.74	585.71	585.94	585.60	---	585.25
29	587.55	---	587.08	586.73	---	585.83	585.72	585.69	586.00	585.57	---	585.23
30	587.51	---	587.07	586.71	---	585.82	585.69	585.68	586.04	585.55	---	585.18
31	587.50	---	587.06	586.71	---	585.81	---	585.69	---	585.53	---	---
MEAN	---	---	---	587.07	---	---	585.76	585.67	585.76	585.84	---	---
MAX	---	---	---	587.49	---	---	585.82	585.74	586.04	586.06	---	---
MIN	---	---	---	586.71	---	---	585.69	585.61	585.66	585.53	---	---



220354159205601. Local number, 2-0320-01.

LOCATION.--Lat 22°03′54″, long 159°20′56″, Hydrologic unit 20070000, 0.6 mi east of Sleeping Giant Mountain, and 1.3 mi northwest of Wailua River bridge. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 240 ft, 8-in. casing diameter, cased to 193 ft.

DATUM.--Elevation of land-surface datum is 155 ft. Measuring point is the top of 1-in. hole on pump base on southeast side after removing elbow and nipple, 155.98 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, February 1960, June 1973 to current year.
Water quality: occasional measurements, 1960, 1966, 1972-80, 1985-89, 1991-94, 1997 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.04 ft above mean sea level, February 17, 1960; lowest water level measured, 0.85 ft below mean sea level, August 5, 1998.

REMARKS.--Water is used for public supply. Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	4.25	DEC 5	5.93	FEB 6	4.14	APR 8	2.08	JUN 3	-0.29	AUG 5	-0.85

220354159205602. Local number, 2-0320-03.

LOCATION.--Lat 22°03′54″, long 159°20′56″, Hydrologic unit 20070000, 0.6 mi east of Sleeping Giant Mountain, and 1.3 mi northwest of Wailua River bridge. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 302 ft; 14-in. casing diameter, cased to 168 ft.

DATUM.--Elevation of land-surface datum is 156 ft. Measuring point is the top of 1-in. hole on pump base on southeast side after removing elbow and nipple, 156.94 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, August 1976 to current year.
Water quality: occasional measurements, 1972, 1976 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.91 ft above mean sea level, November 19, 1982; lowest water level measured, 0.75 ft below mean sea level, August 5, 1998.

REMARKS.--Water is used for public supply. Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	4.49	DEC 5	6.14	FEB 6	4.50	APR 8	2.37	JUN 3	0.05	AUG 5	-0.75

220621159232101. Local number 2-0623-04.

LOCATION.--Lat 22°06′21″, long 159°23′21″, Hydrologic Unit 20070000, 1.3 mi northeast of Kapahi Reservoir, and at the end of Kahuna Road. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled well, depth 1,023 ft, 12-in. casing diameter, cased to 169 ft below mean sea level.

DATUM.--Elevation of land-surface datum is 518 ft. Measuring point is the top of 3/4-in. pipe on concrete pump base, 516.35 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, April 1993 to current year.
Water quality: occasional measurements, April 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 482.42 ft above mean sea level, August 6, 1997; lowest water level measured, 392.80 ft above mean sea level, November 14, 1996.

REMARKS.--Water is used for public supply.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	475.54	DEC 4	468.45	FEB 6	459.00	APR 8	464.70	JUN 3	447.03	AUG 5	439.32

220825159185301. Local number 2-0818-03.

LOCATION.--Lat 22°08′25″, long 159°18′50″, Hydrologic Unit 20070000, 1.3 mi southwest of Kahala Point, and 0.2 mi south of Anahola School. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 466 ft, 12-in. casing diameter, cased to 290 ft above mean sea level.

DATUM.--Elevation of land-surface datum is 267 ft. Measuring point is the top of west side of 4 1/2-in. pipe at 268.99 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, October 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.64 ft above mean sea level, October 8, 1997; lowest water level measured, 7.34 ft above mean sea level, April 8, 1998.

REMARKS.--Water for future public supply. Water level affected by pumping of nearby wells.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	12.64	DEC 4	12.58	FEB 6	11.24	APR 8	7.34	JUN 3	9.99	AUG 5	11.43

221038159203801. Local number, 2-1020-03.

LOCATION.--Lat 22°10′38″, long 159°20′38″, Hydrologic Unit 20070000, 2.6 mi south of Kulikoa Point, and 2.6 mi northwest of Kuaehu Point. Owner: Amfac Properties Development Corp.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 700 ft.

DATUM.--Elevation of land-surface datum is 358 ft. Measuring point is the top of temporary metal girder over well opening, elevation 358.52 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to 1991, 1997.

REVISED RECORDS.--WRD HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 144.56 ft above mean sea level, March 30, 1990; lowest water level measured, 66.17 ft above mean sea level, November 6, 1973, lowest water level measured with pump on, 42.69 ft above mean sea level, October 4, 1973.

REMARKS.--Pump is in the process of being replaced. Well unused at this time.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 9	142.52	DEC 1	142.97	FEB 3	142.69	APR 2	139.97	JUN 3	137.17	AUG 3	133.11

221150159264501. Local number, 2-1126-01.

LOCATION.--Lat 22°11′50″, long 159°26′45″, Hydrologic Unit 20070000, 1.2 mi south of Princeville Airport terminal, and 4.0 mi east southeast of Puupoa Point. Owner: Princeville Hanalei.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 763 ft; 14-in. casing diameter, cased to 435 ft.

DATUM.--Elevation of land-surface datum is 349 ft. Measuring point is the top of 3/4-in. pipe, in 1-in. hole on southside of pump base, after removing airline connection, 349.88 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1977 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.36 ft above mean sea level, June 3, 1974; lowest water level measured, 4.12 ft below mean sea level, November 17, 1992, lowest water level measured with pump on, 10.30 ft below mean sea level, June 2, 1983.

REMARKS.--Water used for public supply and irrigation of golf course. Water level affected by pumping of nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 9	8.39	DEC 10	8.78	FEB 3	8.60	APR 3	7.64	JUN 4	8.35	AUG 12	7.41

221247159324801. Local number, 2-1232-01.

LOCATION.--Lat 22°12′47″, long 159°32′48″, Hydrologic Unit 20070000, 0.9 mi southwest of Kolokoko Point, and 1.5 mi southeast of Haena Point. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 188 ft, 6-in. casing diameter, cased to 140 ft.

DATUM.--Elevation of land-surface datum is 67 ft. Measuring point is the top of 1-in. pipe 0.06 ft above flange, 66.56 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1975 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.48 ft above mean sea level, June 3, 1974; lowest water level measured, 4.69 ft above mean sea level, August 6, 1993, lowest water level measured with pump on, 10.04 ft below mean sea level, June 9, 1975.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	8.68	DEC 4	7.30	FEB 6	8.43	APR 8	6.72	JUN 3	8.05	AUG 5	6.76

221318159335901. Local number, 2-1333-01.

LOCATION.--Lat 22°13′18″, long 159°33′59″, Hydrologic Unit 20070000, 0.6 mi south southwest of Haena Point, and 1.2 mi east southeast of Kailiu Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 159 ft; 8-in. casing diameter, cased to 104 ft.

DATUM.--Elevation of land-surface datum is 82 ft. Measuring point is the top of airline hole after removing plug, elevation 82.05 ft above mean sea level from levels of December 12, 1995.

PERIOD OF RECORD.--

Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WRD HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.35 ft above mean sea level, December 8, 1989; lowest water level measured, 1.45 ft above mean sea level, August 26, 1986, lowest water level measured with pump on, 3.58 ft below mean sea level, November 30, 1977.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	5.10	DEC 4	9.68	FEB 6	6.60	APR 8	7.49	JUN 3	2.33	AUG 5	2.77

215434159263301. Local number, 2-5426-03.

LOCATION.--Lat 21°54′34″, long 159°26′33″, Hydrologic Unit 20070000, 0.6 mi northeast of Koloa Mill, and 2.6 mi north of Makahuena Point. Owner: Grove Farm Co. Inc.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 318 ft, 12-in. casing diameter, cased to 176 ft.

DATUM.--Elevation of land-surface datum is 222 ft. Measuring point is the top of 1-in. hole on southwest side of flange, 222.30 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1997.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.83 ft above mean sea level, January 10, 1974; lowest water level measured, 15.48 ft above mean sea level, June 16, 1982, lowest water level measured with pump on, 5.05 ft above mean sea level, March 10, 1975.

REMARKS.--Water used for irrigation. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	25.77	DEC 3	25.57	MAR 9	25.47	APR 3	25.08	JUN 1	25.05	AUG 7	24.96

215454159274201. Local number, 2-5427-01.

LOCATION.--Lat 21°54′54″, long 159°27′42″, Hydrologic Unit 20070000, 0.1 mi west of the southwest corner of Waita Reservoir, and 2.7 mi northeast of Kaulala Point. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 455 ft; 12-in. casing diameter, cased to 263 ft.

DATUM.--Elevation of land-surface datum is 247 ft. Measuring point is the bottom edge of the east side opening on pump base 246.77 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-94 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 40.04 ft above mean sea level, July 15, 1974; lowest water level measured, 27.97 ft above mean sea level, October 6, 1988, lowest water level measured with pump on, 22.77 ft above mean sea level, March 3, 1983.

REMARKS.--Water used for public supply. Water level affected by pumping and by nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	34.47	DEC 5	34.57	FEB 5	34.68	APR 7	34.35	JUN 2	34.37	AUG 6	32.64

215536159263501. Local number, 2-5526-01.

LOCATION.--Lat 21°55'36", long 159°26'35", Hydrologic Unit 20070000, 3.7 mi north of Makahuena Point and 2.5 mi southeast of Knudsen Gap. Owner: McBryde Sugar Co.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,010 ft, 20 in. casing diameter, cased to 400 ft.

DATUM.--Elevation of land-surface is 355 ft. Measuring point is the top of 1-in. hole on top of pipe flange, southeast side, 355.28 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1977 to current year.
Water quality: occasional measurements, 1977 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 115.84 ft above mean sea level, April 7, 1998; lowest water level measured, 25.28 ft above mean sea level on April 5, 1984, lowest water level measured with pump on, 22.67 ft below mean sea level, July 27, 1978.

REMARKS.--Well was formerly used for irrigation of sugercane.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	113.85	DEC 1	114.41	FEB 9	115.31	APR 7	115.84	MAY 27	115.34	JUL 31	115.71

215522159342601. Local number, 2-5534-03.

LOCATION.--Lat 21°55'22", long 159°34'26", Hydrologic Unit 20070000, 1.9 mi north from Weli Point, and 2.9 mi northeast from Puolo Point. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 109 ft; 9-in. casing diameter, cased to 109 ft.

DATUM.--Elevation of land-surface datum is 79 ft. Measuring point is the top of 3/4-in. galvanized pipe on northwest side of pump base 78.78 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.91 ft above mean sea level, February 1, 1990; lowest water level measured, 12.62 ft above mean sea level, May 20, 1986, lowest water level measured with pump on, 9.19 ft above mean sea level, October 13, 1978.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	17.31	DEC 5	17.28	FEB 5	16.76	APR 7	16.56	JUN 2	17.39	AUG 6	16.32

215630159265101. Local number, 2-5626-01.

LOCATION.--Lat 21°56′30″, long 159°26′51″, Hydrologic Unit 20070000, 5.7 mi south of Lihue, and 3.8 mi northwest of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 802 ft; 12.25-in. solid steel outer casing: 0–156 ft; 4-in. solid pvc casing: 0–20 ft; annular space grouted: 0–256 ft; open hole: 256 ft to bottom.

DATUM.--Elevation of land-surface is 485 ft. Measuring point is the top of 4-in. well casing, 485.40 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 179.99 ft above mean sea level, September 8, 1998; lowest water level measured, 173.49 ft above mean sea level, November 8, 1996.

REMARKS.--Well part of a network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	177.48	DEC 1	178.09	JAN 26	178.60	APR 7	179.25	MAY 27	179.60	JUL 31	179.88
OCT 30	177.85	DEC 29	178.46	FEB 9	178.76	APR 30	179.36	JUL 1	179.69	SEP 8	179.99
NOV 17	178.18	JAN 15	178.54	MAR 6	179.06						

215607159344301. Local number 2-5634-01.

LOCATION.--Lat 21°56'07", long 159°34'43", Hydrologic Unit 20070000, 2.7 mi north of Weli Point, and 3.3 mi northeast of Puolo Point. Owner: State of Hawaii.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 508 ft, 8-in. casing diameter, cased to 507 ft.

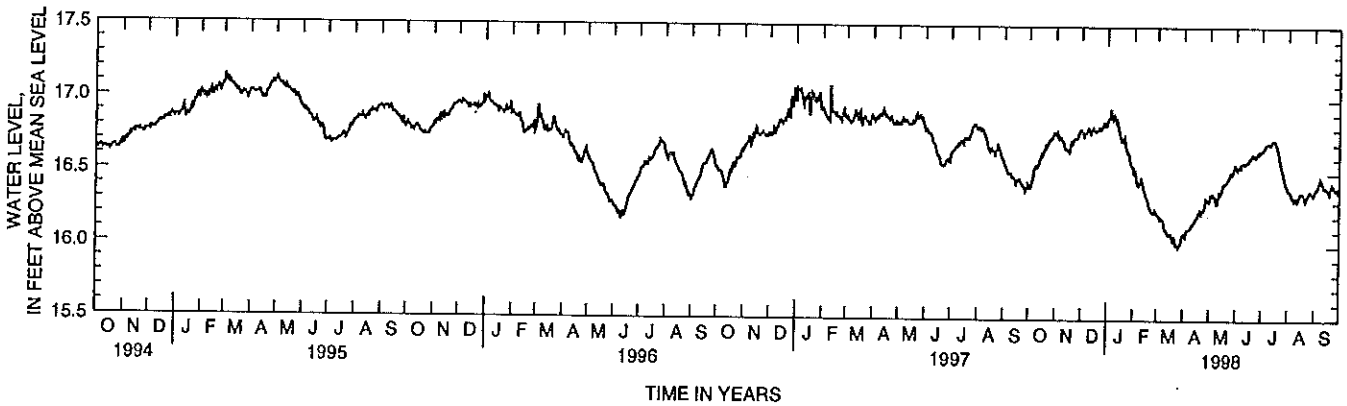
DATUM.--Elevation of land-surface datum is 439 ft. Measuring point is the top of recorder shelf 440.68 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, February 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.83 ft above mean sea level, January 15, 16, 1992; lowest water level measured, 15.87 ft above mean sea level, November 1, 1989.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.40	16.77	16.80	16.85	16.50	16.22	16.09	16.32	16.56	16.66	16.39	16.37
2	16.40	16.76	16.79	16.87	16.50	16.22	16.08	16.36	16.54	16.66	16.39	16.39
3	16.42	16.78	16.77	16.88	16.51	16.21	16.07	16.36	16.53	16.67	16.38	16.40
4	16.45	16.76	16.76	16.88	16.47	16.19	16.10	16.35	16.54	16.68	16.38	16.40
5	16.46	16.74	16.78	16.94	16.43	16.20	16.12	16.36	16.55	16.69	16.35	16.41
6	16.51	16.75	16.78	16.89	16.42	16.19	16.12	16.35	16.56	16.70	16.34	16.43
7	16.54	16.75	16.78	16.87	16.42	16.19	16.12	16.35	16.55	16.70	16.34	16.45
8	16.55	16.73	16.79	16.89	16.43	16.18	16.12	16.32	16.57	16.71	16.32	16.47
9	16.54	16.72	16.81	16.90	16.47	16.14	16.13	16.30	16.57	16.71	16.32	16.46
10	16.54	16.72	16.81	16.88	16.47	16.12	16.14	16.30	16.58	16.71	16.34	16.45
11	16.55	16.69	16.80	16.86	16.44	16.12	16.16	16.34	16.58	16.70	16.34	16.43
12	16.57	16.67	16.78	16.88	16.42	16.11	16.16	16.37	16.57	16.70	16.32	16.41
13	16.59	16.67	16.79	16.84	16.39	16.09	16.17	16.36	16.58	16.72	16.33	16.41
14	16.61	16.67	16.80	16.81	16.38	16.08	16.18	16.37	16.58	16.73	16.35	16.41
15	16.63	16.66	16.81	16.78	16.35	16.08	16.19	16.38	16.59	16.73	16.37	16.40
16	16.62	16.66	16.80	16.76	16.34	16.09	16.20	16.41	16.59	16.73	16.37	16.40
17	16.63	16.65	16.79	16.73	16.33	16.09	16.21	16.43	16.61	16.72	16.37	16.40
18	16.65	16.67	16.79	16.72	16.31	16.07	16.23	16.43	16.61	16.70	16.36	16.38
19	16.67	16.72	16.79	16.72	16.28	16.05	16.24	16.44	16.62	16.69	16.36	16.37
20	16.69	16.72	16.80	16.74	16.26	16.07	16.25	16.44	16.63	16.67	16.34	16.39
21	16.68	16.71	16.80	16.75	16.26	16.07	16.23	16.44	16.62	16.64	16.32	16.41
22	16.69	16.73	16.81	16.71	16.24	16.05	16.25	16.46	16.62	16.60	16.33	16.43
23	16.70	16.74	16.80	16.67	16.24	16.01	16.25	16.47	16.63	16.58	16.34	16.42
24	16.72	16.74	16.80	16.66	16.23	16.01	16.25	16.47	16.62	16.55	16.36	16.42
25	16.73	16.74	16.81	16.64	16.23	16.01	16.27	16.49	16.62	16.53	16.37	16.40
26	16.73	16.74	16.82	16.64	16.25	16.00	16.30	16.51	16.64	16.51	16.37	16.39
27	16.74	16.75	16.83	16.61	16.24	16.01	16.33	16.51	16.65	16.48	16.38	16.39
28	16.74	16.77	16.85	16.58	16.23	16.02	16.32	16.50	16.64	16.46	16.37	16.40
29	16.76	16.79	16.85	16.56	---	16.03	16.32	16.51	16.65	16.43	16.37	16.39
30	16.78	16.80	16.83	16.55	---	16.07	16.31	16.53	16.66	16.42	16.37	16.37
31	16.78	---	16.83	16.55	---	16.08	---	16.56	---	16.41	16.36	---
MEAN	16.62	16.73	16.80	16.76	16.36	16.10	16.20	16.41	16.60	16.63	16.35	16.41
MAX	16.78	16.80	16.85	16.94	16.51	16.22	16.33	16.56	16.66	16.73	16.39	16.47
MIN	16.40	16.65	16.76	16.55	16.23	16.00	16.07	16.30	16.53	16.41	16.32	16.37



215803159401201. Local number, 2-5840-01.

LOCATION.--Lat 21°58′03″, long 159°40′12″, Hydrologic Unit 20070000, 0.7 mi north of Waimea Recreational Pier State Park, and 2.4 mi east northeast of Oomano Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 190 ft, 8-in. casing diameter, cased to 190 ft.

DATUM.--Elevation of land-surface datum is 168 ft. Measuring point is the top of 1-in. hole on pump base, 168.08 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1973 to current year.
Water quality: occasional measurements, 1973 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.10 ft above mean sea level, January 26, 1989; lowest water level measured, 6.58 ft above mean sea level, July 19, 1990, lowest water level measured with pump on, 4.76 ft above mean sea level, December 8, 1980.

REMARKS.--Water used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	8.38	DEC 5	8.35	FEB 5	8.26	APR 7	8.33	JUN 2	7.71	AUG 6	8.63

215857159430101. Local number, 2-5843-01.

LOCATION.--Lat 21°58′57″, long 159°43′01″, Hydrologic Unit 20070000, 2.7 mi east northeast from Kokole Point, and 1.4 mi north northwest of Oomano Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 55 ft, 15-ft casing diameter, cased to 10 ft.

DATUM.--Elevation of land surface is 57 ft. Measuring point is the top of 1/4-in. steel plate 57.80 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972, 1985 to current year.
Water quality: occasional measurements, 1972, 1997 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.52 ft above mean sea level, February 5, 1990; lowest water level measured, 7.82 ft above mean sea level, April 25, 1988.

REMARKS.--Well used for public supply. Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	9.03	DEC 5	9.08	FEB 5	9.16	APR 7	8.99	JUN 2	8.87	AUG 6	8.79

215958159214301. Local number 2-5921-01.

LOCATION.--Lat 21°59′58″, long 159°21′43″, Hydrologic Unit 20070000, 1.0 mi west of Hanamaulu Beach Park, and 3.3 mi south southwest of Lydgate State Park. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 540 ft, 14-in. casing diameter, cased to 315 ft.

DATUM.--Elevation of land-surface datum is 302 ft. Measuring point is the top of 1-in. pipe, northeast side of flange after removing the plug, elevation 302.66 above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, July 1980 to September 1985. Water-level recorder, October 1985 to July 1992. occasional measurements, October 1992 to current year.

Water quality: occasional measurements, 1997 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.69 ft above mean sea level, November 26, 1985; lowest water level measured, 9.41 ft above mean sea level, June 5, 1997.

REMARKS.--Water level affected by pumping.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	14.60	DEC 4	13.47	FEB 6	13.34	APR 8	13.17	JUN 3	12.65	AUG 5	13.01

215901159235201. Local number 2-5923-07.

LOCATION.--Lat 21°59′01″, long 159°23′52″, Hydrologic Unit 20070000, 4.2 mi northwest of Ninini Point and 3.4 mi west from Lihue Airport terminal. Owner: Kauai County, Department of Water.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 200 ft, 12-in. casing diameter, cased to 200 ft.

DATUM.--Elevation of land-surface datum is 364 ft. Measuring point is the top of 1-in. pump base opening, after removing copper fittings, 365.48 ft above mean sea level.

PERIOD OF RECORD.--

Water level: occasional measurements, 1985 to current year.
Water quality: occasional measurements, 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 226.86 ft above mean sea level, December 8, 1989; lowest water level measured, 212.38 ft above mean sea level, August 5, 1998.

REMARKS.--Water used for public supply. Water level affected by pumping and by nearby well.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	215.82	DEC 4	217.22	FEB 6	214.79	APR 8	215.18	JUN 3	214.32	AUG 5	212.38

215950159231601. Local number 2-5923-08.

LOCATION.--Lat 21°59′50″, long 159°23′16″, Hydrologic Unit 20070000, 1.5 mi northwest of Lihue, and 2.8 mi west of the nearest shoreline. Owner: U.S. Geological Survey.

AQUIFER.--Koloa Volcanics, Pliocene to Pleistocene age.

WELL CHARACTERISTICS.---Drilled well, depth 1,002 ft, 12.75-in. solid steel outer casing: 0-124 ft; 4-in. solid pvc casing: 0-87 ft; 4-in. perforated pvc casing: 87 ft to bottom; annular space grouted: 0-124 ft; annular space gravel packed: 124 ft to bottom.

DATUM.--Elevation of land-surface datum is 272 ft. Measuring point is the top of 4-in. well casing, 273.49 ft above mean sea level.

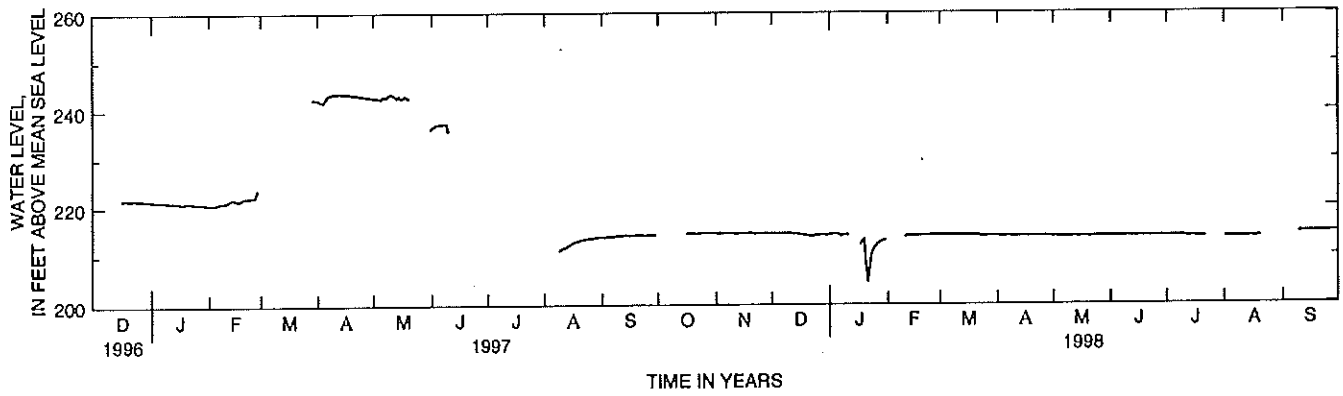
PERIOD OF RECORD.--Water level: continuous water-level recorder, February 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 244.14 ft above mean sea level, April 10, 1997; lowest water level measured, 204.37 ft above mean sea level, January 20, 21, 1998.

REMARKS.--Well part of network of observation wells in cooperation with the County of Kauai Department of Water.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	214.51	214.46	214.19	---	214.08	213.81	213.69	213.75	213.76	213.49	---
2	---	214.50	214.43	214.25	---	214.09	213.79	213.70	213.74	213.75	213.50	---
3	---	214.51	214.41	214.28	---	214.09	213.76	213.71	213.74	213.75	213.50	---
4	---	214.50	214.39	214.27	---	214.07	213.75	213.66	213.75	213.76	213.51	---
5	---	214.50	214.39	214.23	---	214.08	213.78	213.65	213.75	213.77	213.50	---
6	---	214.51	214.41	214.11	---	214.06	213.81	213.64	213.76	213.76	213.50	---
7	---	214.52	214.39	213.92	---	214.06	213.81	213.66	213.74	213.77	213.51	---
8	---	214.49	214.41	214.04	---	214.08	213.79	213.67	213.73	213.77	213.51	---
9	---	214.47	214.45	214.17	---	214.08	213.78	213.66	213.75	213.77	213.53	214.51
10	---	214.45	214.48	214.16	213.82	214.05	213.78	213.64	213.75	213.76	213.54	214.50
11	---	214.45	214.45	214.07	213.85	214.03	213.79	213.65	213.76	213.70	213.55	214.51
12	---	214.42	214.34	---	213.87	214.04	213.77	213.68	213.76	213.66	213.55	214.52
13	---	214.44	214.34	---	213.87	214.03	213.78	213.68	213.77	213.65	213.54	214.53
14	---	214.47	214.37	---	213.87	214.02	213.79	213.67	213.77	213.67	213.55	214.53
15	---	214.48	214.33	---	213.86	214.00	213.81	213.65	213.78	213.68	213.57	214.51
16	214.47	214.47	214.28	---	213.89	214.01	213.80	213.67	213.77	213.67	213.59	214.51
17	214.47	214.47	214.11	212.08	213.94	214.02	213.79	213.69	213.77	213.65	213.58	214.54
18	214.48	214.49	214.15	212.75	213.96	214.01	213.78	213.71	213.76	213.64	213.59	214.54
19	214.49	214.54	214.03	213.04	213.95	213.98	213.79	213.70	213.76	213.64	213.60	214.52
20	214.50	214.52	213.94	207.84	213.95	213.98	213.81	213.69	213.76	213.63	213.60	214.51
21	214.50	214.46	213.94	204.45	213.96	213.98	213.79	213.66	213.75	213.60	---	214.52
22	214.50	214.41	213.88	207.74	213.98	213.93	213.78	213.68	213.75	213.59	---	214.54
23	214.50	214.40	213.88	210.09	214.01	213.86	213.76	213.69	213.74	---	---	214.54
24	214.51	214.38	213.99	211.15	214.04	213.82	213.75	213.69	213.74	---	---	214.55
25	214.52	214.38	214.06	211.70	214.07	213.81	213.74	213.71	213.75	---	---	214.56
26	214.52	214.41	214.09	212.17	214.09	213.81	213.76	213.74	213.76	---	---	214.57
27	214.51	214.43	214.07	212.47	214.09	213.83	213.78	213.75	213.78	---	---	214.59
28	214.51	214.45	214.10	212.70	214.08	213.83	213.76	213.74	213.78	---	---	214.62
29	214.51	214.48	214.13	212.88	---	213.81	213.75	213.72	213.79	---	---	214.62
30	214.51	214.49	214.06	212.95	---	213.79	213.72	213.72	213.78	---	---	214.60
31	214.51	---	214.07	213.05	---	213.79	---	213.75	---	---	---	---
MEAN	---	214.47	214.22	---	---	213.97	213.78	213.69	213.76	---	---	---
MAX	---	214.54	214.48	---	---	214.09	213.81	213.75	213.79	---	---	---
MIN	---	214.38	213.88	---	---	213.79	213.72	213.64	213.73	---	---	---



215906159395601. Local number, 2-5939-01.

LOCATION.--Lat 21°59′06″, long 159°39′56″, Hydrologic Unit 20070000, 2.3 mi north northeast of Waimea Recreational Pier State Park, and 3.2 mi northeast from Oomano Point. Owner: Kauai County, Department of Water.

AQUIFER.--Waimea Canyon Basalt, Miocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 43 ft, 6.5-ft diameter, uncased.

DATUM.--Elevation of land surface is 42 ft. Measuring point is the top west side of concrete base 41.61 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, 1972 to current year.
Water quality: occasional measurements, 1972 to current year.

REVISED RECORDS.--WDR HI-94-1: 1988-93 (the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.43 ft above mean sea level, January 14, 1988; lowest water level measured, 8.71 ft above mean sea level, March 9, 1981, lowest water level measured with pump on, 5.86 ft above mean sea level, May 7, 1975.

REMARKS.--Water is presently unused.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	9.86	DEC 5	9.61	FEB 5	9.46	APR 7	9.21	JUN 2	9.32	AUG 6	9.62

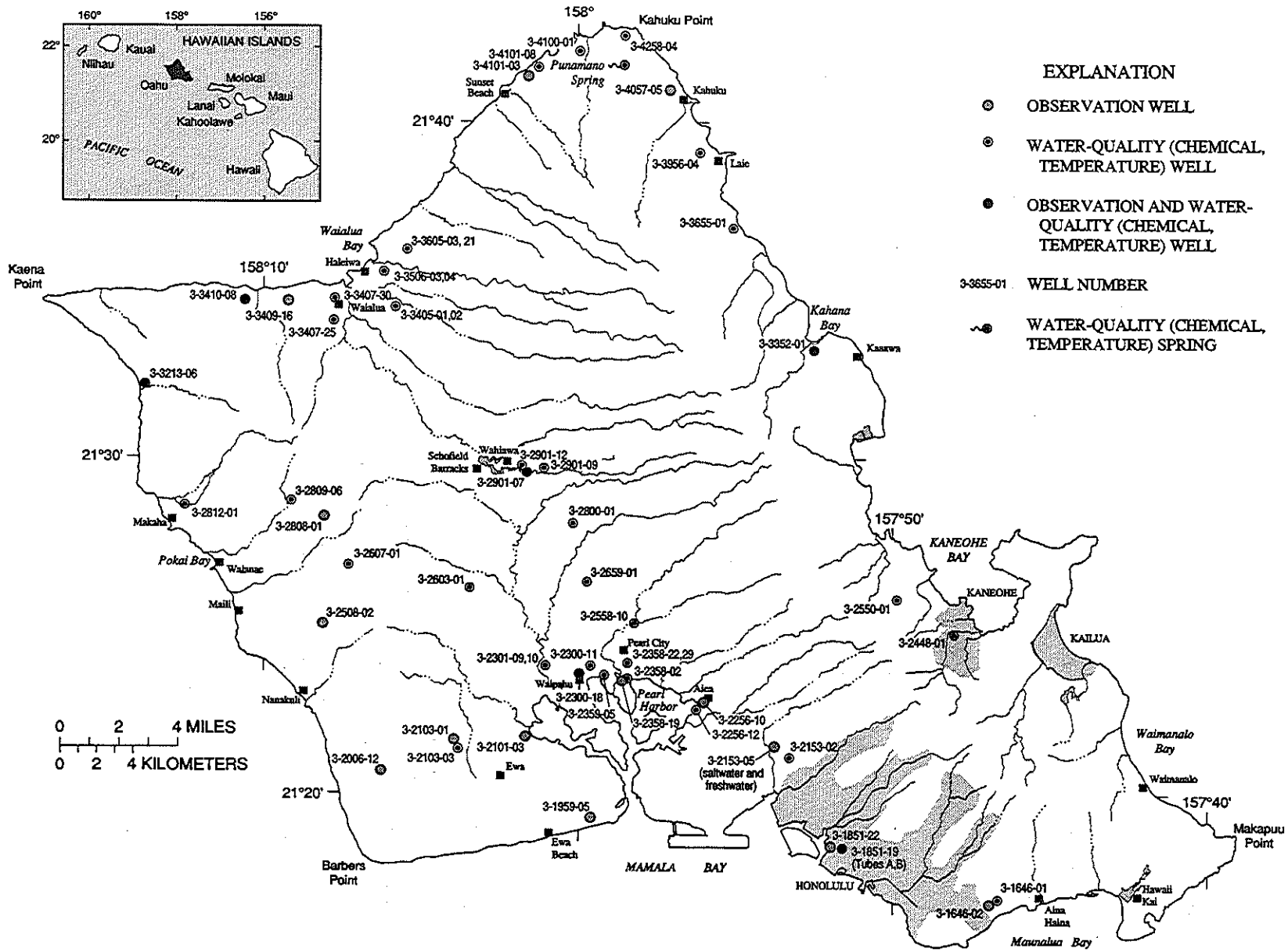


Figure 17. Locations of observation wells and ground-water quality sampling wells on Oahu.

211646157465202. Local number, 3-1646-02.

LOCATION.--Lat 21°16′46″, long 157°46′52″, Hydrologic Unit 20060000, at Waialae Golf Course. Owner: Bishop Estate.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 131 ft, 4-in. casing diameter, cased to 100 ft.

DATUM.--Elevation of land-surface datum is 16 ft. Measuring point is top of casing, 13.84 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--Occasional measurements, September 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.63 ft above mean sea level, January 27, 1983; lowest, 7.00 ft above mean sea level, June 10, 1986, July 23, 1986.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	7.96	MAR 19	7.75	MAY 13	7.76	AUG 11	7.68	SEP 21	7.76

211832157515501. Local number, 3-1851-19 Tube A.

LOCATION.--Lat 21°18′32″, long 157°51′55″, Hydrologic Unit 20060000, corner of Richards and Halekauwila Streets, adjacent to Ala Moana Boulevard. Owner: Hawaiian Electric Company.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 1/2-in. galvanized pipe at 1,043 ft depth. Tube A is the pipe closer to Richards Street.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is chiseled square inside of wooden cover of well, elevation 5.80 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, April 1969, March 1973 to current year.
Water quality: occasional measurements, 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.16 ft above mean sea level, August 13, 1974; lowest, 5.53 ft above mean sea level, September 25, 1990.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	6.46	MAR 11	6.52	MAY 13	6.53	AUG 11	6.00	SEP 23	a--

a No flow, unable to read water level

211832157515502. Local number, 3-1851-19 Tube B.

LOCATION.--Lat 21°18′32″, long 157°51′55″, Hydrologic Unit 20060000, corner of Richards and Halekauwila Streets, adjacent to Ala Moana Boulevard. Owner: Hawaiian Electric Company.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 1/2-in. galvanized pipe at 988 ft depth. Tube B is the pipe furthest from Richards Street.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is chiseled square inside of wooden cover of well, elevation 5.80 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, April 1969, March 1973 to current year.
Water quality: occasional measurements, 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.16 ft above mean sea level, February 3, 1983; lowest, 13.54 ft above mean sea level, October 20, 1993.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	16.95	MAR 11	16.63	MAY 13	16.20	AUG 11	14.67	SEP 23	13.75

211828157515801. Local number, 3-1851-22.

LOCATION.--Lat 21°18′28″, long 157°51′58″, Hydrologic Unit 20060000, northeast corner of the mini-park at the intersection of Richards Street and Ala Moana Boulevard. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, 3-in. PVC pipe, depth 1,142 ft, bottom 60 ft slotted.

DATUM.--Elevation of land-surface datum is 7 ft. Measuring point is edge of manhole cover, 7.30 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: water-level recorder, June 1983 to November 1986, occasional measurements, December 1982 to current year.

Water quality: occasional measurements, 1982, 1987, 1998.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.74 ft above mean sea level, April 12, 1991; lowest, 15.60 ft, above mean sea level, September 23, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 11	18.33	MAR 11	18.06	MAY 13	18.61	AUG 11	17.46	SEP 23	15.60

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

211907157594701. Local number, 3-1959-05.

LOCATION.--Lat 21°19'06", long 157°59'46", Hydrologic Unit 20060000, 600 ft northwest of Ewa Beach Park, and 1.2 mi southeast of Campbell High School. Owner: NOAA.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,110 ft, 5-in. PVC casing, bottom 12 ft perforated.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is top of 5-in. PVC casing, 6.40 ft above mean sea level.

REMARKS.--Geophysical log and water-quality records are available in files of district office.

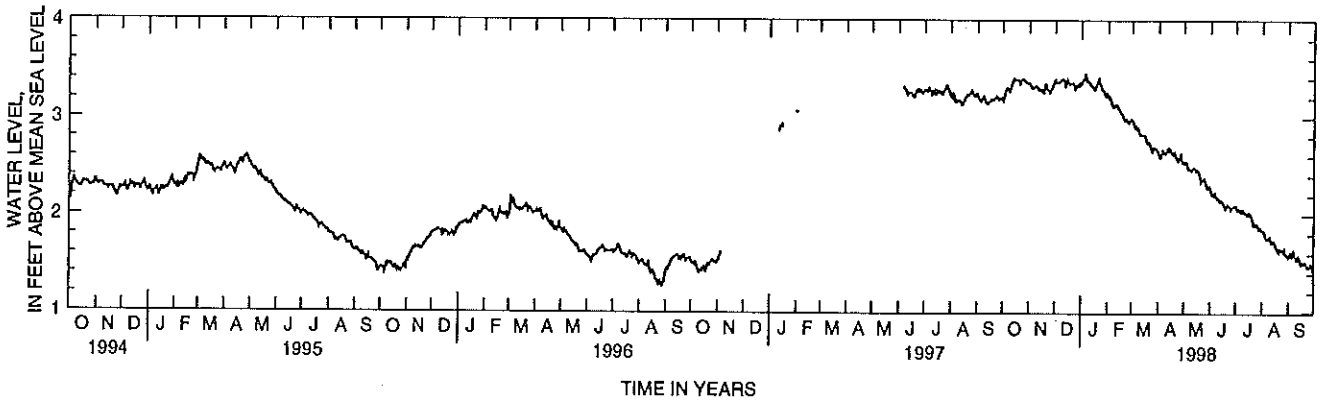
PERIOD OF RECORD.--Water-level recorder, December 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.38 ft above mean sea level, January 17, 1969; lowest, 2.81 ft below mean sea level, August 25, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.18	3.36	3.39	3.36	3.22	2.98	2.65	2.54	2.28	2.10	1.85	1.58
2	3.21	3.35	3.37	3.38	3.21	2.97	2.61	2.56	2.24	2.07	1.85	1.61
3	3.25	3.33	3.37	3.40	3.22	2.93	2.60	2.56	2.22	2.06	1.83	1.62
4	3.29	3.31	3.37	3.40	3.20	2.91	2.62	2.54	2.21	2.07	1.81	1.59
5	3.30	3.31	3.37	3.46	3.15	2.92	2.65	2.50	2.21	2.07	1.78	1.58
6	3.31	3.32	3.37	3.43	3.13	2.90	2.67	2.48	2.23	2.06	1.77	1.61
7	3.30	3.32	3.39	3.38	3.12	2.89	2.66	2.48	2.21	2.04	1.76	1.63
8	3.28	3.33	3.39	3.38	3.13	2.90	2.64	2.48	2.19	2.05	1.76	1.61
9	3.28	3.33	3.40	3.38	3.14	2.87	2.64	2.48	2.18	2.06	1.77	1.58
10	3.31	3.32	3.40	3.37	3.13	2.84	2.65	2.47	2.18	2.05	1.78	1.56
11	3.34	3.31	3.40	3.35	3.14	2.83	2.68	2.48	2.16	2.03	1.76	1.55
12	3.37	3.29	3.36	3.35	3.13	2.83	2.67	2.49	2.15	2.03	1.72	1.56
13	3.39	3.30	3.34	3.33	3.10	2.83	2.69	2.49	2.16	2.03	1.72	1.58
14	3.40	3.30	3.36	3.33	3.09	2.83	2.67	2.48	2.16	2.02	1.73	1.56
15	3.39	3.28	3.39	3.32	3.07	2.83	2.68	2.46	2.15	2.01	1.74	1.53
16	3.39	3.29	3.37	3.30	3.06	2.83	2.65	2.46	2.13	2.03	1.72	1.51
17	3.39	3.27	3.36	3.30	3.05	2.81	2.64	2.47	2.10	2.03	1.70	1.52
18	3.39	3.27	3.35	3.33	3.03	2.77	2.63	2.46	2.10	2.01	1.67	1.52
19	3.39	3.35	3.36	3.36	3.01	2.75	2.64	2.43	2.08	2.01	1.66	1.51
20	3.39	3.35	3.36	3.38	2.98	2.75	2.65	2.40	2.09	1.98	1.64	1.52
21	3.36	3.31	3.36	3.40	2.98	2.76	2.62	2.35	2.11	1.95	1.63	1.52
22	3.37	3.29	3.36	3.37	2.98	2.73	2.59	2.36	2.10	1.91	1.66	1.51
23	3.39	3.29	3.33	3.34	2.99	2.71	2.59	2.37	2.10	1.92	1.66	1.48
24	3.40	3.27	3.31	3.33	2.97	2.67	2.57	2.37	2.09	1.91	1.65	1.47
25	3.40	3.27	3.33	3.29	2.96	2.66	2.58	2.38	2.07	1.90	1.64	1.47
26	3.39	3.30	3.34	3.29	2.97	2.68	2.62	2.36	2.08	1.91	1.63	1.48
27	3.38	3.31	3.33	3.28	2.98	2.70	2.63	2.33	2.09	1.90	1.65	1.50
28	3.37	3.33	3.35	3.25	2.99	2.69	2.58	2.29	2.09	1.86	1.61	1.49
29	3.37	3.36	3.36	3.23	---	2.69	2.55	2.28	2.10	1.86	1.61	1.46
30	3.36	3.38	3.34	3.23	---	2.68	2.54	2.28	2.10	1.87	1.60	1.44
31	3.36	---	3.35	3.25	---	2.66	---	2.30	---	1.85	1.59	---
MEAN	3.35	3.31	3.36	3.34	3.08	2.80	2.63	2.43	2.15	1.99	1.71	1.54
MAX	3.40	3.38	3.40	3.46	3.22	2.98	2.69	2.56	2.28	2.10	1.85	1.63
MIN	3.18	3.27	3.31	3.23	2.96	2.66	2.54	2.28	2.07	1.85	1.59	1.44

WTR YR 1998 MEAN 2.64 MAX 3.46 MIN 1.44



212038158061501. Local number, 3-2006-12.

LOCATION.--Lat 21°20′38″, long 158°06′15″, Hydrologic Unit 20060000, 1.8 mi northwest of Barbers Point School, 0.4 mi east of Honokai Hale, and 2.1 mi southeast of the Kahe Power Plant. Owner: Honolulu Board of Water Supply.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 150 ft, 6-in. casing, cased to 108 ft.

DATUM.--Elevation of land-surface datum is 139 ft. Measuring point is top of casing, 139.13 ft above mean sea level.

REMARKS.--Prior to October 1995, unpublished records are available in files of district office.

PERIOD OF RECORD.--
Water level: occasional measurements, January 1953 to August 1973, July 1994 to current year.
Water quality: occasional measurements, January 1953 to August 1973.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.02 ft above mean sea level, January 25, 1957; lowest measured, 12.02 ft above mean sea level, June 5, 1973.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
APR 5	14.08	MAY 20	13.91	AUG 14	13.93

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 3	14.23	JUN 19	14.11	SEP 12	14.27

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	14.16	MAR 13	13.93	MAY 28	13.85	AUG 6	13.74	SEP 23	13.89

212154158015201. Local number, 3-2101-03.

LOCATION.--Lat 21°21′54″, long 158°01′52″, Hydrologic Unit 20060000, 0.4 mi southeast of Honouliuli, and 0.5 mi north of Ewa Hospital. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 355 ft, 6-in. PVC casing, cased to 165 ft. Well was modified in January 1958 and May 1982.

DATUM.--Elevation of land-surface datum is 15 ft. Measuring point is top of horizontal flange below petcock, 13.31 ft above mean sea level.

REMARKS.--Water-quality records for 1910-16, 1920-21, 1923-75, 1978-81, are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, April 1910 to June 1921, September 1923 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.16 ft above mean sea level, April 1918; lowest observed, less than 11.2 ft above mean sea level (below petcock then in use), September 2, and October 19, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	19.59	MAR 11	18.83	MAY 14	18.39	AUG 4	17.35	SEP 23	16.88

212132158035701. Local number, 3-2103-01.

LOCATION.--Lat 21°21′32″, long 158°03′57″, Hydrologic Unit 20060000, 1 mi east of Makakilo, and 2 mi north of Barbers Point Naval Air Station. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 206 ft, casing diameter 6-in., cased to 17 ft.

DATUM.--Elevation of land-surface datum is 210 ft. Measuring point is top of 6-in. pipe. Elevation: 211.70 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: water-level recorder, September 1966 to December 1971. Occasional measurements, August 1942 to December 1942, January 1953 to September 1967, September 1972 to current year.
Water quality: occasional measurements, 1942, 1953-68.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.81 ft above mean sea level, February 20, 1957; lowest, 14.25 ft above mean sea level, July 5, 1978, September 20, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	15.06	MAR 13	14.80	MAY 28	14.65	AUG 6	14.42	SEP 25	14.41

212133158035501. Local number, 3-2103-03.

LOCATION.--Lat 21°21′33″, long 158°03′55″, Hydrologic Unit 20060000, 1 mi east of Makakilo, and 2 mi north of Barbers Point Naval Air Station. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 204 ft, 12 ft diameter.

DATUM.--Elevation of land-surface datum is 160 ft. Measuring point is top of concrete ledge under manhole. Elevation: 155.5 ft above mean sea level.

REMARKS.--Prior to October 1997, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: occasional measurements, March 1973 to current year.
Water quality: occasional measurements, 1952 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.50 ft above mean sea level, December 8, 1982, January 28, 1983; lowest, 13.52 ft above mean sea level, June 16, 1976, July 26, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	15.10	MAR 13	14.80	MAY 28	14.65	AUG 6	14.44	SEP 25	13.91

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

212123157535501. Local number, 3-2153-05 Freshwater well.

LOCATION.--Lat 21°21′23″, long 157°53′55″, Hydrologic Unit 20060000, 0.4 mi northwest of Moanalua Elementary School, and 0.5 mi southwest of Tripler Hospital, in Moanalua. Owner: Honolulu Board of Water Supply.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,246 ft, 6-in. PVC casing, cased to 24 ft, perforated from 24 to 1,246 ft. Well was modified and deepened August 1980. The well is a combination of a 3-in. PVC (saltwater) and a 6-in. PVC (freshwater) encased in a 12-in. steel casing.

DATUM.--Elevation of land-surface datum is 35 ft. Measuring point is top of 3-in. PVC casing, 37.90 ft above mean sea level.

REMARKS.--Geophysical logs are available in files of district office. Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

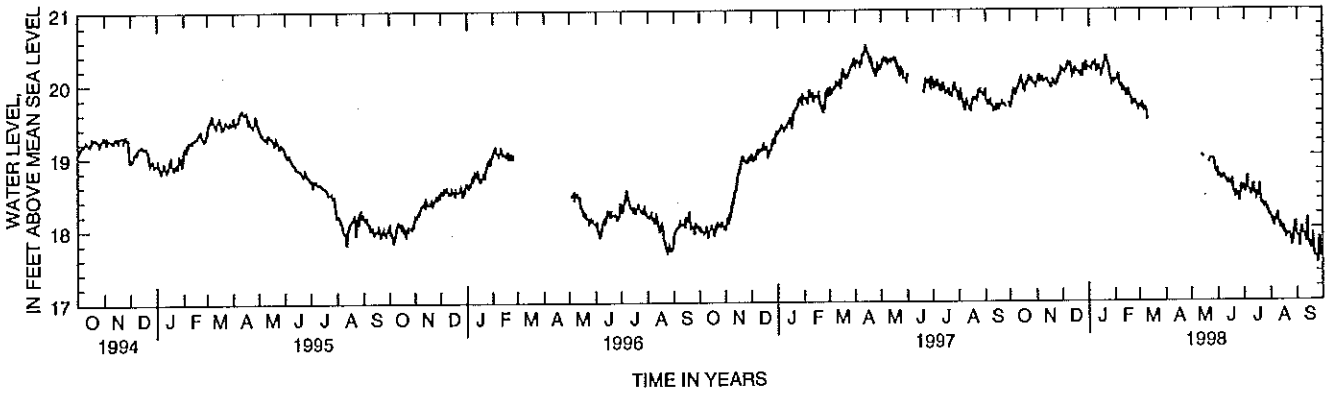
PERIOD OF RECORD.--Water-level recorder, March 1981 to current year (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.53 ft above mean sea level, January 9, 1983; lowest 16.56 ft above mean sea level, July 24, 1987.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e19.66	20.05	20.19	e20.21	20.05	e19.69	---	---	18.70	18.55	18.15	17.88
2	19.71	20.08	20.16	e20.20	e20.04	19.66	---	---	18.71	18.50	18.12	17.88
3	19.77	20.11	20.15	e20.22	e20.09	e19.65	---	---	18.72	18.50	18.08	17.86
4	19.88	20.02	20.18	20.20	20.12	19.70	---	---	18.68	18.66	18.13	17.73
5	19.91	20.04	20.18	e20.26	20.00	19.68	---	---	18.68	18.71	18.02	17.99
6	e19.90	20.04	20.25	20.25	19.96	e19.63	---	---	18.72	18.54	18.06	18.00
7	19.85	20.09	20.27	20.24	e19.95	19.66	---	---	18.72	18.52	18.12	18.00
8	19.88	e20.02	e20.24	e20.27	19.96	e19.65	---	---	18.71	18.48	18.09	17.91
9	e19.93	e20.02	20.23	20.21	e19.87	19.62	---	---	18.67	18.46	18.20	17.91
10	19.95	20.03	20.28	20.15	e19.94	19.50	---	---	18.66	18.49	18.10	17.90
11	19.99	20.05	20.18	20.24	e19.89	19.51	---	---	18.62	18.59	18.05	17.80
12	20.04	20.05	20.10	20.18	e19.89	---	---	a--	18.61	18.59	18.01	18.05
13	20.07	e20.04	e20.12	20.21	e19.81	---	---	e19.00	18.64	18.45	18.04	18.13
14	20.04	e20.00	e20.12	20.16	19.87	---	---	18.98	18.61	18.50	17.99	17.77
15	19.97	19.99	20.22	20.12	19.84	---	---	18.98	18.63	18.41	17.97	17.81
16	19.92	e19.97	20.18	20.16	19.88	---	---	---	18.60	18.43	18.02	17.73
17	19.90	19.94	20.16	e20.20	19.84	---	---	---	18.67	18.44	17.93	17.71
18	19.95	19.95	20.16	e20.27	e19.81	---	---	---	18.56	18.55	17.94	17.71
19	20.02	20.04	20.15	e20.29	e19.78	---	---	---	18.48	18.60	17.86	17.92
20	19.99	20.04	20.13	20.37	19.72	---	---	b--	18.46	18.40	17.91	17.73
21	20.01	20.02	20.14	e20.32	19.74	---	---	18.90	18.42	18.33	17.91	17.63
22	20.09	19.97	20.11	20.27	19.72	---	---	18.93	18.51	18.34	17.90	17.60
23	e20.06	19.97	20.14	20.24	19.75	---	---	18.95	18.47	18.32	17.91	17.60
24	20.03	20.02	20.12	20.21	19.75	---	---	18.95	18.46	18.29	17.89	17.60
25	20.06	19.99	20.26	20.10	19.70	---	---	18.95	18.36	18.32	17.81	17.51
26	e20.05	20.10	20.21	20.07	19.69	---	---	18.95	18.45	18.32	17.78	17.80
27	20.00	20.10	e20.16	e20.00	e19.65	---	---	18.92	18.59	18.24	17.81	17.87
28	e19.99	20.10	e20.29	e20.02	e19.68	---	---	18.84	18.51	18.28	17.96	17.66
29	19.99	20.20	e20.19	20.04	---	---	---	18.76	18.52	18.19	18.02	17.60
30	19.96	20.19	e20.21	e20.01	---	---	---	18.76	18.59	18.17	18.08	17.59
31	20.00	---	20.22	20.03	---	---	---	18.79	---	18.18	17.95	---
MEAN	19.95	20.04	20.18	20.18	19.86	---	---	---	18.59	18.43	17.99	17.80
MAX	20.09	20.20	20.29	20.37	20.12	---	---	---	18.72	18.71	18.20	18.13
MIN	19.66	19.94	20.10	20.00	19.65	---	---	---	18.36	18.17	17.78	17.51

e Estimated
a No record March 12 (1100) to May 13, 1998 (1500), logger malfunctioned
b No record May 16 (1100) to May 20, 1998 (1100), logger malfunctioned



GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

212123157535503. Local number, 3-2153-05 Saltwater well.

LOCATION.--Lat 21°21′23″, long 157°53′55″, Hydrologic Unit 20060000, 0.4 mi northwest of Moanalua Elementary School, and 0.5 mi southwest of Tripler Hospital, in Moanalua. Owner: Honolulu Board of Water Supply.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,246 ft, 3-in. PVC casing, cased to 46 ft, where it becomes 3/4-in. PVC pipe; two 5/8-in. holes at depth of 1,190 ft. Well was modified and deepened in August 1980 and used to monitor water level (saltwater). The well is a combination of a 3-in. PVC (saltwater) and a 6-in. PVC (freshwater) encased in a 12-in. steel casing.

DATUM.--Elevation of land-surface datum is 35 ft. Measuring point is top of 6-in. PVC casing, 37.90 ft above mean sea level.

REMARKS.--Geophysical logs are available in files of district office. Prior to October 1993, unpublished records in files of the U.S. Geological Survey. No record March 5, 1991 to April 8, 1991.

PERIOD OF RECORD.--Water-level recorder, March 1981 to current year (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.45 ft above mean sea level, January 9, 1983; lowest, 1.45 ft below mean sea level, October 24, 1981.

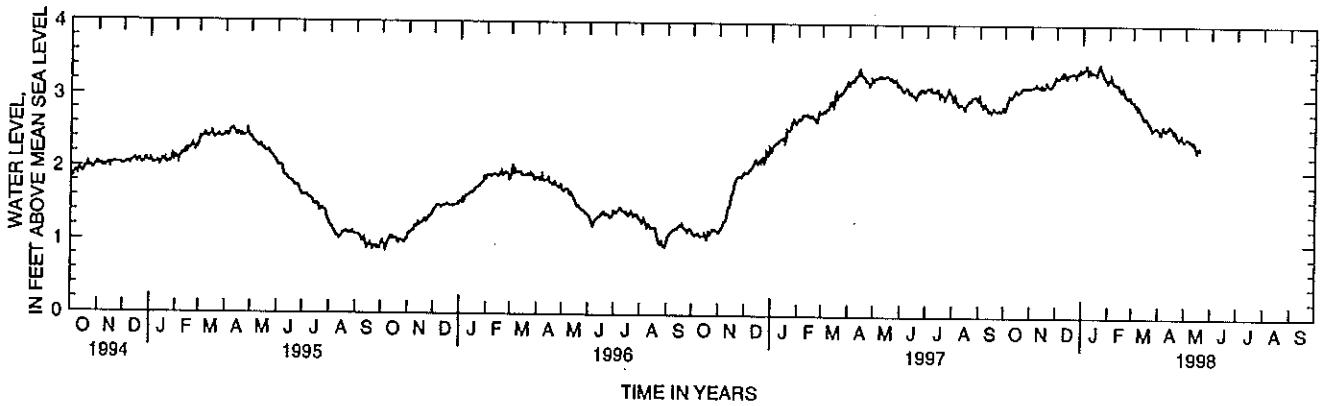
WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.84	3.15	3.30	e3.40	3.25	e2.97	2.58	2.43	---	---	---	---
2	2.87	3.16	3.28	e3.39	3.26	2.97	2.54	2.45	---	---	---	---
3	2.90	3.16	3.28	e3.41	e3.31	e2.93	2.53	2.46	---	---	---	---
4	2.96	3.16	3.28	3.41	3.28	2.91	2.57	2.46	---	---	---	---
5	2.98	3.16	3.31	e3.47	3.23	2.92	2.61	2.45	---	---	---	---
6	3.03	3.17	3.32	3.42	3.22	e2.88	2.62	2.43	---	---	---	---
7	3.02	3.19	3.34	e3.37	e3.21	2.91	2.60	2.44	---	---	---	---
8	3.01	3.17	3.29	e3.41	3.21	e2.90	2.57	2.43	---	---	---	---
9	3.02	3.16	3.36	3.41	e3.20	2.85	2.57	2.42	---	---	---	---
10	3.04	3.16	3.36	3.36	e3.19	2.82	2.60	2.40	---	---	---	---
11	3.06	3.17	3.34	3.36	e3.20	2.81	2.61	2.42	---	---	---	---
12	3.08	3.16	3.29	3.37	e3.19	2.79	2.60	2.41	---	---	---	---
13	3.11	3.15	3.29	3.36	e3.14	2.75	2.63	2.36	---	---	---	---
14	3.11	3.18	e3.33	3.36	3.14	2.73	2.62	2.32	---	---	---	---
15	3.09	3.17	3.34	e3.36	3.11	2.74	2.61	2.29	---	---	---	---
16	3.08	3.15	3.34	3.36	3.13	2.74	2.59	2.32	---	---	---	---
17	3.09	3.16	3.34	e3.34	3.15	2.74	2.55	2.34	---	---	---	---
18	3.10	3.16	3.34	e3.37	3.11	2.72	2.54	2.34	---	---	---	---
19	3.10	3.21	3.35	e3.42	e3.08	2.68	2.57	2.30	---	---	---	---
20	3.13	3.20	3.35	3.46	3.04	2.67	2.56	a--	---	---	---	---
21	3.13	3.18	3.35	e3.47	3.04	2.67	2.51	---	---	---	---	---
22	3.14	3.17	3.35	3.42	e3.02	2.63	2.48	---	---	---	---	---
23	3.15	3.16	3.33	3.39	3.03	2.61	2.47	---	---	---	---	---
24	3.15	3.16	3.31	e3.37	3.03	2.58	2.45	---	---	---	---	---
25	3.15	3.17	3.35	3.33	3.01	2.59	2.47	---	---	---	---	---
26	3.15	3.20	e3.37	3.31	3.02	2.59	2.49	---	---	---	---	---
27	3.14	3.21	3.36	e3.29	e2.98	2.61	2.50	---	---	---	---	---
28	3.14	3.23	e3.39	e3.27	2.97	2.61	2.46	---	---	---	---	---
29	3.15	3.26	e3.40	3.26	---	2.61	2.44	---	---	---	---	---
30	3.14	3.30	e3.37	e3.24	---	2.61	2.43	---	---	---	---	---
31	3.15	---	3.38	3.27	---	2.59	---	---	---	---	---	---
MEAN	3.07	3.18	3.34	3.37	3.13	2.75	2.55	---	---	---	---	---
MAX	3.15	3.30	3.40	3.47	3.31	2.97	2.63	---	---	---	---	---
MIN	2.84	3.15	3.28	3.24	2.97	2.58	2.43	---	---	---	---	---

CAL YR 1997 MEAN 3.02 MAX 3.40 MIN 2.23

e Estimated

a No record May 20, 1998 (1200) to the end of the year; internal battery problem



212117157534601. Local number, 3-2153-08.

LOCATION.--Lat 21°21'17", long 157°53'46", Hydrologic Unit 20060000, 1,300 ft northwest of junction of H-1 freeway and Puuloa Road, and 0.5 mi south of Tripler Army Hospital. Owner: U.S. Army.

AQUIFER.--Koolau Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 306 ft, 16-in. casing diameter, cased to 57 ft.

DATUM.--Elevation of land-surface datum is 28 ft. Measuring point is top of 3/4-in. copper overflow pipe at base of pump, 33.16 ft above mean sea level.

REMARKS.--Prior to May 1998, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--Occasional measurements, April 1945 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.79 ft above mean sea level, April 21, 1969; lowest, 17.78 ft above mean sea level, September 1, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 20	18.75	JUN 2	18.53	JUL 1	18.48	AUG 3	18.08	SEP 1	17.78

GROUND-WATER LEVELS

HAWAII, ISLAND OF OAHU--Continued

212238157561101. Local number, 3-2256-10.

LOCATION.--Lat 21°22′38″, long 157°56′11″, Hydrologic Unit 20060000, 0.4 mi southwest of Aiea School, and 0.5 mi east of McGrew Point. Owner: U.S. Navy.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 173 ft, casing diameter 12 in., cased to 143 ft.

DATUM.--Elevation of land-surface datum is 10 ft. Measuring point is top of 10-in. stilling pipe for water-level recorder, 26.15 ft above mean sea level.

REMARKS.--Water-quality records for 1923, 1928-30, 1934-68, 1972, 1974-75 are available in files of district office.

PERIOD OF RECORD.--

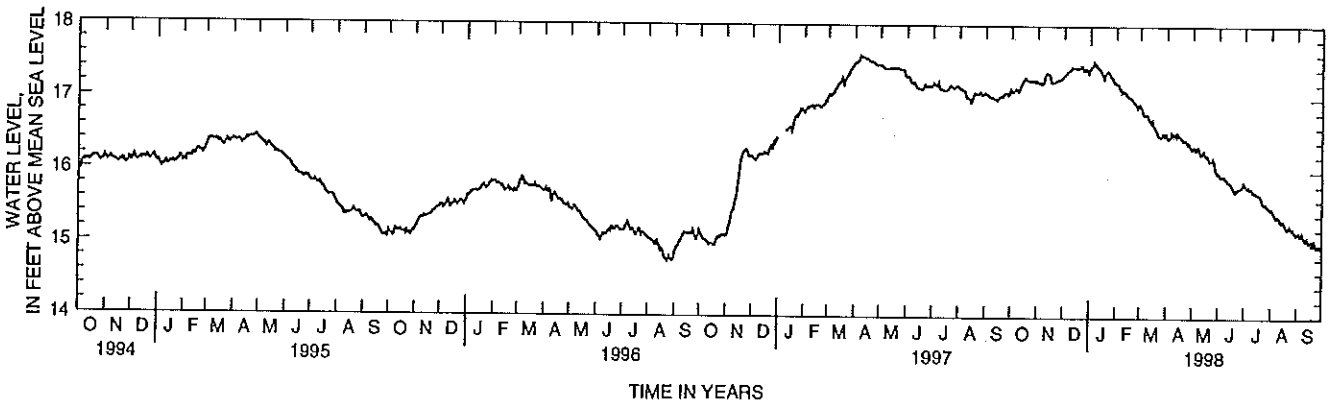
Water level: occasional measurements, January 1928 to February 1931, September 1934 to August 1966. Water-level recorder, September 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.90 ft above mean sea level, January 16, 1928; lowest, 12.97 ft above mean sea level, October 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.12	17.25	17.33	17.42	17.22	16.91	16.50	16.33	15.99	15.83	15.47	15.16
2	17.10	17.24	17.35	17.45	17.21	16.90	16.47	16.35	15.96	15.81	15.48	15.17
3	17.11	17.25	17.36	17.45	17.21	16.87	16.47	16.33	15.95	15.79	15.46	15.18
4	17.11	17.24	17.36	17.47	17.18	16.81	16.48	16.34	15.94	15.78	15.44	15.14
5	17.13	17.24	17.38	17.51	17.14	16.80	16.49	16.31	15.94	15.78	15.41	15.13
6	17.14	17.23	17.39	17.49	17.15	16.79	16.54	16.32	15.95	15.79	15.38	15.14
7	17.14	17.24	17.40	17.47	17.10	16.80	16.52	16.35	15.95	15.76	15.36	15.17
8	17.12	17.26	17.40	17.48	17.11	16.80	16.53	16.35	15.93	15.77	15.37	15.14
9	17.12	17.33	17.42	17.45	17.12	16.80	16.51	16.29	15.91	15.77	15.38	15.11
10	17.14	17.37	17.44	17.44	17.11	16.77	16.53	16.26	15.90	15.75	15.37	15.08
11	17.18	17.38	17.44	17.42	17.09	16.73	16.54	16.25	15.88	15.72	15.36	15.07
12	17.20	17.37	17.44	17.42	17.10	16.72	16.50	16.26	15.87	15.72	15.32	15.08
13	17.23	17.36	17.44	17.40	17.06	16.69	16.53	16.28	15.87	15.72	15.32	15.10
14	17.26	17.37	17.44	17.39	17.05	16.68	16.51	16.29	15.86	15.71	15.32	15.06
15	17.27	17.33	17.43	17.35	17.04	16.71	16.51	16.25	15.85	15.70	15.34	15.04
16	17.30	17.25	17.44	17.33	17.04	16.65	16.49	16.24	15.82	15.70	15.33	15.05
17	17.30	17.25	17.43	17.30	17.04	16.64	16.48	16.23	15.80	15.69	15.30	15.06
18	17.28	17.25	17.43	17.33	17.03	16.61	16.46	16.24	15.77	15.68	15.27	15.06
19	17.27	17.25	17.44	17.37	17.02	16.59	16.44	16.23	15.75	15.68	15.25	15.03
20	17.27	17.25	17.44	17.37	16.99	16.57	16.45	16.19	15.74	15.66	15.23	15.04
21	17.27	17.26	17.46	17.39	16.98	16.54	16.45	16.16	15.77	15.63	15.23	15.07
22	17.27	17.26	17.46	17.39	16.97	16.51	16.44	16.16	15.76	15.58	15.24	15.07
23	17.27	17.27	17.43	17.37	16.96	16.50	16.43	16.16	15.78	15.57	15.26	15.00
24	17.27	17.27	17.40	17.35	16.93	16.50	16.40	16.17	15.78	15.56	15.24	14.98
25	17.27	17.28	17.41	17.32	16.91	16.49	16.39	16.19	15.78	15.55	15.23	14.98
26	17.27	17.28	17.42	17.32	16.89	16.51	16.41	16.16	15.78	15.56	15.22	14.98
27	17.27	17.28	17.40	17.30	16.92	16.53	16.40	16.11	15.79	15.53	15.23	14.99
28	17.27	17.28	17.42	17.26	16.93	16.52	16.36	16.04	15.79	15.51	15.20	14.99
29	17.26	17.30	17.41	17.24	---	16.50	16.34	16.01	15.82	15.50	15.18	14.97
30	17.27	17.31	17.38	17.24	---	16.53	16.32	15.99	15.85	15.50	15.18	14.97
31	17.26	---	17.42	17.23	---	16.53	---	16.00	---	15.48	15.15	---
MEAN	17.22	17.28	17.41	17.38	17.05	16.66	16.46	16.22	15.85	15.67	15.31	15.07
MAX	17.30	17.38	17.46	17.51	17.22	16.91	16.54	16.35	15.99	15.83	15.48	15.18
MIN	17.10	17.23	17.33	17.23	16.89	16.49	16.32	15.99	15.74	15.48	15.15	14.97

WTR YR 1998 MEAN 16.46 MAX 17.51 MIN 14.97



212238157561102. Local number, 3-2256-12.

LOCATION.--Lat 21°22′39″, long 157°56′09″, Hydrologic Unit 20060000, 0.4 mi southwest of Aiea School, and 0.5 mi east of McGrew Point. Owner: U.S. Navy.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 182 ft, casing diameter 12-in., cased to 139 ft.

DATUM.--Elevation of land-surface datum is 9 ft. Measuring point is corner of concrete base next to faucet, 13.18 ft above mean sea level.

REMARKS.--Prior to October 1996, unpublished water-level records are available in files of district office.

PERIOD OF RECORD.--
Water level: occasional measurements, December 1966, November 1973 to current year.
Water quality: occasional measurements, December 1966, September 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.73 ft above mean sea level, January 31, 1983; lowest measured, 13.15 ft above mean sea level, September 18, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL
JUN 17	17.16	SEP 17	16.98

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	16.85	DEC 15	17.46	MAR 11	16.64	MAY 14	16.17	AUG 12	15.26	SEP 23	14.91

212340158001901. Local number, 3-2300-18.

LOCATION.--Lat 21°23′40″, long 158°00′19″, Hydrologic Unit 20060000, 700 ft south of August Ahrens School, and 1,400 ft northeast of L'Orange Park, Waipahu. Owner: Honolulu Board of Water Supply.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,090 ft, casing diameter 12-in., cased to 38 ft. Well was deepened May 1980 and modified February 1984. Prior to May 1980, well depth 205 ft.

DATUM.--Elevation of land-surface datum is 26 ft. Measuring point is top of casing, 27.73 ft above mean sea level.

PERIOD OF RECORD.--
Water level: water-level recorder, August 1970 to January 1973. Occasional measurements, October 1987 to current year.
Water quality: occasional measurements, 1930, 1942-45, 1947-49, 1951-54, 1968, 1983, 1985-86, 1991, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 22.40 ft above mean sea level, January 4, 1983; lowest 14.01 ft above mean sea level, September 14, 1985.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	19.61	MAR 10	19.03	MAY 14	18.52	AUG 11	17.44	SEP 23	17.13

212318157583401. Local number, 3-2358-19.

LOCATION.--Lat 21°23′18″, long 157°58′34″, Hydrologic Unit 20060000, 0.3 mi southwest of Lehua Elementary School, and 0.7 mi south of Pearl City Elementary School. Owner: U.S. Navy.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 172 ft, casing diameter 17-in., cased to 112 ft.

DATUM.--Elevation of land-surface datum is 13.30 ft. Measuring point is 1-in. square chiseled on concrete base wall, northeast corner, elevation is 13.30 ft above mean sea level.

REMARKS.--Prior to October 1995, unpublished records are available in files of district office.

PERIOD OF RECORD.--

Water level: occasional measurements, September 1972, November 1973 to December 1988, and March 3, 1993 to current year.
Water quality: occasional measurements, 1944, 1946, 1954, 1956-58, 1972-80.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.68 ft above mean sea level, December 7, 1982; lowest, 12.30 ft above mean sea level, September 18, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
APR 4	15.03	MAY 20	14.64	AUG 1	14.28

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 14	16.12	JUN 19	16.36	SEP 12	16.51

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	16.47	MAR 10	15.92	MAY 14	15.42	AUG 12	14.46	SEP 23	14.14

212501158080701. Local number, 3-2508-02.

LOCATION.--Lat 21°25′01″, long 158°08′07″, Hydrologic Unit 20060000, 2.2 mi northeast from the intersection of Farrington Highway and Lualualei Naval Ammunition Depot, 0.4 mi southeast of entrance to Lualualei Naval Ammunition Depot, located inside the Depot. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Located at the bottom of a 30-degree incline 6.8 ft by 7.8 ft shaft, 340 ft long.

DATUM.--Elevation of land-surface datum is 180 ft. Measuring point is top of concrete above well, elevation is 13.16 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, October 1972 to September 1997 (station discontinued; unable to enter shaft).
Water quality: occasional measurements, 1971-84.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.40 ft above mean sea level, October 3, 1972; lowest, 10.15 ft above mean sea level, March 8, 1994.

212614157594301. Local number, 3-2659-01.

LOCATION.--Lat 21°26′14″, long 157°59′43″, Hydrologic Unit 20060000, 2.3 mi southeast of Kipapa School and 0.5 mi southwest of entrance to Mililani Memorial Park Cemetary. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,790 ft, 9-in. casing, cased to 424 ft.

DATUM.--Elevation of land-surface datum is 412 ft. Measuring point is top of casing, elevation is 412.98 ft above mean sea level.

REMARKS.--Prior to October 1995, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--Water level: occasional measurements, October 1986 to April 1987, March 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.74 ft above mean sea level, March 5, 1990; lowest, 17.23 ft above mean sea level, October 3, 1986.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 13	19.71	MAY 17	19.08	JUL 22	19.03

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 14	21.20	JUN 20	22.02	SEP 17	21.84

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	21.74	MAR 10	21.08	MAY 18	20.47	AUG 4	19.35	SEP 23	18.97

212813158080201. Local number, 3-2808-01.

LOCATION.--Lat 21°28′13″, long 158°08′04″, Hydrologic Unit 20060000, inside Lualualei Naval Ammunition Depot, 1,000 ft west from the intersection of Kolekole Road and Radford Street, at Building 492, 3.3 mi north from the entrance of the depot. Owner: U.S. Navy.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Depth 535 ft, cased to 179 ft, diameter is 12-in. steel casing to 179 ft, then 3-in. to 535 ft.

DATUM.--Elevation of land-surface datum is 435 ft. Measuring point is on pump 2 ft above base. Remove 1/2-in. nipple, elevation 437.45 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: occasional measurements, June 1973 to current year.
Water quality: occasional measurements, 1972-88.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 441.81 ft above mean sea level, February 28, 1983; lowest, 420.78 ft above mean sea level, October 24, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	433.65	MAR 13	432.69	MAY 28	431.82	AUG 6	430.79	SEP 25	a--

a Unable to make water-level measurement, gate locked

212927158014801. Local number, 3-2901-07.

LOCATION.--Lat 21°29′27″, long 158°01′48″, Hydrologic Unit 20060000, across the main gate of Wheeler Air Force Base, and 1,200 ft south of Wahiawa bridge on Kaukonohua Stream. Owner: U.S. Army.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Dug high-level water-table well, size 8 ft x 8 ft, length of 30-degree inclined shaft 1,148 ft.

DATUM.--Elevation of land-surface datum is 850 ft (revised). Measuring point is top of pump chamber floor at recorder, 287.00 ft above mean sea level (revised).

PERIOD OF RECORD.--

Water level: water-level recorder, November 1938 to current year.
Water quality: occasional measurements, 1966-72, 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 284.40 ft above mean sea level, May 12, 1969; lowest, 269.52 ft above mean sea level, December 5, 1978.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	279.97	279.67	279.58	279.82	279.27	278.15	277.48	--	--	--	275.87	275.17
10	280.01	279.78	279.61	279.47	279.11	278.61	277.90	--	--	a--	275.51	274.47
15	280.14	279.80	279.53	279.37	278.93	278.31	277.25	--	--	276.12	275.50	274.27
20	280.00	279.86	279.45	279.42	278.87	278.44	277.17	--	--	275.83	274.74	274.31
25	280.04	279.80	279.44	279.26	278.87	278.22	277.01	--	--	275.73	275.31	274.94
EOM	279.98	279.69	279.44	279.25	278.84	277.56	277.51	--	--	275.10	275.22	274.09

a No record May 1 to July 13, 1998, recorder stopped

NON-PUMPING VALUES

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	280.26	NOV 3	280.08	JAN 5	279.82	FEB 3	279.38	MAR 2	279.96
APR 1	278.27	JUN 2	277.06	JUL 1	276.58	AUG 3	275.91	SEP 2	275.53

Note: Water levels are measured after all pumps in the pump chamber are turned off for 2 hours

213224158135901. Local number, 3-3213-06.

LOCATION.--Lat 21°32′24″, long 158°13′59″, Hydrologic Unit 20060000, along Farrington Highway, 1.2 mi north of Makua Cave, and 1 mi southeast of Yokohama Bay. Owner: U.S. Air Force.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled well, depth 50 ft, cased to 21 ft with 6-in. black steel pipe.

DATUM.--Elevation of land-surface datum is 26 ft. Measuring point is top of 6-in. casing, elevation is 26.47 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: occasional measurements, October 1972 to current year.
Water quality: occasional measurements, 1967, 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.92 ft above mean sea level, January 2, 1975; lowest, 6.49 ft above mean sea level, July 15, 1976.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	7.18	MAR 13	7.08	MAY 28	6.91	AUG 6	6.85	SEP 25	6.85

213327157524401. Local number, 3-3352-01.

LOCATION.--Lat 21°33′27″, long 157°52′43″, Hydrologic Unit 20060000, at mouth of Kahana Valley, and 700 ft southwest of Kamehameha Highway, Kahana. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 441 ft, casing diameter 10-in., cased to 177 ft.

DATUM.--Elevation of land-surface datum is 6 ft. Measuring point is top of "T", 7.31 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, April 1935 to 1990, 1992 to current year.
Water quality: occasional measurements, 1935 to 1991, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.3 ft above mean sea level, March 29, 1966; lowest measured, 12.61 ft above mean sea level, July 5, 1984.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 23	14.18	MAR 10	13.13	JUN 17	13.02	AUG 20	12.95	SEP 30	12.72

213438158091101. Local number, 3-3409-16.

LOCATION.--Lat 21°34′36″, long 158°09′12″, Hydrologic Unit 20060000, 1.6 mi west of Waialua High School, 2.6 mi east of Mokuleia Beach Park along Farrington Highway. Owner: J. Mendonca.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 518 ft, cased to 440 ft, diameter 10-in. to 396 ft, 8-in. to 440 ft.

DATUM.--Elevation of land-surface datum is 8 ft. Measuring point is chiseled 1-1/2-in. square on concrete, 3.7 ft in front of door of well shelter, elevation is 8.48 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: occasional measurements, December 1924 to current year.
Water quality: occasional measurements, 1924-84.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.3 ft above mean sea level, January 16, 1969; lowest, 16.75 ft above mean sea level, August 6, 1929.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	18.50	MAR 10	17.91	JUN 3	18.01	AUG 4	17.92	SEP 24	17.98

213446158104901. Local number, 3-3410-08.

LOCATION.--Lat 21°34′46″, long 158°10′49″, Hydrologic Unit 20060000, 0.5 mi east of Dillingham Airfield, and 1.1 mi southeast of Mokuleia Beach Park. Owner: Waialua Sugar Company, Inc.

AQUIFER.--Waianae Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 447 ft, casing diameter 1 in., cased to 410 ft, perforated from 410 to 447 ft.

DATUM.--Elevation of land-surface datum is 12 ft. Measuring point is top of recorder shelf over 12-in. stilling well, 20.53 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--

Water level: water-level recorder, January 1963 to February 1972. Occasional measurements, January 1929 to December 1962, March 1972 to current year.
Water quality: occasional measurements, 1929 to 1985, 1989 to 1991, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level 19.98 ft above mean sea level, January 5, 1969; lowest 16.08 ft above mean sea level, August 6, 1929.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	18.96	MAR 10	18.47	JUN 3	18.62	AUG 4	18.31	SEP 24	18.40

214053157570401. Local number, 3-4057-05.

LOCATION.--Lat 21°40′53″, long 157°57′04″, Hydrologic Unit 20060000, 0.4 mi northeast of Kahuku Hospital, and 500 ft north of Kahuku High School.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled flowing artesian well, depth 397 ft, 12-in. metal casing, cased to 172 ft.

DATUM.--Elevation of land-surface datum is 9 ft. Measuring point is top of 10-in. standpipe, elevation; 16.01 ft above mean sea level.

REMARKS.--Prior to October 1993, unpublished records in files of the U.S. Geological Survey.

PERIOD OF RECORD.--
Water level: water-level recorder, August 1958 to December 1990. Occasional measurements, March 1911 to May 1918, March 1921, January 1926 to August 1958, December 1990 to current year.
Water quality: occasional measurements, 1908, 1911-16, 1924-78.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.12 ft above mean sea level, January 1916; lowest, 8.00 ft above mean sea level, October 5, 1962.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 23	13.04	MAR 10	12.59	JUN 17	12.33	AUG 18	12.52	SEP 30	12.43

214125158013401. Local number, 3-4101-03.

LOCATION.--Lat 21°41′25″, long 158°01′34″, Hydrologic Unit 20060000, 1,500 ft northeast of University of Hawaii agriculture experiment station in Waialee, and 1.9 mi northeast of Sunset Beach. Owner: State of Hawaii.

AQUIFER.--Koolau Basalt, Pleistocene to Pliocene age.

WELL CHARACTERISTICS.--Drilled artesian well, depth 61 ft, casing diameter 8 in., cased to 36 ft.

DATUM.--Elevation of land-surface datum is 22 ft. Measuring point is top of 4-in. pipe, 21.89 ft above mean sea level.

REMARKS.--Water-quality records for 1929-74 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, February 1929 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.60 ft above mean sea level, November 14, 1932; lowest measured, 10.97 ft above mean sea level, July 1, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 23	14.29	MAR 10	14.04	JUN 17	13.59	AUG 18	13.39	SEP 30	13.46

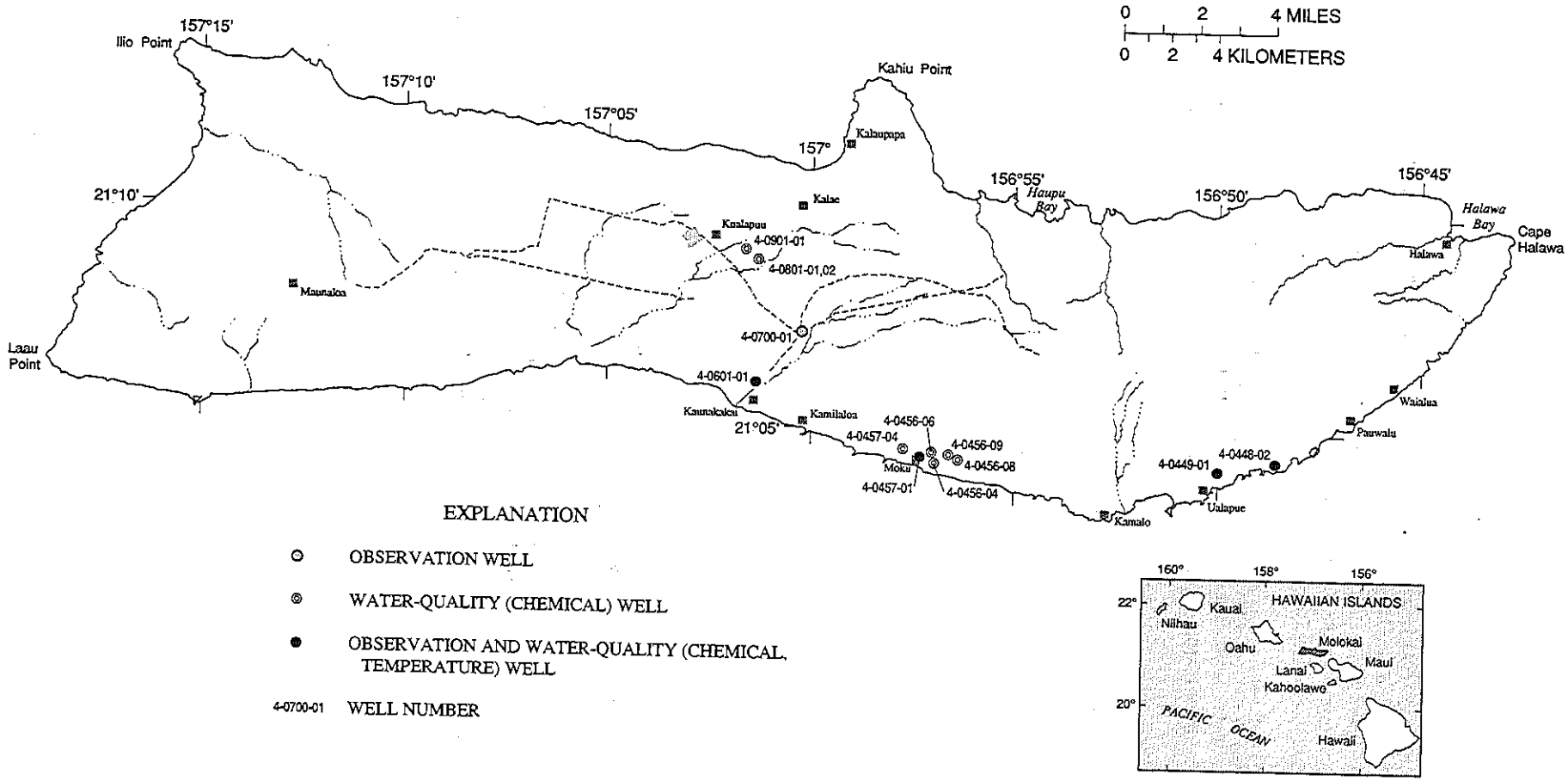


Figure 18. Locations of observation wells and ground-water quality sampling wells on Molokai.

210425156483001. Local number, 4-0448-02.

LOCATION.--Lat 21°04′25″, long 156°48′30″, Hydrologic Unit 20050000, 100 ft north of Highway 45, and 0.8 mi west of Pukoo. Owner: P. Friel.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, size 4 ft x 6 ft, depth 21 ft.

DATUM.--Elevation of land-surface datum is 19 ft. Measuring point is top of 2 in. x 2 in. steel plate bolted to top of concrete wall of well, 21.23 ft above mean sea level.

PERIOD OF RECORD.--
Water level: water-level recorder, August 1970 to January 1973. Occasional measurements, February 1973 to current year.
Water quality: occasional measurements, 1970-73, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.11 ft above mean sea level, November 26, 1970; lowest measured, 3.67 ft above mean sea level, February 8, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	4.36	DEC 11	4.61	FEB 5	4.12	APR 22	4.08	JUN 15	3.91	AUG 10	4.05

210402156495801. Local number, 4-0449-01.

LOCATION.--Lat 21°04′02″, long 156°49′58″, Hydrologic Unit 20050000, 1,800 ft north of Ualapue Fishpond, and 0.5 mi northeast of Kilohana School. Owner: County of Maui.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, size 4 ft x 6 ft, depth 42 ft, lined with concrete to 42 ft; two infiltration tunnels, total length 214 ft.

DATUM.--Elevation of land-surface datum is 42 ft. Measuring point is top of steel plate, 42.42 ft above mean sea level.

REMARKS.--Water from this well is used for public supply; water level affected by pumping.

PERIOD OF RECORD.--
Water level: occasional measurements, 1938-39, 1941-63, November 1972 to current year.
Water quality: occasional measurements, 1948, 1952-56, 1970-91, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.05 ft above mean sea level, January 19, 1950; lowest measured, 2.09 ft above mean sea level, September 16, 1975.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	3.30	DEC 11	3.52	FEB 5	3.19	APR 22	3.19	JUN 15	2.87	AUG 10	3.12

210419156570501. Local number, 4-0457-01.

LOCATION.--Lat 21°04′19″, long 156°57′05″, Hydrologic Unit 20050000, 0.5 mi northwest of Kakahaia Fishpond, and 0.5 mi northeast of Moku. Owner: County of Maui.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, size 4 ft x 4 ft, depth 38 ft, lined with concrete to 38 ft; two infiltration tunnels, total length 229 ft.

DATUM.--Elevation of land-surface datum is 38 ft. Measuring point is top of steel plate, 37.36 ft, above mean sea level.

REMARKS.--Water from this well is used for public supply. Water level measured after pump has been turned off for 30 minutes.

PERIOD OF RECORD.--
Water level: occasional measurements, June 1947 to November 1960, January 1962 to February 1963, November 1972 to current year.
Water quality: occasional measurements, 1948, 1954-56, 1960, 1962, 1971, 1973-91, 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.78 ft above mean sea level, February 5, 1991; lowest measured, 1.47 ft above mean sea level, June 24, 1955.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	2.01	DEC 11	2.00	FEB 5	2.08	APR 22	1.86	JUN 15	1.73	AUG 10	1.95

210605157012001. Local number, 4-0601-01.

LOCATION.--Lat 21°06′01″, long 157°01′11″, Hydrologic Unit 20050000, 0.6 mi north of Kaunakakai School, and 0.9 mi east of Kalanianaole Colony. Owner: Molokai Ranch.

AQUIFER.--East Molokai Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 59 ft, 12-in. casing diameter, cased to 20 ft.

DATUM.--Elevation of land-surface datum is 51 ft. Measuring point is top of 15-in. surface casing, 51.95 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, May 1954 to current year.
Water quality: occasional measurements, 1954 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.30 ft above mean sea level, January 20, 1969; lowest measured, 1.60 ft above mean sea level, December 5, 1964.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 9	2.77	DEC 11	2.75	FEB 5	2.57	APR 22	2.59	JUN 15	2.45	AUG 10	2.60

210711157000501. Local number, 4-0700-01.

LOCATION.--Lat 21°07′11″, long 157°00′05″, Hydrologic Unit 20050000, 2.3 mi northeast of Kakahaia Fishpond, and 0.5 mi northeast of Kaunakakai, and 2.4 mi north of Kamiloloa. Owner: Kaluakoi Corporation.

AQUIFER.--East Molokai Volcanics.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,080 ft, 20-in. casing diameter, cased to 956 ft, perforated from 956 to 1,056 ft.

DATUM.--Measuring point is top of casing, 982.94 ft above mean sea level (levels of May 19, 1997).

REMARKS.--Water-quality records for 1973-75 and water-level records for 1976-82 are available in files of the U.S. Geological Survey district office. Prior to October 1995, water-level data was published as "water level, in feet below land surface datum." New measuring point added in May 1997.

PERIOD OF RECORD.--Occasional measurements, July 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.70 ft above mean sea level, April 27, 1988; lowest measured, 5.72 ft above mean sea level, September 10, 1986.

REVISION.--The datum of the measuring point was revised to 981.95 ft above mean sea level, superseding figures published in the reports for 1984 to 1996. The extremes for the period of record also was revised to reference feet above mean sea level.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	a--	DEC 9	a--	FEB 5	a--	APR 23	a--	JUN 18	5.78	AUG 12	5.80

a Well locked, unable to access

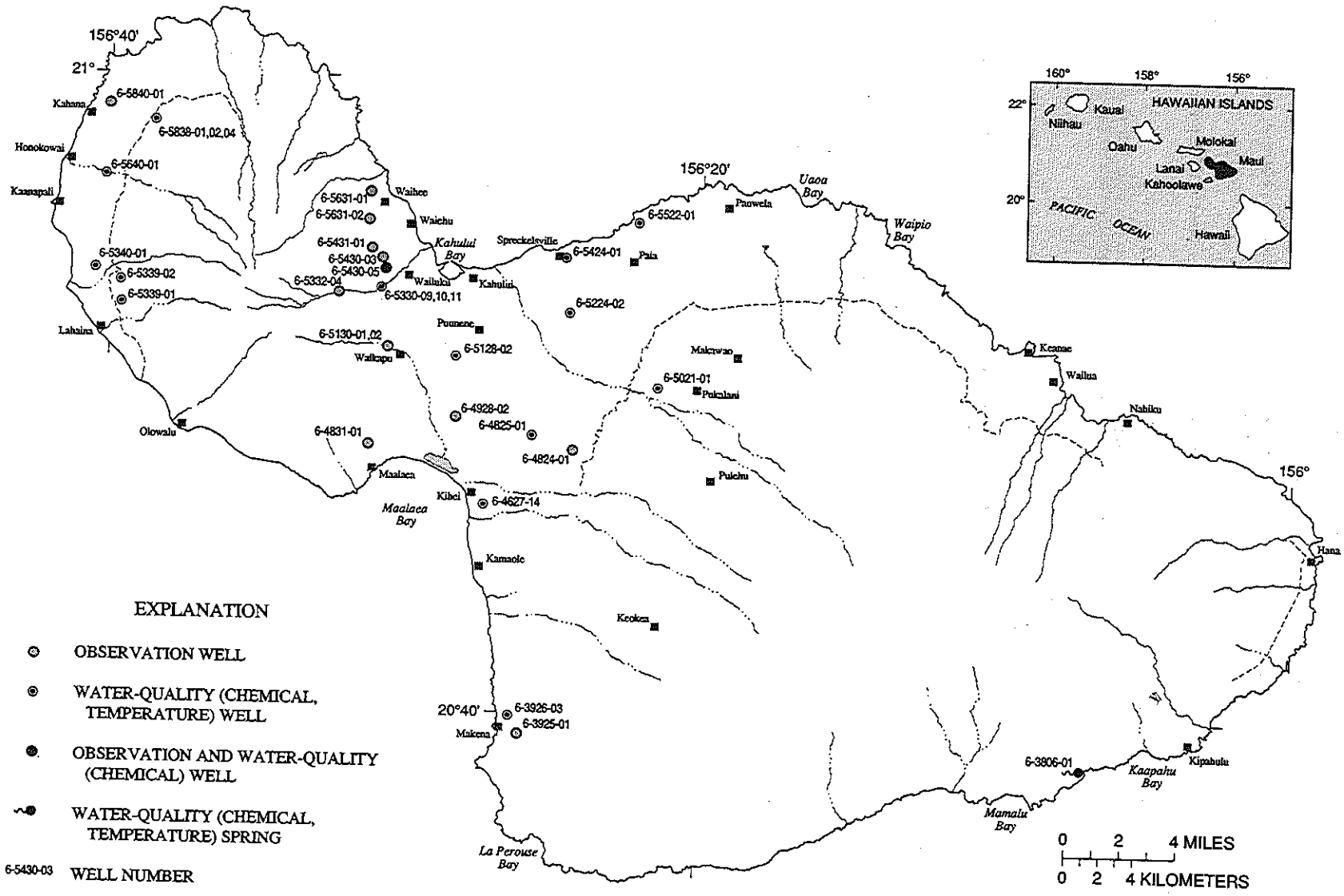


Figure 19. Locations of observation wells and ground-water quality sampling wells on Maui.

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI

203912156255901. Local number, 6-3925-01.

LOCATION.--Lat 20°39′12″, long 156°25′59″, Hydrologic Unit 20020000, 0.8 mi east of Keawalai Church, and 0.9 mi southeast of intersection of Kihei and Makena roads. Owner: State of Hawaii.

AQUIFER.--Hana Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 382 ft, 8-in. casing diameter, cased to 343 ft, perforated from 343 to 363 ft.

DATUM.--Elevation of land-surface datum is 351 ft. Measuring point is top of 2-in. pipe attached to the casing cover, 352.29 ft above mean sea level.

REMARKS.--Water-quality records for 1964 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, August 1964, June 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.47 ft above mean sea level, August 24, 1964; lowest measured, 0.41 ft below mean sea level, May 4, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	0.15	FEB 13	-0.08	APR 28	-0.35	AUG 17	-0.09

204827156242201. Local number, 6-4824-01.

LOCATION.--Lat 20°48′27″, long 156°24′22″, Hydrologic Unit 20020000, on Waiakoa Road 1,000 ft south of intersection with Kalaloa Gulch, and 4 mi east of Kihei. Owner: State of Hawaii.

AQUIFER.--Kula Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 646 ft, 12-in. casing diameter, cased to 598 ft, screened from 598 to 638 ft.

DATUM.--Elevation of land-surface datum is 593 ft. Measuring point is top of 3-in. pipe attached to the steel casing cover, 594.74 ft above mean sea level.

REMARKS.--Water-quality records for 1971, 1973 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, March 1971, May 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.20 ft above mean sea level, January 17, 1974; lowest measured, 3.65 ft above mean sea level, January 27, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	4.19	JAN 16	4.29	FEB 24	4.30	MAY 8	4.09	JUN 24	4.10	SEP 4	4.30

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 north of Maalaea, and 0.9 mi southwest of intersection of Honoapiilani Highway and Kihei Road. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 219 ft, 8-in. casing diameter, cased to 187 ft.

DATUM.--Elevation of land-surface datum is 166 ft. Measuring point is top of 8-in. casing, 166.60 ft above mean sea level.

REMARKS.--Water-quality records for 1965-67 are available in files of district office.

PERIOD OF RECORD.--Water-level recorder, January to July 1974. Occasional measurements, September 1972 to December 1973, August 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.76 ft above mean sea level, November 30, 1983; lowest measured, 4.74 ft above mean sea level, March 16, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	5.13	DEC 17	5.19	FEB 12	5.03	APR 28	4.95	JUN 9	4.88	AUG 18	5.02

204909156281401. Local number, 6-4928-02.

LOCATION.--Lat 20°49′09″, long 156°28′14″, Hydrologic Unit 20020000, at Puunene Airport on Mokulele Highway 2.3 mi north of intersection with Kihei Road, Kihei. Owner: Hawaiian Commercial and Sugar Co.

AQUIFER.--Honomanu Basalt, Pliocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, 6 ft x 9 ft vertical shaft, depth 52 ft.

DATUM.--Elevation of land-surface datum is 50 ft. Measuring point is top of angle iron at well, 50.08 ft above mean sea level.

REMARKS.--Water-quality records for 1973 are available in files of district office.

PERIOD OF RECORD.--Water-level recorder, March 1972 to September 1984. Occasional measurements, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.09 ft above mean sea level, January 12, 1980; lowest measured, 3.05 ft above mean sea level, March 5, 6, 1977.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	3.79	DEC 17	3.93	FEB 12	3.59	APR 28	3.71	JUN 9	3.65	AUG 17	3.65

205140156304501. Local number, 6-5130-01.

LOCATION.--Lat 20°51′40″, long 156°30′45″, Hydrologic Unit 20020000, 0.5 mi northwest of Waikapu, and 1.0 mi southeast of Wailuku Heights. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water table well, depth 757 ft, 8-in. casing diameter, cased to 569 ft, perforated from 569 to 609 ft.

DATUM.--Elevation of land-surface datum is 551 ft. Measuring point is top of 6-in. pipe coupling, 551.33 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, June 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.90 ft above mean sea level, October 13, 1982; lowest measured, 11.36 ft above mean sea level, January 27, 1976.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	13.20	JAN 5	13.05	APR 1	11.86	JUL 2	11.54	SEP 29	12.23
NOV 25	11.90	FEB 23	12.49	MAY 26	12.13	AUG 24	12.00		

205154156303801. Local number, 6-5130-02.

LOCATION.--Lat 20°51′54″, long 156°30′38″, Hydrologic Unit 20020000, 0.6 mi northwest of Waikapu, and 1.0 mi southeast of Wailuku Heights. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,020 ft, 20-in. casing diameter, cased to 520 ft, perforated from 520 to 570 ft.

DATUM.--Elevation of land-surface datum is 518 ft. Measuring point is top of casing, 519.33 ft above mean sea level.

REMARKS.--Water-quality records for 1974 are available in files of district office.

PERIOD OF RECORD.--Water-level recorder, August 1983 to September 1984. Occasional measurements, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.03 ft above mean sea level, July 15, 1987; lowest measured, 11.88 ft above mean sea level, October 1, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	12.52	JAN 5	12.51	APR 1	12.18	JUL 2	12.12	SEP 29	12.11
NOV 25	12.30	FEB 23	12.36	MAY 26	12.20	AUG 24	12.11		

205312156321402. Local number, 6-5332-04.

LOCATION.--Lat 20°53′12″, long 156°32′14″, Hydrologic Unit 20020000, 1.9 mi southwest of Puuohala Village, 1.9 mi west of Wailuku Elementary School, and 10 ft from well 6-5332-04. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 254 ft.

DATUM.--Elevation of land-surface datum is 713 ft. Measuring point is top of 2-in. PVC pipe.

PERIOD OF RECORD.--Occasional measurements, October 1991 to current year. Prior to October 1995, unpublished records are in the files of the U.S. Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.41 ft below land-surface datum, July 1, 1996; lowest measured, 80.60 ft below land-surface datum, February 12, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	79.77	JAN 5	46.05	APR 1	75.92	JUL 2	69.08	SEP 29	69.25
NOV 25	47.18	FEB 23	67.47	MAY 26	51.99	AUG 24	77.90		

205419156304401. Local number, 6-5430-03.

LOCATION.--Lat 20°54′19″, long 156°30′44″, Hydrologic Unit 20020000, 2,000 ft north of Puuohala Village, and 0.5 mi northwest of Wailuku Sugar Mill reservoir. Owner: Wailuku Sugar Co.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 580 ft, 1.5-in. PVC casing, cased to 400 ft, perforated from 400 to 580 ft.

DATUM.--Elevation of land-surface datum is 415 ft. Measuring point is top of 1-in. galvanized pipe, 416.75 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, August 1982 to February 1984. Occasional measurements, March 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.09 ft above mean sea level, December 31, 1982; lowest measured, 9.65 ft above mean sea level, October 1, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	11.34	JAN 5	13.05	APR 1	12.40	JUL 2	12.14	SEP 29	11.79
NOV 25	12.53	FEB 24	12.64	MAY 26	11.99	AUG 24	11.64		

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI--Continued

205405156305401. Local number, 6-5430-05.

LOCATION.--Lat 20°54′59″, long 156°30′54″, Hydrologic Unit 20020000, 1.0 mi southwest of intersection of Malaihi Road and Highway 33, and 1.2 mi south of Waihee. Owner: State of Hawaii.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,400 ft, 10-in. casing diameter, cased to 400 ft.

DATUM.--Elevation of land-surface datum is 380 ft. Measuring point is top of 10-in. casing, 380.84 ft above mean sea level.

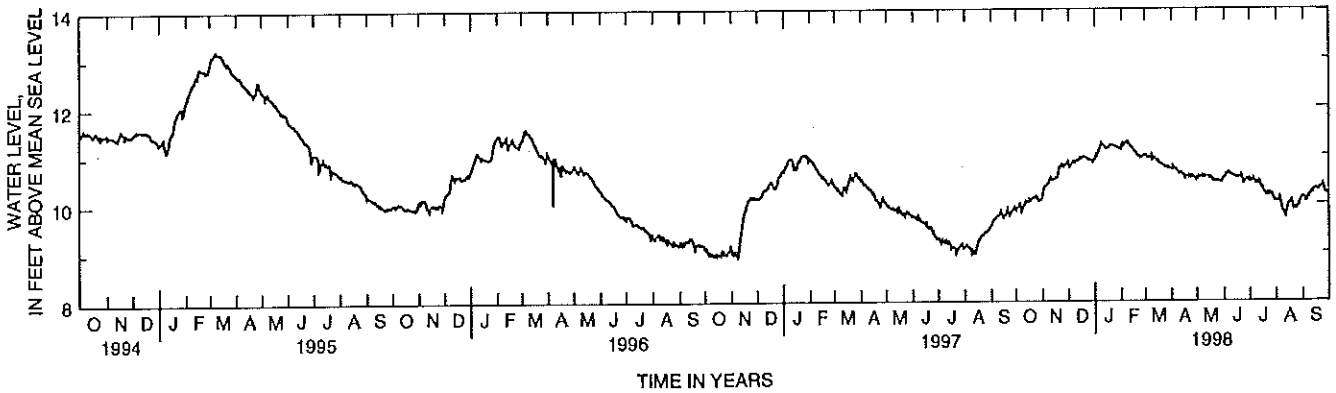
PERIOD OF RECORD.--
Water level: occasional measurements, August 1983 to May 1986. Water-level recorder, June 1986 to current year.
Water quality: 1982, 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.20 ft above mean sea level, December 14, 1989; lowest measured, e8.77 ft above mean sea level, November 5, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.86	10.21	e10.79	e10.93	11.20	10.98	10.71	10.52	10.53	10.50	10.05	10.13
2	9.89	10.31	e10.76	11.00	11.23	10.99	10.75	10.51	10.54	10.46	10.04	10.12
3	9.93	10.35	10.79	10.98	11.18	10.95	10.71	10.55	10.60	10.45	10.06	10.10
4	9.97	10.36	10.80	11.04	11.19	10.96	10.73	10.53	10.60	10.46	10.05	10.05
5	9.99	10.36	10.85	11.06	11.24	10.94	10.71	10.54	10.62	10.50	10.11	10.05
6	9.91	10.39	10.86	11.12	11.25	10.94	10.71	10.56	10.63	10.46	10.06	10.13
7	9.84	10.40	10.87	11.17	11.26	10.94	10.68	10.57	10.61	10.46	9.94	10.16
8	9.88	10.44	10.84	11.23	11.23	10.98	10.66	10.54	10.60	10.41	9.87	10.14
9	9.94	10.51	e10.86	11.21	11.25	10.90	10.64	10.56	10.58	10.41	9.84	10.20
10	9.97	10.53	e10.87	11.20	11.21	10.92	10.61	10.54	10.58	10.43	9.81	10.20
11	10.01	10.51	10.89	11.19	11.19	10.94	10.63	10.56	10.57	10.41	9.76	10.23
12	10.05	10.49	10.88	11.17	11.18	10.92	10.63	10.56	10.55	10.46	9.74	10.22
13	10.03	10.50	10.89	11.12	11.17	10.89	10.62	10.56	10.55	10.45	9.83	10.28
14	10.03	10.50	10.94	11.14	11.13	10.87	10.59	10.55	10.55	10.36	9.92	10.29
15	10.03	10.51	10.93	11.14	11.11	10.87	10.59	10.52	10.54	10.32	9.99	10.30
16	10.09	10.53	10.92	11.16	11.08	10.88	10.56	10.53	10.53	10.33	10.00	10.31
17	10.05	10.52	10.95	11.15	11.05	10.83	10.52	10.54	10.54	10.26	10.02	10.30
18	10.06	10.54	10.96	11.20	11.05	10.83	10.55	10.51	10.53	10.23	10.04	10.28
19	10.10	10.65	10.95	11.20	11.01	10.82	10.56	10.47	10.54	10.21	10.06	10.29
20	10.12	10.75	10.95	11.19	10.99	10.80	10.56	10.49	10.54	10.18	10.00	10.32
21	10.12	10.76	10.93	11.20	10.97	10.80	10.53	10.46	10.58	10.20	9.89	10.33
22	10.11	10.76	10.93	11.19	10.98	10.78	10.57	10.47	10.55	10.21	9.91	10.34
23	10.12	10.80	10.92	11.18	10.95	10.77	10.55	10.46	10.42	10.16	9.89	10.36
24	10.14	10.78	10.90	11.17	10.96	10.74	10.53	10.47	10.41	10.16	9.92	10.39
25	10.10	10.76	10.91	11.17	10.95	10.76	10.57	10.45	10.45	10.21	9.90	10.34
26	10.11	10.80	10.90	11.16	10.97	10.76	10.56	10.46	10.46	10.20	9.94	10.23
27	10.06	10.79	10.90	11.15	10.98	10.74	10.54	10.46	10.50	10.19	9.94	10.24
28	10.06	10.80	10.87	11.16	10.99	10.72	10.52	10.44	10.50	10.15	10.01	10.21
29	10.07	e10.84	10.85	11.14	---	10.74	10.52	10.44	10.50	10.08	10.06	10.20
30	10.08	e10.86	10.86	11.13	---	10.71	10.49	10.47	10.46	10.06	10.10	10.22
31	10.13	---	e10.90	11.12	---	10.71	---	10.51	---	10.07	10.11	---
MEAN	10.03	10.58	10.88	11.14	11.11	10.85	10.60	10.51	10.54	10.30	9.96	10.23
MAX	10.14	10.86	10.96	11.23	11.26	10.99	10.75	10.57	10.63	10.50	10.11	10.39
MIN	9.84	10.21	10.76	10.93	10.95	10.71	10.49	10.44	10.41	10.06	9.74	10.05

e Estimated



GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI--Continued

205437156310501. Local number, 6-5431-01.

LOCATION.--Lat 20°54'37", long 156°31'05", Hydrologic Unit 20020000, 0.5 mi southwest of Waiehu Village, and 1.4 mi southwest of intersection of Malaihi Road and Kahekili Highway. Owner: Wailuku Sugar Co.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 555 ft, 1.5-in. PVC casing, cased to 515 ft, perforated from 515 to 555 ft.

DATUM.--Elevation of land-surface datum is 493 ft. Measuring point is top of 1.5-in. PVC casing, 492.51 ft above mean sea level.

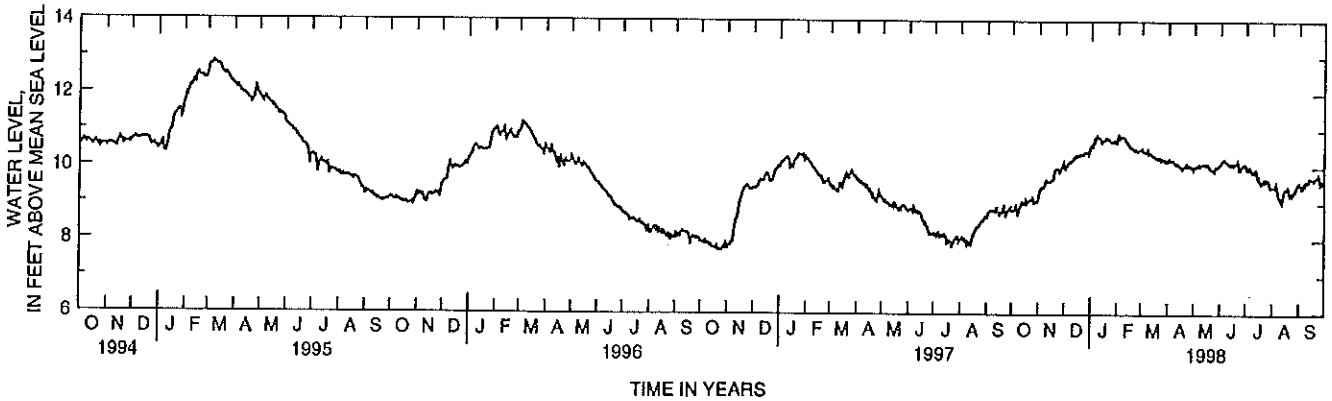
PERIOD OF RECORD.--Water-level recorder, August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.52 ft above mean sea level, January 2, 1983; lowest measured, 7.58 ft above mean sea level, October 25, 31, 1996.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.83	9.27	10.01	10.61	10.84	10.49	10.21	10.02	10.12	10.06	9.47	9.58
2	8.83	9.41	9.99	10.62	10.88	10.52	10.24	10.02	10.13	9.97	9.47	9.56
3	8.84	9.42	10.06	10.58	10.80	10.47	10.20	10.05	10.20	9.95	9.49	9.50
4	8.90	9.46	10.06	10.65	10.80	10.47	10.21	10.03	10.20	9.98	9.47	9.45
5	8.94	9.45	10.13	10.79	10.86	10.44	10.21	10.04	10.23	10.02	9.56	9.46
6	8.81	9.46	10.14	10.74	10.86	10.44	10.22	10.07	10.22	9.95	9.47	9.55
7	8.70	9.47	10.17	10.80	10.86	10.43	10.19	10.09	10.18	9.96	9.30	9.58
8	8.81	9.56	10.15	10.87	10.83	10.48	10.16	10.06	10.16	9.88	9.23	9.54
9	8.90	9.66	10.18	10.84	10.83	10.39	10.13	10.09	10.15	9.89	9.19	9.63
10	8.95	9.66	10.21	10.82	10.76	10.41	10.10	10.09	10.13	9.92	9.15	9.61
11	9.01	9.65	10.26	10.82	10.75	10.42	10.12	10.10	10.12	9.89	9.10	9.63
12	9.06	9.61	10.25	10.76	10.70	10.39	10.12	10.10	10.09	9.95	9.06	9.62
13	9.01	9.61	10.28	10.69	10.68	10.35	10.08	10.11	10.11	9.94	9.19	9.71
14	9.02	9.62	10.33	10.73	10.64	10.33	10.05	10.10	10.12	9.78	9.31	9.70
15	9.01	9.63	10.31	10.74	10.60	10.34	10.04	10.08	10.10	9.72	9.39	9.71
16	9.10	9.66	10.32	10.78	10.58	10.34	10.02	10.09	10.08	9.75	9.41	9.71
17	9.03	9.67	10.35	10.76	10.56	10.28	9.99	10.10	10.12	9.64	9.43	9.70
18	9.06	9.69	10.36	10.81	10.56	10.29	10.01	10.06	10.11	9.61	9.43	9.67
19	9.09	9.87	10.34	10.82	10.52	10.28	10.04	10.02	10.12	9.58	9.46	9.69
20	9.11	9.95	10.38	10.78	10.51	10.26	10.05	10.02	10.12	9.60	9.36	9.72
21	9.10	9.97	10.38	10.79	10.49	10.27	10.04	9.97	10.18	9.66	9.26	9.73
22	9.12	9.96	10.39	10.78	10.51	10.25	10.10	9.97	10.11	9.68	9.28	9.74
23	9.12	9.98	10.37	10.75	e10.48	10.27	10.06	9.95	9.96	9.60	9.25	9.74
24	9.16	9.96	10.38	10.73	e10.48	10.22	10.04	9.97	9.96	9.61	9.31	9.79
25	9.08	9.90	10.42	10.73	10.47	10.25	10.07	9.93	10.02	9.68	9.29	9.72
26	9.12	9.96	10.41	10.71	10.49	10.23	10.06	e10.03	10.03	9.66	9.35	9.57
27	9.05	9.96	10.41	10.71	10.50	10.23	10.04	e10.03	10.08	9.65	9.35	9.61
28	9.07	10.01	10.43	10.75	10.51	10.19	10.01	e10.02	10.08	9.56	9.44	9.58
29	9.08	10.08	10.38	10.71	---	10.23	10.02	e10.05	10.09	9.48	9.49	9.57
30	9.08	10.14	10.45	10.71	---	10.18	9.97	10.05	10.03	9.47	9.55	9.68
31	9.16	---	10.58	10.70	---	10.17	---	10.10	---	9.48	9.54	---
MEAN	9.00	9.72	10.29	10.74	10.66	10.33	10.09	10.05	10.11	9.76	9.36	9.63
MAX	9.16	10.14	10.58	10.87	10.88	10.52	10.24	10.11	10.23	10.06	9.56	9.79
MIN	8.70	9.27	9.99	10.58	10.47	10.17	9.97	9.93	9.96	9.47	9.06	9.45

e Estimated



205617156311101. Local number, 6-5631-01.

LOCATION.--Lat 20°56′17″, long 156°31′11″, Hydrologic Unit 20020000, 2,000 ft southwest of Waihee Farm, and 1.3 mi northwest of Waiehu Golf Course. Owner: Wailuku Sugar Co.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 300 ft, 1.5-in. PVC casing, cased to 260 ft, perforated from 260 to 300 ft.

DATUM.--Elevation of land-surface datum is 248 ft. Measuring point is top of 1.5-in. PVC pipe, 248.05 ft above mean sea level.

PERIOD OF RECORD.--Water-level recorder, August 1982 to September 1984. Occasional measurements, October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.83 ft above mean sea level, December 6, 1982; lowest measured, 12.24 ft above mean sea level, August 6, 1997.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	12.55	JAN 5	12.98	APR 1	12.72	JUL 2	12.60	SEP 29	12.65
NOV 25	12.85	FEB 23	12.88	MAY 26	12.53	AUG 24	12.49		

GROUND-WATER LEVELS

HAWAII, ISLAND OF MAUI--Continued

205651156313201. Local number, 6-5631-02.

LOCATION.--Lat 20°56′51″, long 156°31′32″, Hydrologic Unit 20020000, 0.9 mi northwest of Waihee School, and 0.9 mi upstream from mouth of Waihee river. Owner: Hawaiian Investments.

AQUIFER.--Wailuku Basalt, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 387 ft, 16-in. casing diameter, cased to 290 ft, perforated from 290 to 310 ft.

DATUM.--Elevation of land-surface datum is 281 ft. Measuring point is top of 16-in. casing, 285.23 ft above mean sea level (revised November 1997).

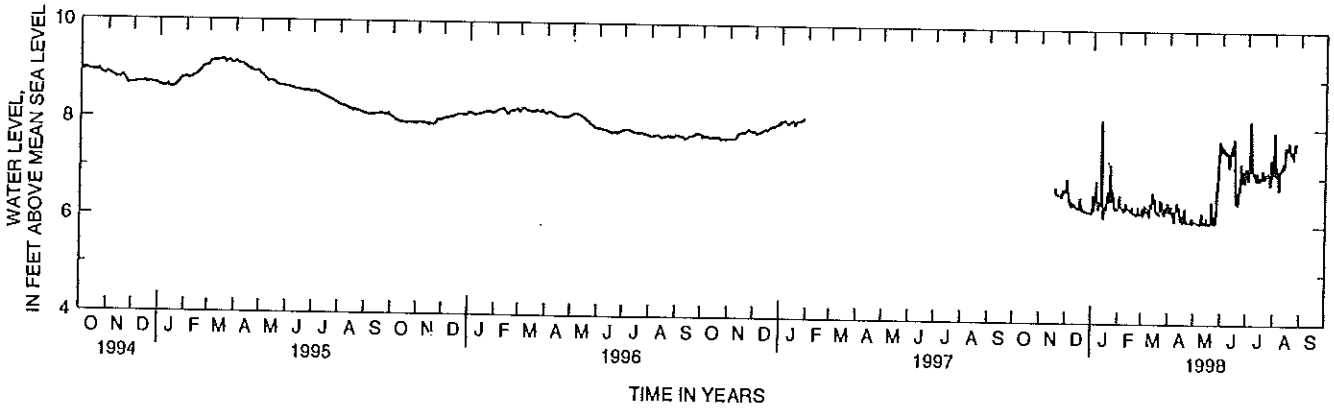
PERIOD OF RECORD.--Water-level recorder, April 1988 to January 29, 1997. Recorder removed due to installation of pump in the well. Water-level recorder reinstalled November 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.05 ft above mean sea level, October 22, November 2, 10, 11, 1989; lowest water level measured, 7.59 ft above mean sea level, November 8, 9, 1996. Lowest water level measured after pumping resumed, 5.50 ft above mean sea level, June 4, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	6.70	6.28	6.51	6.38	6.37	6.10	7.54	7.04	7.11	---
2	---	---	6.95	6.62	6.62	6.25	6.28	6.10	7.65	7.20	7.94	---
3	---	---	6.72	6.32	6.40	6.28	6.36	6.09	7.63	6.96	7.05	---
4	---	---	6.65	6.56	6.39	6.37	6.42	6.08	7.55	7.05	7.15	---
5	---	---	6.48	6.61	6.36	6.33	6.27	6.07	7.57	8.17	7.19	---
6	---	---	6.43	6.91	6.36	6.39	6.28	6.07	7.52	7.82	7.09	---
7	---	---	6.41	6.46	6.33	6.29	6.12	6.06	7.54	7.19	6.77	---
8	---	---	6.49	6.34	6.37	6.26	6.11	6.06	7.54	7.13	7.13	---
9	---	---	6.41	6.50	6.47	6.24	6.32	6.18	7.48	7.05	7.15	---
10	---	---	6.41	6.43	6.36	6.44	6.43	6.27	7.23	7.12	7.23	---
11	---	---	6.43	6.43	6.38	6.45	6.48	6.07	7.29	7.03	7.18	---
12	---	---	e6.40	8.16	6.36	6.41	6.33	6.08	7.58	6.95	7.31	---
13	---	---	6.38	e6.50	6.35	6.68	6.39	6.09	7.49	7.12	7.21	---
14	---	---	6.36	e6.16	6.34	6.54	6.16	6.07	7.69	7.04	7.28	---
15	---	---	e6.36	6.37	6.31	6.56	6.11	6.18	7.57	6.95	7.65	---
16	---	---	6.36	6.37	6.30	6.55	6.23	6.07	7.80	7.04	7.59	---
17	---	---	6.41	6.36	6.39	6.31	6.09	6.07	7.22	6.99	7.62	---
18	---	6.67	6.56	6.62	6.28	6.29	6.09	6.06	6.51	6.99	7.60	---
19	---	6.77	6.33	6.70	6.27	6.27	6.29	6.07	6.51	7.17	7.71	---
20	---	6.64	6.37	6.53	6.26	6.27	6.36	6.07	6.48	7.06	7.70	---
21	---	6.63	6.31	6.49	6.24	6.26	6.10	6.51	6.50	6.99	7.53	---
22	---	6.63	6.31	7.25	6.24	6.53	6.09	6.20	6.85	7.07	7.52	---
23	---	6.63	6.30	6.49	6.24	6.45	6.08	6.08	6.73	7.04	7.50	---
24	---	6.63	6.30	6.72	6.39	6.50	6.08	6.07	7.30	7.06	7.47	---
25	---	6.64	6.29	6.68	6.25	6.26	6.08	6.23	7.08	7.10	7.71	---
26	---	e6.57	6.28	6.59	6.24	6.30	6.09	6.07	6.92	7.04	7.57	---
27	---	6.66	6.28	6.36	6.25	6.23	6.09	6.75	7.11	7.03	7.73	---
28	---	6.74	6.28	6.35	6.28	6.40	6.17	6.76	7.15	6.86	---	---
29	---	6.68	6.28	6.36	---	6.31	6.09	7.28	6.91	7.39	---	---
30	---	6.69	6.27	6.36	---	6.31	6.10	7.75	7.21	7.02	---	6.70
31	---	---	6.27	6.36	---	6.48	---	7.53	---	7.10	---	---
MEAN	---	---	6.41	6.56	6.34	6.37	6.22	6.29	7.24	7.12	---	---
MAX	---	---	6.95	8.16	6.62	6.68	6.48	7.75	7.80	8.17	---	---
MIN	---	---	6.27	6.16	6.24	6.23	6.08	6.06	6.48	6.86	---	---

e Estimated



205856156400101. Local number, 6-5840-01.

LOCATION.--Lat 20°58′56″, long 156°40′01″, Hydrologic Unit 20020000, on pineapple plantation road 0.9 mi east of Kahana, and 1.5 mi southwest of Honokahua. Owner: State of Hawaii.

AQUIFER.--Honolua Volcanics, Pliocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 274 ft, 8-in. casing diameter, cased to 264 ft, perforated from 264 to 274 ft. Hole was drilled to depth of 284 ft, but plugged back 10 ft with cement.

DATUM.--Elevation of land-surface datum is 257 ft. Measuring point is top of 9-in. casing, 257.45 ft above mean sea level. Levels of August 11, 1993.

REMARKS.--Water-quality records for 1964 and 1980 are available in files of district office.

PERIOD OF RECORD.--Occasional measurements, March 1972 to July 1975. Water-level recorder, August 1975 to June 25, 1993. Occasional measurements, July 1993 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.68 ft above mean sea level, September 20, 1981; lowest, 2.40 ft above mean sea level May 4, 5, 1985.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	3.20	JAN 20	3.07	FEB 25	3.08	MAY 5	2.80	JUN 11	2.50	AUG 20	2.79

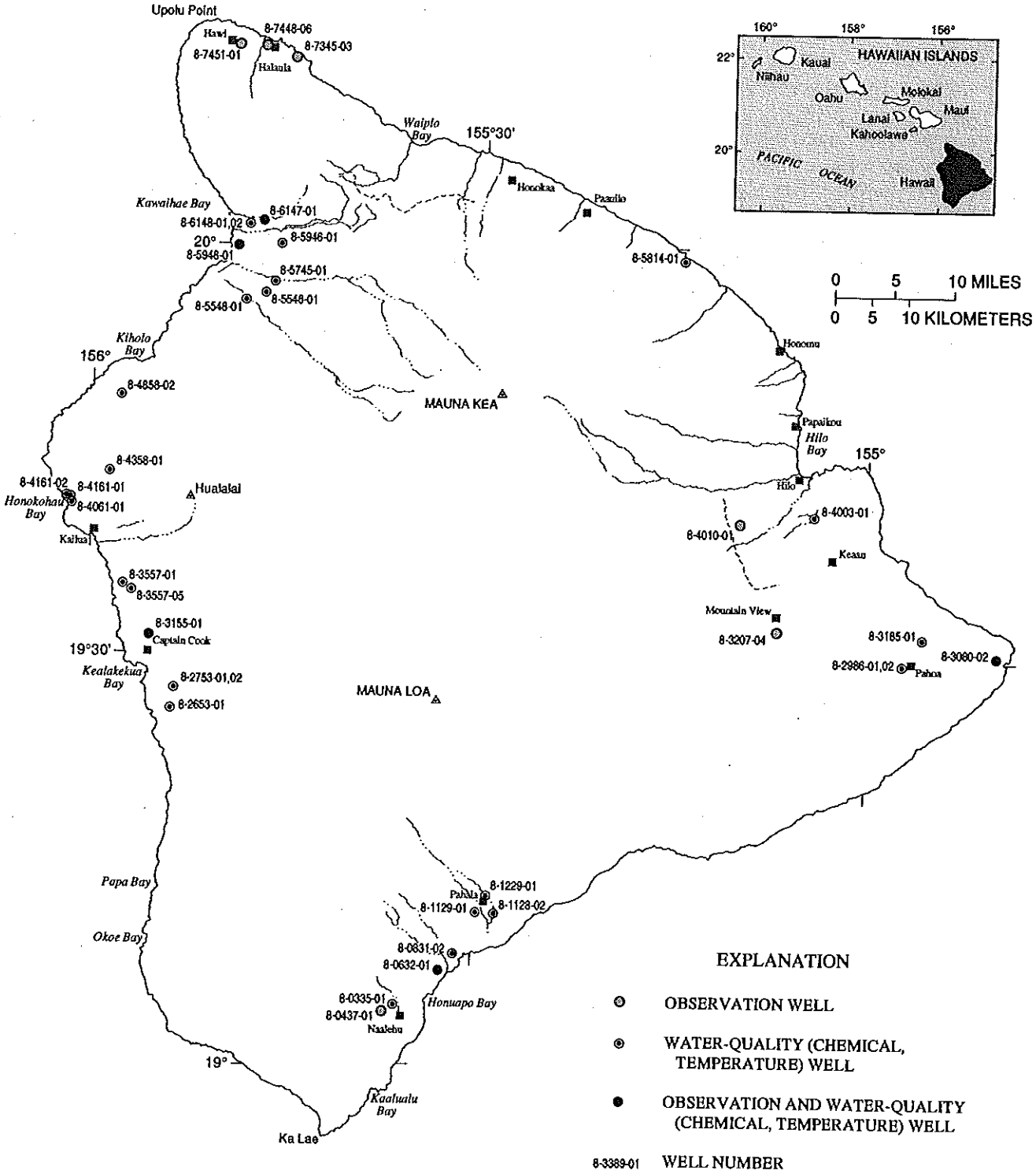


Figure 20. Locations of observation wells and ground-water quality sampling wells on Hawaii.

190423155371501. Local number, 8-0437-01.

LOCATION.--Lat 19°04′23″, long 155°37′15″, Hydrologic Unit 20010000, 2,500 ft northwest of Waiohinu. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 972 ft, 4-in. casing diameter, cased to 240 ft, screened from 240 to 972 ft.

DATUM.--Elevation of land-surface datum is 1,299 ft. Measuring point is top of 4-in. casing, 1,299.83 ft above mean sea level.

PERIOD OF RECORD.--
Water level: occasional measurements, September 1995, September 1997 to current year.
Water quality: October 1994.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1,014.57 ft above mean sea level, September 23, 1997; lowest measured, 1,013.05 ft above mean sea level, September 15, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 4	1014.09	MAY 26	1013.60	SEP 15	1013.05
MAR 19	1013.90	JUL 15	1013.35		

190602155325901. Local number, 8-0632-01.

LOCATION.--Lat 19°06′02″, long 155°32′59″, Hydrologic Unit 20010000, 0.9 mi north of Whittington Park, and 3.3 mi northeast of Naalehu. Owner: Kau Agribusiness (formerly Kau Sugar Company).

AQUIFER.--Ninole Basalt, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 140 ft, 14-in. casing diameter, cased to 105 ft, perforated from 105 to 125 ft.

DATUM.--Elevation of land-surface datum is 102 ft. Measuring point is 0.38 ft above 1-in. hole in pump base, 103.64 ft above mean sea level.

REMARKS.--Water-quality records for 1972 and 1973 are available in files of the district office.

PERIOD OF RECORD.--
Water level: occasional measurements, April 1972 to current year.
Water quality: occasional measurements, 1994-97.

REVISED RECORDS.--WDR HI-91-1: 1984-90 (The units of the minimum water level for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.39 ft above mean sea level, October 19, 1978; lowest measured, 0.15 ft above mean sea level, May 26, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	1.41	MAR 19	1.12	JUL 15	1.21
FEB 4	1.78	MAY 26	0.15	SEP 15	1.83

193017154502101. Local number, 8-3080-02.

LOCATION.--Lat 19°30′17″, long 154°50′21″, Hydrologic Unit 20010000, 0.5 mi south of intersection of Highway 132 and Highway 137 near Pahoa. Owner: County of Hawaii.

AQUIFER.--Puna Basalt, Holocene age.

WELL CHARACTERISTICS.--Dug basal water-table well, depth 46 ft, 66-in. casing diameter, with two horizontal infiltration tunnels 2 x 50 ft extending in opposite directions from 3 ft above bottom of well.

DATUM.--Elevation of land-surface datum is 39 ft. Measuring point is top of steel manhole cover at 1-in. hole, 39.50 ft above mean sea level.

REMARKS.--Water from this well is used for public supply and at times, water level is affected by pumping.

PERIOD OF RECORD.--
Water level: occasional measurements, March 1972 to current year.
Water quality: occasional measurements, 1972-81, 1983-97.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.99 ft above mean sea level, May 5, 1997; lowest measured, 1.18 ft above mean sea level, June 3, 1985.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	4.85	MAR 18	4.45	JUL 13	4.42
FEB 9	4.64	MAY 27	4.20	SEP 14	4.59

193117155550801. Local number, 8-3155-01.

LOCATION.--Lat 19°31′17″, long 155°55′08″, Hydrologic Unit 20010000, 0.3 mi east of Kealakekua Post Office and 0.6 mi north of Konawaena High School. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,510 ft, 4-in. casing diameter, cased to 1,500 ft perforated from 1,250 to 1,500 ft.

DATUM.--Elevation of land-surface datum is 1,745 ft. Measuring point is top of aluminum cap on 4-in. casing, 1,745.70 ft above mean sea level.

REMARKS.--Water level may be affected by pumping well 50 ft away.

PERIOD OF RECORD.--Water level: occasional measurements.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 469.06 ft above mean sea level, December 18, 1997; lowest measured, 468.17 ft above mean sea level, May 29, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 18	469.06	MAR 24	468.38	JUL 30	a--
FEB 6	468.55	MAY 29	468.17	SEP 16	a--

a Pump from nearby well was removed and well casing is covering this well hole

193251155072101. Local number, 8-3207-04.

LOCATION.--Lat 19°32′51″, long 155°07′21″, Hydrologic Unit 20010000, 1.4 mi southwest of Mountain View. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,143 ft, 4-in. casing and 8-in. casing diameter, from 0 to 75 ft, cased to 660 ft slotted from 660 to 1,120 ft, solid from 1,120 to 1,143 ft. Hole caved from 1,143 to 1,155 ft; hole grouted to 95 ft.

DATUM.--Elevation of land-surface datum is 1,687 ft. Measuring point is top of casing, 1,687.84 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, March 1995, December 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1,010.84 ft above mean sea level, March 27, 1995; lowest measured, 982.87 ft above mean sea level, May 26, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	992.09	MAR 19	988.16	JUL 14	988.48
FEB 9	990.58	MAY 26	982.87	SEP 15	990.02

194035155102201. Local number, 8-4010-01.

LOCATION.--Lat 19°40′35″, long 155°10′22″, Hydrologic Unit 20010000, 2 mi west of Kaumana at western end of Kaumana Estates subdivision. Owner: U.S. Geological Survey.

AQUIFER.--Kau Basalt, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled water-table well, depth 1,375 ft, 4-in. casing diameter, cased to 732 ft, screened from 732 to 1,375 ft.

DATUM.--Elevation of land-surface datum is 1,796 ft. Measuring point is top of 4-in. casing, 1,796.29 ft above mean sea level.

PERIOD OF RECORD.--Occasional measurements, February 1995, January 1998 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 969.58 ft above mean sea level, January 6, 1998; lowest measured, 964.13 ft above mean sea level, September 14, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 6	969.58	MAR 18	968.85	JUL 13	965.08
FEB 9	969.14	MAY 27	966.57	SEP 14	964.13

194945155534401. Local number, 8-4953-01.

LOCATION.--Lat 19°49′45″, long 155°53′44″, Hydrologic Unit 20010000, 2.7 mi inland from Kiholo Bay. Owner: State of Hawaii.

AQUIFER.--Hualalai Volcanics, Holocene and Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 971 ft, 12-in. casing diameter, cased to 926 ft, screened from 926 to 966 ft.

DATUM.--Elevation of land-surface datum is 931 ft. Measuring point is top of 7 1/4 in. (O.D.) casing, 932.48 ft above mean sea level.

REMARKS.--State exploratory well drilling program.

PERIOD OF RECORD.--
Water level: occasional measurements, June 1972 to current year.
Water quality: 1972.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.85 ft above mean sea level, June 6, 1972 (data from Hawaii State Department of Land and Natural Resources, Circular C63, 1973); lowest measured, 1.94 ft above mean sea level, May 29, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 6	2.58	MAR 24	2.25	JUL 30	2.34
FEB 5	2.45	MAY 29	1.94		

195947155485801. Local number, 8-5948-01.

LOCATION.--Lat 19°59′47″, long 155°48′58″, Hydrologic Unit 20010000, 0.7 mi east of Hapuna Beach Park, and 3.1 mi southeast of Kawaihae. Owner: State of Hawaii.

AQUIFER.--Hamakua Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 268 ft, 10-in. casing diameter, cased to 246 ft, screened from 246 to 266 ft.

DATUM.--Elevation of land-surface datum is 244 ft. Measuring point is hole in pump base, 246.62 ft above mean sea level.

REMARKS.--Water from this well is used for irrigation.

PERIOD OF RECORD.--
Water level: occasional measurements, April 1970, March 1973 to current year.
Water quality: occasional measurements, 1970, 1973 to current year.

REVISED RECORDS.--WDR HI-91-1: 1976-80 (water-level data), 1976-90 (extremes for the period of record).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.83 ft above mean sea level, August 29, 1994; lowest measured, 1.38 ft above mean sea level, September 28, 1979.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 22	3.49	MAR 23	3.10
FEB 10	3.17	MAY 28	2.72

200132155471101. Local number, 8-6147-01.

LOCATION.--Lat 20°01′32″, long 155°47′11″, Hydrologic Unit 20010000, on Highway 26, 3.1 mi east of Kawaihae, and 2.8 mi northeast of Hapuna Beach Park. Owner: State of Hawaii.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 1,008 ft, 8-in. casing diameter, cased to 997 ft, perforated from 997 to S1,008 ft. Hole was drilled to 1,040 ft, but was finally plugged back to 1,008 ft.

DATUM.--Elevation of land-surface datum is 982 ft. Measuring point is top of pipe coupling on casing cover 983.08 ft, revised, November 18, 1986, above mean sea level.

REMARKS.--Water-quality records for 1963-64 are available in files of district office.

PERIOD OF RECORD.--
Water level: occasional measurements, June to July 1963, June 1973 to current year.
Water quality: occasional measurements, 1994-97.

REVISED RECORDS.--WRD HI-91-1: 1975-90 (Station ID number).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.23 ft above mean sea level, May 1, 1987; lowest measured, 4.66 ft above mean sea level, May 3, 1994.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 19	5.66	MAR 23	5.30	JUL 29	5.43
FEB 6	5.57	MAY 28	5.14	SEP 17	5.55

201307155452001. Local number, 8-7345-03.

LOCATION.--Lat 20°13′07″, long 155°45′20″, Hydrologic Unit 20010000. Owner: U.S. Geological Survey.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 495 ft, 8-in. casing diameter, cased to 440 ft, open hole 440 to 495 ft.

DATUM.--Elevation of land-surface datum is 396 ft. Measuring point is top of casing, 395.87 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, April 1990 to September 1995, December 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.75 ft above mean sea level, April 25, 1990; lowest measured, 8.82 ft above mean sea level, July 1, 1992.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 22	9.30	FEB 5	9.20

201429155480201. Local number, 8-7448-06.

LOCATION.--Lat 20°14′29″, long 155°48′02″, Hydrologic Unit 20010000. Owner: U.S. Geological Survey.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 440 ft, 8-in. casing diameter, cased to 123 ft, open hole 123 to 440 ft.

DATUM.--Elevation of land-surface datum is 411 ft. Measuring point is top of casing, 411.62 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, May 1990 to January 1991, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.47 ft above mean sea level, September 17, 1998; lowest measured, 6.85 ft above mean sea level, March 23, 1998.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 23	6.85	JUL 29	7.72
MAY 28	7.62	SEP 17	8.47

201440155510601. Local number, 8-7451-01.

LOCATION.--Lat 20°14′45″, long 155°51′06″, Hydrologic Unit 20010000. Owner: U.S. Geological Survey.

AQUIFER.--Pololu Volcanics, Pleistocene age.

WELL CHARACTERISTICS.--Drilled basal water-table well, depth 632 ft, 8-in. casing diameter, cased to 100 ft, open hole 100 to 632 ft.

DATUM.--Elevation of land-surface datum is 567 ft. Measuring point is top of casing, 566.65 ft above mean sea level.

PERIOD OF RECORD.--Water level: occasional measurements, May 1990 to September 1995, October 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.84 ft above mean sea level, July 15, 1993; lowest measured, 3.72 ft above mean sea level, July 15, 1993.

WATER LEVEL, IN FEET ABOVE MEAN SEA LEVEL, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 22	4.13	MAR 20	3.83	JUL 29	4.04
FEB 5	4.03	MAY 28	3.63	SEP 17	4.12

HAWAII, ISLAND OF KAUAI

220136159205501 - 2-0120-01 W7 WAILUA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
15...	0800	800	25.5	134
DEC				
05...	0730	799	25.5	136
FEB 1998				
09...	0735	796	25.0	134
APR				
07...	0745	799	25.0	136
MAY				
27...	0730	807	25.0	139
JUL				
31...	0730	811	25.5	139

220354159205601 - 2-0320-01 W9-1A WAIL

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	a0945	--	--	--
DEC				
04...	a1455	--	--	--
FEB 1998				
06...	b0950	400	23.5	--
APR				
08...	a1445	--	--	--
JUN				
03...	1005	452	24.0	58.0
AUG				
05...	a0905	--	--	--

220354159205602 - 2-0320-03 W9-1B WAIL

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	0920	406	24.5	45.0
DEC				
04...	1400	401	24.0	45.0
FEB 1998				
06...	a0955	--	--	--
APR				
08...	1435	402	24.0	51.0
JUN				
03...	a0950	--	--	--
AUG				
05...	0940	418	24.0	54.0

220530159450401 - 2-0545-01 W59 KAULAU

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1245	752	24.0	133
DEC				
03...	1045	762	23.0	137
FEB 1998				
04...	1015	754	23.0	136
APR				
03...	1040	750	24.0	136
JUN				
01...	1345	747	26.0	136
AUG				
06...	1210	745	23.0	133

See footnotes at end of table

220621159232101 - 2-0623-04 KAPAA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1415	105	25.0	14.0
DEC				
04...	0945	108	23.5	13.0
FEB 1998				
06...	1045	108	23.5	13.0
APR				
08...	0930	108	24.0	14.0
JUN				
03...	1040	111	23.5	14.0
AUG				
05...	1015	112	23.5	14.0

220827159185401 - 2-0818-01 W90A ANAHO

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1020	241	24.5	21.0
DEC				
04...	a1030	--	--	--
FEB 1998				
06...	1125	244	24.0	22.0
APR				
08...	a1105	--	--	--
JUN				
03...	1130	234	24.0	21.0
AUG				
05...	a1100	--	--	--

220826159185401 - 2-0818-02 W90B ANAHO

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	a1020	--	--	--
DEC				
04...	1025	263	23.5	21.0
FEB 1998				
06...	a1130	--	--	--
APR				
08...	1110	241	23.5	20.0
JUN				
03...	a1140	--	--	--
AUG				
05...	1055	230	23.5	20.0

221038159203801 - 2-1020-03 W78 MOLOAA

DATE	TIME
OCT 1997	
09...	c1430
DEC	
01...	c1520
FEB 1998	
03...	c0840
APR	
02...	c1500
JUN	
03...	c1530
AUG	
03...	c1250

HAWAII, ISLAND OF KAUAI--Continued

221141159252501 - 2-1125-01 N1 KILAUEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1330	179	23.5	18.0
DEC				
04...	a1100	--	--	--
FEB 1998				
06...	a1205	--	--	--
APR				
08...	1130	161	26.5	16.0
JUN				
03...	a1455	--	--	--
AUG				
05...	1130	175	23.5	17.0

221141159252502 - 2-1125-02 N2 KILAUEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	a1330	--	--	--
DEC				
04...	1100	162	24.0	16.0
FEB 1998				
06...	1210	162	24.0	16.0
APR				
08...	a1135	--	--	--
JUN				
03...	1450	176	24.0	17.0
AUG				
05...	a1130	--	--	--

221150159264501 - 2-1126-01 KALIHIWAI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
09...	0740	185	22.0	20.0
DEC				
10...	a0800	--	--	--
FEB 1998				
03...	0745	162	21.5	18.0
APR				
03...	a0800	--	--	--
JUN				
04...	0800	161	22.0	18.0
AUG				
12...	a0755	--	--	--

221151159265001 - 2-1126-02 KALIHIWAI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
09...	a0745	--	--	--
DEC				
10...	0810	192	23.5	17.0
FEB 1998				
03...	a0750	--	--	--
APR				
03...	0820	189	23.5	17.0
JUN				
04...	a0810	--	--	--
AUG				
12...	0810	203	23.5	20.0

See footnotes at end of table

221201159293401 - 2-1229-03 W73 HANALE

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1100	265	24.5	37.0
DEC				
04...	1315	270	24.5	39.0
FEB 1998				
06...	1245	264	24.0	37.0
APR				
08...	1345	265	23.5	37.0
JUN				
03...	1420	265	24.0	38.0
AUG				
05...	1345	265	24.0	38.0

221247159324801 - 2-1232-01 W67 WAINIH

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1300	122	23.0	21.0
DEC				
04...	1240	141	22.5	21.0
FEB 1998				
06...	1340	128	22.5	21.0
APR				
08...	1325	143	22.5	22.0
JUN				
03...	1300	125	22.5	21.0
AUG				
05...	1325	145	22.5	22.0

221318159335901 - 2-1333-01 W66 HAENA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	1215	203	22.0	21.0
DEC				
04...	c1220	--	--	--
FEB 1998				
06...	1255	205	21.5	21.0
APR				
08...	1240	203	22.0	22.0
JUN				
03...	1320	203	22.0	21.0
AUG				
05...	1230	204	22.0	21.0

215454159274201 - 2-5427-01 W16A KOLOA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	0800	231	23.0	26.0
DEC				
05...	a0800	--	--	--
FEB 1998				
05...	0830	232	22.0	27.0
APR				
07...	a0750	--	--	--
JUN				
02...	1025	236	23.0	27.0
AUG				
06...	a0820	--	--	--

215455159274201 - 2-5427-02 W16B KOLOA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	a0815	--	--	--
DEC				
05...	0825	225	22.5	25.0
FEB 1998				
05...	a0835	--	--	--
APR				
07...	0820	223	22.5	25.0
JUN				
02...	a1030	--	--	--
AUG				
06...	0820	226	23.0	--

215535159302601 - 2-5530-03 W22 LAWAI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1415	228	28.0	26.0
DEC				
03...	1150	220	21.5	26.0
FEB 1998				
05...	1400	221	24.5	26.0
APR				
03...	1130	220	23.0	26.0
JUN				
02...	1200	223	25.5	26.0
AUG				
06...	1410	228	28.0	25.0

215522159342601 - 2-5534-03 W25-1 HANA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	0940	433	24.0	37.0
DEC				
05...	0900	398	24.0	34.0
FEB 1998				
05...	1230	411	24.0	34.0
APR				
07...	1105	415	24.0	34.0
JUN				
02...	1135	418	24.0	34.0
AUG				
06...	1040	422	24.5	34.0

215803159401201 - 2-5840-01 W26 WAIMEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1040	1050	25.0	246
DEC				
05...	1100	1090	24.5	259
FEB 1998				
05...	1050	1100	24.5	260
APR				
07...	1030	1030	24.0	238
JUN				
02...	1015	901	24.0	199
AUG				
06...	1005	806	24.5	172

See footnotes at end of table

215857159430101 - 2-5843-01 S12 KEKAHA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1100	520	25.0	69.0
DEC				
05...	0930	530	24.0	69.0
FEB 1998				
05...	1000	484	24.0	59.0
APR				
07...	0915	464	24.0	55.0
JUN				
02...	0925	496	24.5	62.0
AUG				
06...	0920	479	24.5	61.0

215958159214301 - 2-5921-01 W10 HANAMA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	0850	504	25.5	51.0
DEC				
04...	0840	514	25.0	60.0
FEB 1998				
06...	0850	510	25.0	58.0
APR				
08...	0845	503	25.0	55.0
JUN				
03...	0830	509	25.5	60.0
AUG				
05...	0825	500	25.5	57.0

215901159235301 - 2-5923-01 KILOHANA A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	0815	243	25.0	20.0
DEC				
04...	0810	241	25.0	19.0
FEB 1998				
06...	0800	241	25.0	19.0
APR				
08...	0800	242	25.0	20.0
JUN				
03...	0805	247	25.0	21.0
AUG				
05...	0750	241	25.0	19.0

215901159235201 - 2-5923-07 KILOHANA I

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
08...	0730	176	24.0	20.0
DEC				
04...	0800	192	23.0	21.0
FEB 1998				
06...	0815	186	23.0	20.0
APR				
08...	0745	190	23.0	21.0
JUN				
03...	0750	184	23.0	20.0
AUG				
05...	0735	184	23.0	21.0

215906159395601 - 2-5939-01 S9 WAIMEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
07...	1330	329	24.0	51.0
DEC				
05...	1130	370	24.0	50.0
FEB 1998				
05...	1145	376	24.0	53.0
APR				
07...	0950	363	24.0	52.0
JUN				
02...	0950	359	24.0	52.0
AUG				
06...	1330	359	24.5	50.0

211646157465201 - 3-1646-01 W1-B WAIAL

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
11...	c0910	--	--
MAR 1998			
19...	1315	860	22.0
MAY			
13...	1223	857	22.0
AUG			
11...	0901	900	22.0
SEP			
21...	1047	928	22.0

211832157515501 - 3-1851-19 W102 TUBEA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
11...	1100	36300	24.0	13600
MAR 1998				
11...	1400	35500	24.0	13500
MAY				
13...	1400	34800	24.5	13200
AUG				
11...	0820	33600	24.5	12700
SEP				
23...	c1455	--	--	--

211832157515502 - 3-1851-19 W102 TUBEB

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
11...	1110	16900	24.0
MAR 1998			
11...	1410	16900	23.5
MAY			
13...	1345	16900	24.0
AUG			
11...	0817	17700	24.5
SEP			
23...	1452	17200	24.5

211828157515801 - 3-1851-22 W101 DWNTN

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
11...	1150	1650	24.5

212133158035501 - 3-2103-03 S14 MAKAKI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	0830	1090	23.0	227
MAR 1998				
13...	0850	1090	23.0	224
MAY				
28...	0845	1120	23.5	228
AUG				
06...	0850	1090	23.5	234
SEP				
25...	1212	1100	23.5	225

212106157533701 - 3-2153-02 W153 MOANA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
11...	1420	495	22.0	102
MAR 1998				
10...	1505	500	22.0	102
MAY				
14...	1500	492	22.5	103
AUG				
11...	1243	489	23.0	102
SEP				
21...	1416	494	22.0	102

212238157561102 - 3-2256-12 W187-C

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
28...	1520	838	24.5	211
DEC				
15...	1350	884	23.0	225
MAR 1998				
11...	1030	875	22.5	222
MAY				
14...	1410	865	23.0	222
AUG				
12...	1358	882	23.5	227
SEP				
23...	1400	861	23.5	220

212343158001001 - 3-2300-11 W238 WAIPH

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1120	620	22.0
MAR 1998			
10...	1330	612	22.0
MAY			
14...	0940	600	22.0
AUG			
11...	1443	590	22.0
SEP			
22...	1212	588	22.0

See footnotes at end of table

212340158001901 - 3-2300-18 W241 [d]

DATE	TIME	SAMPLE DEPTH DIS-TANCE BELOW MSL FEET (78890)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997			
18...	0930	400	191
18...	0950	500	571
18...	1015	550	1360
18...	1035	600	3090
18...	1100	650	5520
18...	1125	700	7480
18...	1155	750	9320
18...	1220	800	10700
18...	1250	850	12700
18...	1320	900	14200
18...	1350	950	15800
18...	1425	990	16400
MAR 1998			
25...	0930	400	168
25...	0945	500	564
25...	1005	550	1340
25...	1025	600	2980
25...	1050	650	5450
25...	1115	700	6870
25...	1140	750	9220
25...	1205	800	10600
25...	1235	850	12700
25...	1305	900	14400
25...	1335	950	15800
25...	1405	990	16400
UN			
12...	0920	400	167
12...	0935	500	553
12...	0955	550	1340
12...	1015	600	3010
12...	1040	650	5550
12...	1110	700	7540
12...	1145	750	9340
12...	1215	800	10800
12...	1245	850	12900
12...	1315	900	14400
12...	1345	950	16000
12...	1400	990	16600
SEP			
03...	0920	400	166
03...	0940	500	541
03...	1000	550	1330
03...	1020	600	2960
03...	1040	650	5470
03...	1105	700	7480
03...	1135	750	9330
03...	1200	800	10700
03...	1235	850	12900
03...	1310	900	14400
03...	1348	950	15800
03...	1420	990	16200

212358158010901 - 3-2301-09,10 W247-IJ

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	0925	560	22.0
MAR 1998			
11...	0840	589	22.0
MAY			
18...	0920	587	22.0
AUG			
11...	0901	663	22.0
SEP			
22...	0945	641	22.0

212332157582201 - 3-2358-02 W201

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1230	1380	21.0
MAR 1998			
10...	1430	1340	21.0
MAY			
14...	1340	1290	22.5
AUG			
12...	1118	1360	22.0
SEP			
22...	1255	1370	22.0

212342157584301 - 3-2358-22 W204-4

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1140	1770	20.5
MAR 1998			
10...	1345	1700	20.5
MAY			
14...	1002	1600	20.5
AUG			
11...	1415	1470	20.5
SEP			
22...	1228	1420	20.5

212343157584701 - 3-2358-29 W204-9

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1135	4880	20.5
MAR 1998			
10...	1340	4400	20.5
MAY			
14...	1000	4600	20.5
AUG			
11...	1414	3950	20.5
SEP			
22...	1225	3310	20.5

212336157591801 - 3-2359-05 W204-11

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1145	3320	22.0
MAR 1998			
10...	1355	3250	22.0
MAY			
14...	0955	3080	22.0
AUG			
11...	1424	2840	22.0
SEP			
22...	1235	2750	22.0

See footnotes at end of table

212422157485601 - 3-2448-01 W416

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	c1109	--	--	--
MAR 1998				
10...	c1515	--	--	--
JUN				
19...	1115	204	21.5	19.0
AUG				
24...	1429	207	20.5	20.0
SEP				
30...	c1500	--	--	--

212556157500301 - 3-2550-01 W407-16

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	1234	135	23.5	19.0
MAR 1998				
10...	1450	136	24.5	18.0
JUN				
19...	1132	137	23.5	19.0
AUG				
24...	1415	136	23.5	20.0
SEP				
30...	1442	137	24.0	20.0

212506157582301 - 3-2558-10 S16

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
DEC 1997			
15...	0850	253	21.0
MAR 1998			
10...	1410	255	21.5
MAY			
14...	0920	251	21.5
AUG			
11...	1402	251	23.0
SEP			
23...	1320	249	23.5

212617158033801 - 3-2603-01 W330-8

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	c0950	--	--	--
MAR 1998				
11...	c0910	--	--	--
MAY				
14...	1040	341	22.0	47.0
AUG				
12...	0942	338	22.0	46.0
SEP				
22...	1015	337	22.5	47.0

212656158071801 - 3-2607-01 W277-97

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
DEC 1997			
16...	0930	400	24.5
MAR 1998			
13...	1000	402	25.0
MAY			
28...	1005	352	25.0
AUG			
06...	1010	408	25.0
SEP			
25...	1040	411	25.0

212614157594301 - 3-2659-01 WAIPIO-MAUKA MONITOR WELL [d]

DATE	TIME	SAMPLE DEPTH DISTANCE BELOW MSL FEET (78890)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997			
16...	0945	400	26.0
16...	1015	500	44.0
16...	1050	600	77.0
16...	1125	700	563
16...	1155	800	1790
16...	1230	825	3130
16...	1309	850	4510
16...	1340	875	6980
17...	0930	900	8310
17...	1015	1000	13200
17...	1100	1100	15600
17...	1145	1200	17300
17...	1240	1300	17700
MAR 1998			
23...	0935	400	25.0
23...	1005	500	25.0
23...	1200	600	75.0
23...	1230	700	334
23...	1310	800	1820
23...	1335	825	3100
24...	0915	850	4520
24...	0955	875	7080
24...	1025	900	8260
24...	1100	1000	13000
24...	1140	1100	15300
24...	1230	1200	16500
24...	1320	1300	17000
UN			
09...	0940	400	29.0
09...	1015	500	26.0
09...	1045	600	78.0
09...	1115	700	400
09...	1150	800	1860
09...	1235	825	3080
09...	1315	850	4600
10...	0935	875	7140
10...	1015	900	8270
10...	1100	1000	13200
10...	1145	1100	15600
10...	1225	1200	16400
10...	1315	1300	17300
SEP			
01...	0945	400	29.0
01...	1015	500	27.0
01...	1055	600	78.0
01...	1125	700	563
01...	1210	800	1830
01...	1250	825	3030
01...	1320	850	4660
02...	0915	875	7110
02...	1010	900	8270
02...	1100	1000	13100
02...	1150	1100	15200
02...	1230	1200	16100
02...	1330	1300	16700

See footnotes at end of table

HAWAII, ISLAND OF OAHU--Continued

212803158000701 - 3-2800-01 W250-4A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1400	158	22.0	--
MAR 1998				
19...	c1210	--	--	--
MAY				
18...	c1025	--	--	--
JUL				
13...	c1425	--	--	--
SEP				
24...	0908	150	22.0	18.0

212828158092001 - 3-2809-06 TU WAIANAE

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
16...	1210	346	22.5
MAR 1998			
13...	1125	354	22.5
MAY			
28...	1125	390	22.5
AUG			
06...	1135	390	22.5
SEP			
25...	1324	401	22.5

212859158124301 - 3-2812-01 S1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
16...	1230	710	24.5
APR 1998			
28...	1405	682	25.5
MAY			
28...	1230	762	25.5
AUG			
06...	1245	760	25.5
SEP			
25...	1405	761	25.5

212927158014801 - 3-2901-07 S4

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
05...	0915	168	21.5	19.0
MAR 1998				
19...	0910	170	23.0	20.0
JUL				
13...	c0900	--	--	--

212945158014301 - 3-2901-09 W330-6

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1040	200	22.0	21.0
MAR 1998				
19...	c1145	--	--	--
MAY				
18...	1225	198	22.5	22.0
JUL				
13...	1305	198	22.0	22.0
SEP				
24...	0925	199	22.0	22.0

212945158014302 - 3-2901-12 WAHIAWA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1030	196	22.0	20.0

213224158135901 - 3-3213-06 W277-101

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	1300	883	23.0	197
MAR 1998				
13...	1210	880	23.0	197
MAY				
28...	1250	886	23.5	196
AUG				
06...	1325	869	23.5	197
SEP				
25...	1420	871	23.5	196

213327157524401 - 3-3352-01 W405

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1340	258	22.5	34.0
MAR 1998				
10...	1356	255	23.5	34.0
JUN				
17...	1412	259	22.5	34.0
AUG				
20...	1408	258	23.0	35.0
SEP				
30...	1405	258	23.0	35.0

See footnotes at end of table

213429158055501 - 3-3405-01 W323-1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1130	384	22.5
MAR 1998			
19...	1055	378	23.0
MAY			
18...	1200	371	23.0
JUL			
13...	a1400	--	--
SEP			
24...	1405	364	23.0

213427158055501 - 3-3405-02 W323-2

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	a1140	--	--
MAY 1998			
18...	a1200	--	--
JUL			
13...	1400	372	22.5
SEP			
24...	a1405	--	--

213411158074501 - 3-3407-25 W320

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1230	1590	22.5
MAR 1998			
19...	1030	1420	23.5
JUN			
05...	c0900	--	--
AUG			
04...	0905	1420	23.0
SEP			
30...	0940	1450	23.5

213444158075501 - 3-3407-30 W318-2

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	c1140	--	--	--
MAR 1998				
10...	1125	4600	24.0	1280
JUN				
03...	1420	5280	24.0	1420
AUG				
04...	c0915	--	--	--
SEP				
24...	c1312	--	--	--

213446158104901 - 3-3410-08 W286

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
15...	1310	690	22.0
MAR 1998			
10...	1035	700	22.0
JUN			
03...	1320	695	22.0
AUG			
04...	1015	695	22.0
SEP			
24...	1225	698	22.5

213512158061601 - 3-3506-03 TO 04 W329 A-B WSCO P8 A-C OAHU

DATE	TIME
DEC 1997	
18...	c1125
MAR 1998	
10...	c1015
JUN	
05...	c1115
SEP	
30...	c0955

213636158053701 - 3-3605-03 W334-C

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
18...	0940	1690	21.0
MAR 1998			
10...	0945	1690	21.0
JUN			
05...	1035	1660	21.0
JUL			
17...	1430	1650	21.0
SEP			
23...	0958	1640	21.0

213636158053702 - 3-3605-21 W334-U

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
DEC 1997			
18...	0955	1460	21.5
MAR 1998			
10...	1000	1460	21.5
JUN			
05...	1050	1440	21.5
JUL			
17...	1438	1430	21.5
SEP			
23...	1040	1420	21.5

See footnotes at end of table

213656157550401 - 3-3655-01 W394

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	c1305	--	--	--
MAR 1998				
10...	1327	245	22.0	32.0
JUN				
17...	1350	244	21.5	33.0
AUG				
20...	1044	242	21.5	33.0
SEP				
30...	1340	243	21.5	32.0

213902157561601 - 3-3956-04 W366

DATE	TIME
DEC 1997	
23...	c1200
MAR 1998	
10...	c1310
JUN	
17...	c1305
AUG	
20...	c1032
SEP	
30...	c1310

214157158000101 - 3-4100-01 W338

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1050	304	20.5	49.0
MAR 1998				
10...	c1028	--	--	--
JUN				
17...	c1125	--	--	--
AUG				
18...	1130	308	21.0	50.0
SEP				
30...	1035	312	21.0	50.0

214131158011601 - 3-4101-08 W337-6

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1200	229	21.0	33.0
MAR 1998				
10...	1138	228	20.5	33.0
JUN				
17...	c1056	--	--	--
AUG				
18...	1340	231	21.0	33.0
SEP				
30...	c1215	--	--	--

214233157583501 - 3-4258-04 W345

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
23...	1030	1270	23.5	436
MAR 1998				
10...	1000	1580	24.5	451
JUN				
17...	1155	1440	24.5	431
AUG				
18...	1030	1420	25.0	429
SEP				
30...	1000	1500	25.0	430

See footnotes at end of table

210425156483001 - 4-0448-02 S8

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
06...	1335	400	24.5	30.0
DEC				
11...	1020	412	23.5	31.0
FEB 1998				
05...	1130	380	24.5	26.0
APR				
22...	1340	353	25.0	24.0
JUN				
15...	1100	345	24.5	22.0
AUG				
10...	1225	346	24.5	24.0

210402156495801 - 4-0449-01 S6

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
06...	1400	326	21.0	60.0
DEC				
11...	1045	340	20.5	59.0
FEB 1998				
05...	1055	333	20.5	61.0
APR				
22...	1400	323	21.5	62.0
JUN				
15...	1120	331	21.0	63.0
AUG				
10...	1205	329	21.5	64.0

210414156565601 - 4-0456-04 KAWELA PLANTATION SH-5, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0915	77.0
DEC		
11...	1450	53.0
FEB 1998		
05...	0850	18.0
MAR		
03...	0950	39.0
APR		
01...	0830	78.0
MAY		
13...	0805	29.0
JUN		
03...	0955	21.0
JUL		
13...	1310	20.0
AUG		
10...	1330	23.0
SEP		
08...	0844	263

210429156565106 - 4-0456-06 KAWELA PLANTATION DW-3, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0855	93.0
DEC		
11...	1445	64.0
FEB 1998		
05...	0840	68.0
MAR		
03...	0825	74.0
APR		
01...	0820	75.0
MAY		
13...	0940	61.0
JUN		
03...	0945	61.0
JUL		
13...	1300	53.0
AUG		
10...	1320	62.0
SEP		
08...	0831	64.0

210419156562108 - 4-0456-08 KAWELA PLANTATION DW-1, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0830	489
DEC		
11...	1430	108
FEB 1998		
05...	0820	114
MAR		
03...	0850	474
APR		
01...	0755	477
MAY		
13...	0745	111
JUN		
03...	0925	482
JUL		
13...	1115	474
AUG		
10...	1300	472
SEP		
08...	0810	485

210426156563509 - 4-0456-09 KAWELA PLANTATION DW-2, MOLOKAI [f]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0845	153
DEC		
11...	1435	151
FEB 1998		
05...	0830	155
MAR		
03...	0840	160
APR		
01...	0805	164
MAY		
13...	0925	156
JUN		
03...	0935	154
JUL		
13...	1250	151
AUG		
10...	1310	151
SEP		
08...	0821	156

See footnotes at end of table

210419156570501 - 4-0457-01 S4

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
06...	1445	707	23.5	170
DEC				
11...	1115	565	23.5	124
FEB 1998				
05...	1250	669	23.5	155
APR				
22...	1440	682	23.5	165
JUN				
15...	1200	620	23.5	146
AUG				
10...	1435	560	23.5	127

210433156574201 - 4-0457-04 KAWELA PLANTATION AG-1, MOLOKAI [f]

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
08...	0930	330
DEC		
11...	1500	327
FEB 1998		
05...	0900	328
MAR		
03...	1005	333
APR		
01...	0855	331
MAY		
13...	0820	342
JUN		
03...	1010	340
JUL		
13...	1100	332
AUG		
10...	1240	329
SEP		
08...	0755	344

210605157012001 - 4-0601-01 W11

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
09...	1230	358	24.0	30.0
DEC				
11...	1215	244	24.0	21.0
FEB 1998				
05...	0955	295	24.0	21.0
APR				
22...	1535	246	24.0	18.0
JUN				
15...	1445	282	24.5	20.0
AUG				
10...	1115	295	24.5	24.0

210856157011201 - 4-0801-01 W16 [g]

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
06...	1130	100
DEC		
08...	1155	90.0
JAN 1998		
05...	1050	85.0
MAR		
02...	0900	90.0
APR		
06...	0800	90.0
MAY		
06...	0745	93.0
JUN		
01...	0945	135
03...	0800	91.0
JUL		
01...	0815	136
SEP		
16...	0945	108

210857156010701 - 4-0801-02 [g]

DATE	TIME	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997			
08...	0630	e354	72.0
DEC			
10...	0710	--	69.0
JAN 1998			
06...	1030	--	65.0
MAR			
02...	0905	--	70.0
APR			
06...	0805	--	70.0
MAY			
06...	0700	--	70.0
JUN			
01...	0935	--	78.0
05...	0700	--	70.0
JUL			
01...	0830	--	78.0
SEP			
17...	0615	--	72.0

210903157013001 - 4-0901-01 W17 [h]

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
01...	0915	50.0
NOV		
01...	0830	42.0
FEB 1998		
03...	0950	51.0
MAR		
01...	0930	42.0
APR		
01...	0935	43.0
JUN		
01...	0930	56.0
JUL		
01...	1000	51.0
AUG		
03...	0900	50.0
SEP		
01...	0845	51.0

See footnotes at end of table

203947156261201 - 6-3926-03 WAILEA 8

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
17...	c1250	--	--	--
DEC				
17...	1130	3240	19.0	799
FEB 1998				
13...	1245	3340	19.0	892
APR				
28...	1235	2420	19.0	635
AUG				
17...	c1215	--	--	--

204635156270101 - 6-4627-14 W226

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
17...	1045	1500	23.5	227
FEB 1998				
13...	1325	1490	23.5	222
APR				
28...	1015	1460	23.5	222
AUG				
17...	1100	1450	23.5	214

204845156255001 - 6-4825-01 S15

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
24...	1125	1220	23.5
JAN 1998			
16...	c1140	--	--
FEB			
13...	c1350	--	--
MAY			
08...	c1030	--	--
JUN			
24...	c1220	--	--
SEP			
04...	c1250	--	--

205014156212701 - 6-5021-01 PUKALANI [i]

DATE	TIME	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997		
02...	1205	570
JAN 1998		
27...	1100	560
APR		
20...	1215	565
SEP		
23...	0745	570

205102156282501 - 6-5128-02 S16

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
24...	c1105	--	--
JAN 1998			
16...	c1125	--	--
FEB			
13...	1140	1270	23.5
MAY			
08...	c1015	--	--
JUN			
24...	c1245	--	--
SEP			
04...	c1230	--	--

205243156243201 - 6-5224-02 S22

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	1255	1350	23.5	274
JAN 1998				
16...	c1330	--	--	--
FEB				
13...	1420	1330	23.5	262
MAY				
08...	c1200	--	--	--
JUN				
24...	c1015	--	--	--
SEP				
04...	c1435	--	--	--

205329156305502 - 6-5330-09 W15A

DATE	TIME
OCT 1997	
24...	c1025
JAN 1998	
12...	c1345
FEB	
13...	c1100
MAY	
08...	c0945
JUN	
24...	c1305
SEP	
04...	c1015

205329156305501 - 6-5330-10 W15B

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	1030	718	22.0	154
JAN 1998				
12...	c1350	--	--	--
FEB				
13...	1105	672	22.0	141
MAY				
08...	c1040	--	--	--
JUN				
24...	1305	619	22.0	127
SEP				
04...	1015	571	22.0	113

See footnotes at end of table

205330156305401 - 6-5330-11 W15F

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	c1035	--	--	--
JAN 1998				
12...	c1340	--	--	--
FEB				
13...	1110	455	22.5	72.0
MAY				
08...	c1000	--	--	--
JUN				
23...	c1305	--	--	--
SEP				
04...	c1015	--	--	--

205322156394501 - 6-5339-01 W291

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	1345	525	21.5	69.0
JAN 1998				
20...	c1250	--	--	--
FEB				
25...	c1000	--	--	--
MAY				
04...	c1215	--	--	--
JUN				
11...	c0955	--	--	--
AUG				
20...	c0930	--	--	--

205320156394501 - 6-5339-02 W292

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CH) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	c1350	--	--	--
JAN 1998				
20...	c1255	--	--	--
FEB				
25...	c1005	--	--	--
MAY				
04...	1220	550	21.0	89.0
JUN				
11...	c0950	--	--	--
AUG				
20...	c0930	--	--	--

205343156401101 - 6-5340-01 S5

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	1300	1140	21.5	273
JAN 1998				
20...	1410	985	21.5	218
FEB				
25...	1025	1180	21.5	277
MAY				
05...	1050	846	21.0	180
JUN				
11...	1010	875	21.5	193
AUG				
20...	0955	968	21.5	217

See footnotes at end of table

205416156244301 - 6-5424-01 S24

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
24...	1240	1760	23.0
JAN 1998			
16...	c1320	--	--
FEB			
13...	c1435	--	--
MAY			
08...	c1145	--	--
JUN			
24...	c1025	--	--
SEP			
04...	c1430	--	--

205405156305401 - 6-5430-05 WAIEHU MONITOR WELL

DATE	TIME	TEMPER-ATURE WATER (DEG C) (00010)	SAMPLE DEPTH DIS-TANCE BELOW MSL FEET (78890)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	CHLO-RIDE, DUCT-TOTAL (MG/L AS CL) (99905)
OCT 1997					
02...	0855	--	200	205	12.0
02...	0915	--	400	205	12.0
02...	0935	--	600	552	130
02...	0955	--	650	1850	524
02...	1015	--	675	3070	900
02...	1040	--	700	9160	2950
02...	1100	--	725	29600	11000
02...	1125	--	750	42800	15900
02...	1150	--	800	48600	18000
02...	1220	--	1000	50800	19100
JAN 1998					
06...	1005	22.5	200	203	11.0
06...	1021	22.0	400	429	95.0
06...	1040	22.0	600	543	128
06...	1107	21.5	650	1880	534
06...	1130	22.0	675	3400	991
06...	1155	22.0	700	9870	3280
06...	1220	22.0	725	32400	12100
06...	1246	22.0	750	43400	16200
06...	1313	22.0	800	48800	18100
06...	1347	22.0	1000	50600	19200
APR					
02...	1000	--	200	205	12.0
02...	1020	--	400	429	96.0
02...	1043	--	600	521	123
02...	1105	--	650	1950	568
02...	1240	--	675	3480	1040
02...	1305	--	700	10600	3480
02...	1335	--	725	32100	12000
02...	1400	--	750	43000	16000
02...	1430	--	800	47800	17600
02...	1500	--	1000	50100	18400
JUL					
01...	1020	23.0	200	203	12.0
01...	1035	22.5	400	399	85.0
01...	1100	22.5	600	527	125
01...	1120	22.5	650	2090	608
01...	1145	22.5	675	3810	1140
01...	1215	22.5	700	11800	3970
01...	1235	22.5	725	33300	12700
01...	1300	23.0	750	43300	16200
01...	1330	22.5	800	47600	17900
01...	1355	22.5	1000	50000	18800
SEP					
30...	0940	23.0	200	204	12.0
30...	0955	22.5	400	446	99.0
30...	1015	22.5	600	540	126
30...	1040	22.5	650	2270	646
30...	1105	22.5	675	4000	1180
30...	1130	22.5	700	13500	4580
30...	1155	23.0	725	34800	13100
30...	1220	22.5	750	43600	16200
30...	1255	23.0	800	47900	17600
30...	1325	23.0	1000	50000	18500

205511156222101 - 6-5522-01 S31

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
24...	1225	1280	22.5	280
JAN 1998				
16...	c1310	--	--	--
FEB				
13...	1445	1200	22.5	255
MAY				
08...	c1145	--	--	--
JUN				
24...	c1035	--	--	--
SEP				
04...	c1415	--	--	--

205651156401001 - 6-5640-01 S36

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1997			
20...	1200	1060	21.0
JAN 1998			
20...	c1400	--	--
FEB			
25...	c1055	--	--
MAY			
05...	c1115	--	--
JUN			
11...	c1035	--	--
AUG			
20...	1020	834	21.0

205837156384601 - 6-5838-01 NAPILI A

DATE	TIME
OCT 1997	
20...	c1110
JAN 1998	
20...	c1150
FEB	
25...	c1225
MAY	
05...	c1230
JUN	
11...	c1135
AUG	
20...	c1115

205838156383101 - 6-5838-02 NAPILI B

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	c1115	--	--	--
JAN 1998				
20...	1155	311	20.0	61.0
FEB				
25...	c1230	--	--	--
MAY				
05...	c1235	--	--	--
JUN				
11...	1145	305	20.0	61.0
AUG				
20...	c1125	--	--	--

205848156383601 - 6-5838-04 NAPILI

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
20...	1135	576	20.0	133
JAN 1998				
20...	1200	573	20.0	130
MAY				
05...	1255	462	20.0	104
AUG				
20...	1130	447	20.0	99.0

See footnotes at end of table

HAWAII, ISLAND OF HAWAII

190347155354301 - 8-0335-01 NAALEHU W1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	c1130	--	--	--
FEB 1998				
04...	1055	163	19.5	11.0
MAR				
19...	1025	160	19.5	11.0
MAY				
26...	c1045	--	--	--
JUL				
15...	c1220	--	--	--
SEP				
15...	c1053	--	--	--

190832155310901 - 8-0831-02 NINOLE A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	c1310	--	--	--
FEB 1998				
04...	1212	708	18.5	180
MAR				
19...	c1120	--	--	--
MAY				
26...	1130	725	18.5	175
JUL				
14...	c1330	--	--	--
SEP				
15...	c1126	--	--	--

191108155281701 - 8-1128-02 PALIMA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	1330	130	20.5	16.0
FEB 1998				
04...	1320	133	20.0	17.0
MAR				
19...	1145	133	20.0	17.0
MAY				
26...	1150	136	20.0	16.0
JUL				
14...	j1045	157	25.0	16.0
SEP				
15...	1232	143	20.0	19.0

191114155294801 - 8-1129-01

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	1410	92	19.5	5.00
FEB 1998				
04...	1345	89	19.0	4.00
MAR				
19...	1205	91	19.0	6.00
MAY				
26...	1325	95	19.0	6.00
JUL				
14...	1230	94	20.0	7.00
SEP				
15...	1255	95	18.5	7.00

191219155291601 - 8-1229-01 PAHALA

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
16...	c1500	--	--	--
FEB 1998				
04...	1415	96	18.0	5.00
MAR				
19...	1230	96	18.0	5.00
MAY				
26...	1250	100	18.0	6.00
JUL				
14...	1205	99	18.5	6.00
SEP				
15...	1315	99	18.0	7.00

192646155532001 - 8-2653-01 KEEI C

DATE	TIME
DEC 1997	
18...	c1445
FEB 1998	
06...	c0840
MAR	
24...	c0900
MAY	
29...	c0815
JUL	
30...	c0845
SEP	
16...	c1500

192738155534201 - 8-2753-01 W12-4

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	1430	744	20.0	181
FEB 1998				
06...	c0820	--	--	--
MAR				
24...	c0750	--	--	--
MAY				
29...	c0800	--	--	--
JUL				
30...	0820	650	20.0	148
SEP				
16...	c1445	--	--	--

192731155534101 - 8-2753-02 W12-8

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
18...	c1440	--	--	--
FEB 1998				
06...	c0830	--	--	--
MAR				
24...	c0755	--	--	--
MAY				
29...	c0810	--	--	--
JUL				
30...	0830	1240	19.0	322
SEP				
16...	c1450	--	--	--

See footnotes at end of table

192924154564701 - 8-2986-01 W9-5B

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	c1320	--	--	--
FEB 1998				
09...	1200	127	23.5	7.00
MAR				
18...	c1205	--	--	--
MAY				
27...	c0935	--	--	--
JUL				
13...	1120	132	23.5	7.00
SEP				
14...	c1107	--	--	--

192923154564701 - 8-2986-02 W9-5A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	c1322	--	--	--
FEB 1998				
09...	1210	126	23.5	7.00
MAR				
18...	1215	126	23.5	7.00
MAY				
27...	c0940	--	--	--
JUL				
13...	1130	132	23.5	8.00
SEP				
14...	c1108	--	--	--

193113154555801 - 8-3185-01 W9-11 HAWN BEACHES

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1420	121	21.5	15.0
FEB 1998				
09...	1230	122	21.5	15.0
MAR				
18...	1100	122	21.5	15.0
MAY				
27...	1035	129	21.5	16.0
JUL				
13...	0945	130	21.5	16.0
SEP				
14...	1212	131	21.5	17.0

193510155570801 - 8-3557-01 W12-5

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1030	543	20.5	123
FEB 1998				
06...	1100	512	20.5	117
MAR				
24...	0930	525	20.5	122
MAY				
29...	0945	532	20.5	117
JUL				
30...	0930	384	20.5	76.0
SEP				
16...	1545	387	20.5	77.0

See footnotes at end of table

193502155572301 - 8-3557-05 KAH SHAFT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1010	1240	20.5	325
FEB 1998				
06...	1110	1050	20.0	271
MAR				
24...	0910	910	20.0	237
MAY				
29...	0930	1020	20.5	254
JUL				
30...	0950	1210	20.5	314
SEP				
16...	1600	1180	20.5	296

194037155035301 - 8-4003-01 W8-3

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
15...	1505	83	20.5	6.00
FEB 1998				
09...	1125	82	20.0	6.00
MAR				
18...	1330	80	20.5	6.00
MAY				
27...	0910	81	20.5	5.00
JUL				
13...	c1210	--	--	--
SEP				
14...	1330	84	20.5	7.00

194818155582301 - 8-4858-02 KONA VILLAGE

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	c1145	--	--	--
FEB 1998				
06...	c1215	--	--	--
MAR				
23...	c1520	--	--	--
MAY				
28...	1600	2500	21.0	555
JUL				
29...	1550	2540	21.0	579
SEP				
16...	c1335	--	--	--

195546155462001 - 8-5546-01 WAIKOLOA WATER WELL 2

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	c1330	--	--	--
FEB 1998				
06...	1345	564	28.5	94.0
MAR				
24...	1130	565	28.5	97.0
MAY				
29...	1400	592	28.5	95.0
JUL				
30...	1315	590	28.5	96.0
SEP				
16...	1150	625	28.5	105

195546155480301 - 8-5548-01 PARKER 1

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1415	2380	28.5	619
FEB 1998				
06...	c1435	--	--	--
MAR				
24...	1240	2340	28.5	635
MAY				
29...	1345	2450	28.5	637
JUL				
30...	1330	2440	28.5	633
SEP				
16...	1110	2440	28.5	634

195724155455301 - 8-5745-01 PARKER 5

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1345	285	26.5	28.0
FEB 1998				
06...	c1405	--	--	--
MAR				
24...	1200	284	26.5	28.0
MAY				
29...	c1425	--	--	--
JUL				
30...	c1255	--	--	--
SEP				
16...	c1130	--	--	--

195857155142301 - 8-5814-01 LAUPAHOEHO

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
JAN 1998				
06...	c1435	--	--	--
FEB				
05...	c0900	--	--	--
MAR				
23...	c0930	--	--	--
MAY				
28...	0940	369	20.0	74.0
JUL				
29...	c0930	--	--	--
SEP				
16...	c0930	--	--	--

195929155462501 - 8-5946-01 LALAMILO A

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
19...	1455	483	26.0	85.0
FEB 1998				
06...	1500	469	26.5	85.0
MAR				
23...	1422	489	26.0	92.0
MAY				
28...	c1515	--	--	--
JUL				
29...	c1505	--	--	--
SEP				
17...	c0845	--	--	--

195947155485801 - 8-5948-01 HAPUNA PRK

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
DEC 1997				
22...	1345	1880	26.0	508
FEB 1998				
10...	1050	1880	26.0	519
MAR				
23...	1330	1840	26.0	514
MAY				
28...	1430	1910	26.0	510
JUL				
29...	1430	1920	26.0	516
SEP				
17...	0930	1920	26.0	508

200122155480901 - 8-6148-01 W14

DEC 1997	
19...	c1520
FEB 1998	
06...	c1600
MAR	
23...	c1235
MAY	
28...	c1400
JUL	
29...	c1355
SEP	
17...	c1012

200121155480801 - 8-6148-02 W14B

FEB 1998	
06...	c1600
MAR	
23...	c1235
MAY	
28...	c1400
JUL	
29...	c1355
SEP	
17...	c1010

>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
a	Sampling alternated with a nearby well
b	Sample bottle broken; sample discarded
c	Unable to sample, pump off, locked, or inoperable
d	Sampled by Hawaii Commission on Water Resource Management
f	Sampled by Kawela Plantation Homeowners Association
g	Laboratory specific conductance
h	Sampled by Hawaii Department of Hawaiian Home Lands
i	Sampled by Kukui, Inc.
j	Sampled by Sport Shinko
k	Sampled secondary pipeline

HAWAII, ISLAND OF OAHU

203835156065001 - 6-3806-01 PUNAHOU SPRINGS

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
NOV 1997				
07...	1020	--	--	--
DEC				
16...	1020	675	20.0	157
FEB 1998				
18...	1000	--	--	--
MAY				
15...	1300	--	--	--
JUN				
10...	1400	--	--	--
SEP				
03...	1300	--	--	--

HAWAII, ISLAND OF MAUI

205030156154501 - LOWER KULA SP AT 2800 FT

DATE	TIME	CHLORIDE, TOTAL (MG/L AS CL) (99905)
FEB 1998		
06...	1030	7.00

205103156171501 - WAIOHIWI SPR AT 1160 FT

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
29...	1440	63	19.5	9.00

205201156171201 - AWALAU SPRING AT 1700 FT (LAT 20°52'01" LONG 156°17'12")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
NOV 1997			
18...	1140	81	18.5

205259156172501 - AWALAU SPRING AT 1420 FT (LAT 20°52'59" LONG 156°17'25")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)
NOV 1997			
18...	1355	75	20.0

HAWAII, ISLAND OF MAUI--CONTINUED

205322156144201 - HOOLAWA SPRING AT 1200 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
FEB 1998				
05...	1130	75	20.0	15.0

205322156173501 - SANTOS SPRING AT 1180 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
NOV 1997				
18...	1325	129	21.0	18.0

205335156193001 - MALIKO SPRING AT 800 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/L AS CL) (99905)
OCT 1997				
27...	1215	146	21.5	20.0

205352156173301 - AWALAU SPRING AT 940 FT

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
NOV 1997			
18...	0930	92	20.0

205644156194901 - KANEMOEALA SPRING

DATE	TIME	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, TOTAL (MG/ AS CL) (99905)
NOV 1997				
19...	1410	390	23.0	38.0

HAWAII, ISLAND OF MAUI--CONTINUED

204636156142401 - HOSMER GROVE SPRING

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
08...	1455	28	14.0	3.00

204833156172001 - WAIHOU SPRING

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
09...	1612	81	16.5	8.00

204938156131801 - WAIKAMOI SPR AT 3200 FT

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
09...	1320	37	18.0	6.00

204959156092301 - BANANA SPRING, NAHIKU HI (LAT 20°49'59" LONG 156°09'23")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
11...	1330	131	18.5	8.00

205115156084201 - OHIA SPR AT KEANAE, MAUI (LAT 20°51'15" LONG 156°08'42")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
11...	1715	114	18.5	6.00

205144156092001 - NUUAILUA ROADCUT SEEP HI (LAT 20°51'44" LONG 156°09'20")

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	CHLORIDE, TOTAL (MG/L AS CL) (99905)
SEP 1997				
11...	1725	105	22.5	24.0

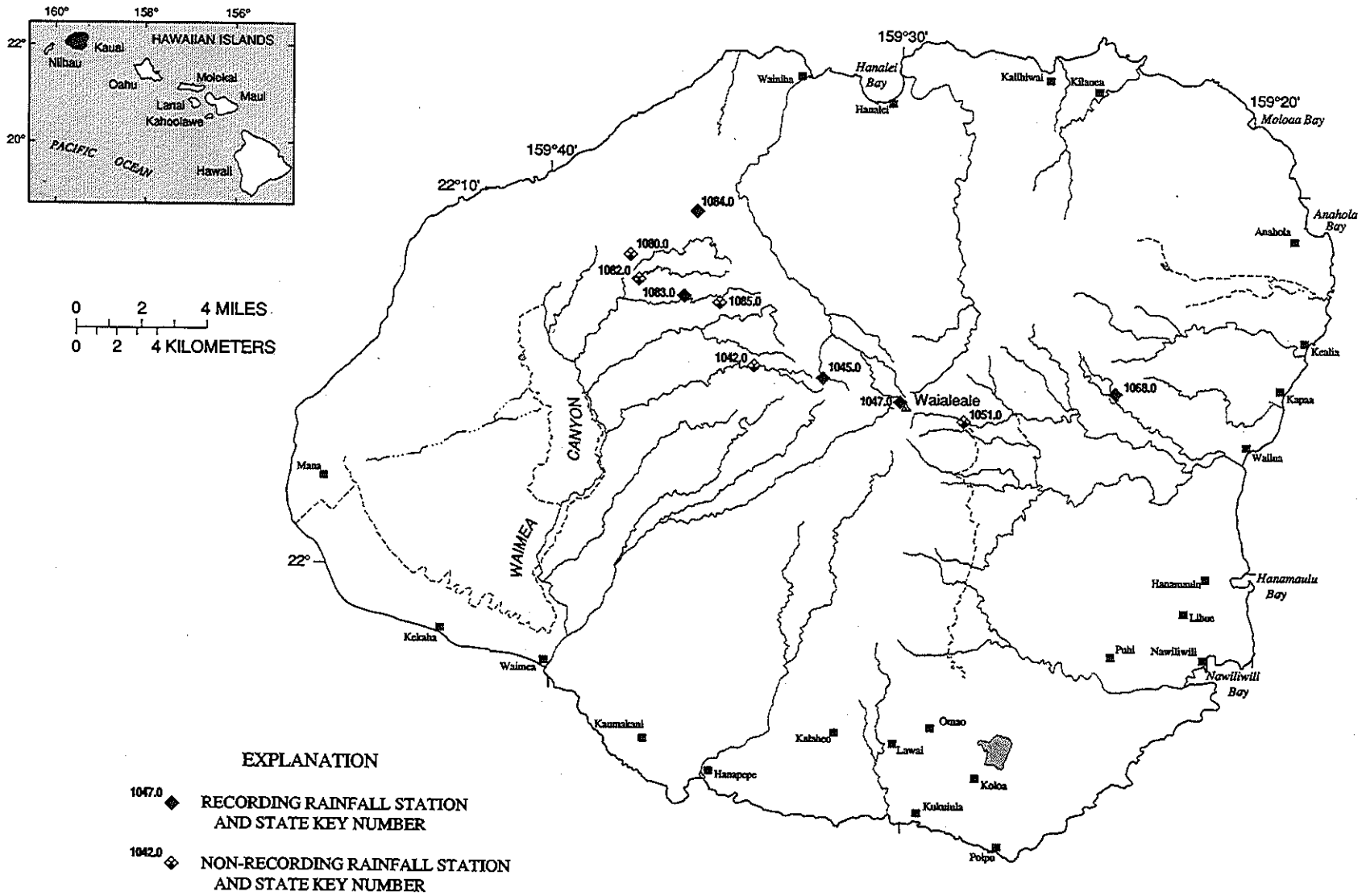


Figure 21. Locations of rainfall stations on Kauai.

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI

220523159341201. State Key Number 1042.0 Waialae rain gage near Waimea, Kauai.

LOCATION.--Lat 22°05′23″, long 159°34′12″, Hydrologic Unit 20070000, on ridge 6.4 mi southeast of Kokee Lodge, and 11.0 mi northeast of Waimea.

PERIOD OF RECORD.--1911 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage with a custom made reduced 1 to 2 ratio rain-gage catchment. Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 16	3.1 estimated (a)
Oct. 16 to Dec. 31	19.0 estimated (b)
Jan. 01 to Jan. 14	2.6 estimated (b)
Jan. 14 to May 28	24.8
May 28 to Aug. 19	14.6
Aug. 19 to Sep. 30	6.9 estimated (c)

CAL YR 1997 Total 97.0
WTR YR 1998 Total 71.0

(a) Estimated values based on accumulation rain can reading of 14.8 inches from Jul. 02 to Oct. 16
(b) Estimated values based on accumulation rain can reading of 21.6 inches from Oct. 16 to Jan. 14
(c) Estimated values based on accumulation rain can reading of 11.0 inches from Aug. 19 to Oct. 23

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220504159321401. State Key Number 1045.0 Waialeale Trail rain gage near Lihue, Kauai.

LOCATION.--Lat 22°05′04″, long 159°32′14″, Hydrologic Unit 20070000, 14.0 mi west of Kapaa Beach Park and 8.4 mi south of Hanalei Bay.

PERIOD OF RECORD.--1962 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 4,560 ft (from topographic map).

REMARKS.--Records good. Recording rainfall in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	1.43	.63	.01	.44	.00	.88	1.75	.00	.13	.49	1.10
2	.31	.10	.92	.18	.00	.01	.87	.09	.54	.29	.05	.39
3	3.46	.05	.22	.91	.00	.00	.26	.35	.14	.62	.06	.49
4	1.32	.00	.02	.01	.09	.02	.03	.30	.10	.81	.03	.12
5	.45	.01	.02	2.22	.00	.00	.22	.03	.17	.02	.82	.00
6	.39	.00	.51	.50	.00	.01	.54	.12	.00	.02	.06	.00
7	.31	.01	1.28	.04	.00	.00	.87	.07	.11	.50	.12	.01
8	.00	.22	2.05	.01	.00	.02	1.50	.52	.68	.42	.11	.00
9	.01	.01	.21	.00	.01	.00	3.11	1.11	.26	.06	.61	.24
10	.48	.00	.13	.00	.05	.27	1.47	.44	.24	.47	.01	.20
11	.01	.19	.23	.00	.00	.00	.59	.74	.06	1.09	.52	.04
12	.01	.02	.18	.00	.00	.00	1.91	.54	.16	.05	.14	.60
13	.02	.12	.00	.00	.12	.00	.97	.30	.90	.21	.42	.41
14	.00	.00	.01	.01	.02	.01	.50	.99	.68	1.05	.07	.26
15	.01	.00	.06	.00	.73	.00	.01	.33	.95	.37	.43	.20
16	.00	.00	.30	.06	.02	.03	.06	.10	.03	.00	.07	.07
17	.02	.01	.57	.52	.00	.01	.03	1.69	.03	.01	.39	.09
18	.20	.98	.06	.37	.01	.00	.07	1.03	.06	.00	.01	.32
19	.02	.35	.69	.16	.00	.00	.03	.52	.06	.01	.00	.04
20	.00	.11	.29	.08	.01	.01	.02	.88	.39	.01	.37	.91
21	1.36	.01	.00	.01	.73	.23	.32	.43	.68	.00	.33	.51
22	1.26	.21	.08	.50	.57	.54	.60	.29	1.24	.00	1.32	.37
23	.53	.51	.01	.00	.08	.31	.16	.81	1.75	.01	2.40	.06
24	.14	2.26	.05	.00	.32	.07	.66	.41	1.43	.27	.24	.05
25	.14	.74	.29	.01	.19	.26	.00	.76	.62	.08	.06	.04
26	.34	.34	.36	.00	.01	1.32	.27	.13	.41	.03	.18	.25
27	.53	1.81	.28	.28	.00	.48	.30	.05	.62	.00	.37	.09
28	.16	1.20	.08	.00	.00	.29	.08	.04	1.75	.07	.19	.22
29	.06	1.23	1.49	.00	---	.76	.14	.01	.99	.13	.11	.20
30	.02	.02	.23	.00	---	.53	.20	.38	.48	.56	.09	.18
31	.21	---	.00	.02	---	.86	---	.00	---	.04	.05	---
TOTAL	11.85	11.94	11.25	5.90	3.40	6.04	16.67	15.21	15.53	7.33	10.12	7.46

CAL YR 1997 Total 156.43
WTR YR 1998 Total 122.70

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220427159300201. State Key Number 1047.0 Mount Waialeale rain gage near Lihue, Kauai.

LOCATION.--Lat 22°04′27″, long 159°30′02″, Hydrologic Unit 20070000, 9.2 mi south of Hanalei Bay and 11.6 mi west of Kapaa Beach Park.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 5,150 ft (from topographic map).

REMARKS.--Records good for period of daily record. Recorded rainfall read in hundredths of an inch. Accumulated rainfall read in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	1.82	1.35	.11	.32	.06	1.97	2.41	.36	.37	1.18	3.03
2	1.22	.20	2.01	.28	.00	.00	1.39	.22	1.66	1.14	.20	2.09
3	7.05	.09	.52	1.03	.00	.00	.46	2.14	.70	1.21	.70	2.79
4	2.86	.06	.09	.00	.06	.00	.13	1.00	1.35	1.91	.31	.76
5	.62	.15	.06	2.01	.00	.00	.94	.12	3.54	1.23	1.69	.01
6	1.02	.00	1.36	.17	.00	.00	1.34	.37	.06	.62	.38	.00
7	2.52	.00	3.97	.01	.00	.21	2.26	.41	.36	1.71	.24	.05
8	.44	.19	4.63	.00	.01	.00	2.62	1.32	1.23	.92	.51	.06
9	.81	.01	.33	.01	.01	.00	3.08	2.41	2.26	.16	2.20	1.12
10	.45	.00	.02	.00	.15	.86	1.24	.96	1.77	.63	.68	4.07
11	.01	1.14	.04	.00	.01	.00	1.19	1.77	.89	1.67	.24	.18
12	.23	.41	.04	.00	.00	.05	1.23	1.26	1.25	.59	.24	1.89
13	.17	.84	.04	.00	.53	.00	1.10	.90	2.33	1.41	1.78	.89
14	.01	.03	.34	.00	.68	.00	.70	1.97	2.19	2.27	.42	.93
15	.04	.00	.54	.00	1.20	.00	.05	1.23	3.54	1.10	1.31	.60
16	.12	.00	.96	.07	.10	.04	.38	.48	1.83	.01	.22	.36
17	.16	.05	1.24	.42	.00	.01	.06	4.35	.54	.00	1.22	.36
18	1.44	1.12	.22	1.19	.01	.00	.73	2.25	.32	.00	.12	1.18
19	.07	.06	1.27	1.39	.00	.00	.27	1.20	.26	.17	.17	.17
20	.08	.03	.70	.25	.00	.00	.45	1.34	1.57	.34	.66	1.77
21	1.46	.02	.01	.03	1.83	.03	2.06	.90	2.53	.25	.92	2.27
22	1.38	.38	.39	.39	1.64	.47	2.37	.33	1.88	.08	5.14	.93
23	3.18	.98	.02	.00	.31	.60	2.34	1.31	2.60	.09	3.66	1.98
24	.32	3.79	.14	.00	2.06	.29	6.43	.67	3.37	.59	.45	.46
25	.51	1.65	.81	.00	1.59	.98	.00	3.46	2.43	.55	.19	3.92
26	1.24	1.47	1.07	.00	.02	2.62	.75	.67	2.04	1.07	.45	1.19
27	.58	3.05	.75	.21	.01	1.05	.18	.22	2.01	.31	1.24	.32
28	.24	2.10	.55	.00	.15	1.27	.02	.31	4.44	.52	1.55	.59
29	.33	1.98	2.04	.00	---	1.26	.39	.20	1.95	.58	.81	.57
30	.09	.06	.51	.00	---	.76	.33	1.96	1.17	1.16	.86	.49
31	.24	---	.18	.00	---	1.59	---	.24	---	.08	.32	---
TOTAL	29.10	21.68	26.20	7.57	10.69	12.15	36.46	38.38	52.43	22.74	30.06	35.03

CAL YR 1997 Total 355.44
WTR YR 1998 Total 322.49

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220356159281401. State Key Number 1051.0 North Wailua ditch rain gage near Lihue, Kauai.

LOCATION.--Lat 22°03′56″, long 159°28′14″, Hydrologic Unit 20070000, 4.0 mi west of Wailua Reservoir and 2.0 mi east southeast of Waialeale rain gage.

PERIOD OF RECORD.--1928 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service non-recording rain gage. Elevation of gage is 1,110 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest hundredths of an inch. Can readings are made by East Kauai Water Company.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall	Period	Rainfall
Oct. 01 to Oct. 06	3.92 estimated (a)	Mar. 30 to Apr. 13	5.83 estimated (c)
Oct. 06 to Oct. 13	3.65	Apr. 13 to Apr. 20	1.00
Oct. 13 to Oct. 20	.80	Apr. 20 to Apr. 27	3.46
Oct. 20 to Oct. 27	4.47	Apr. 27 to May 04	1.54
Oct. 27 to Nov. 03	3.00	May 04 to May 11	2.40
Nov 03 to Nov. 10	.85	May 11 to May 18	4.20
Nov. 10 to Nov. 17	.76	May 18 to May 25	2.90
Nov. 17 to Nov. 24	1.90	May 25 to Jun. 01	2.00
Nov. 24 to Dec. 01	4.08	Jun. 01 to Jun. 08	3.10
Dec. 01 to Dec. 08	3.98	Jun. 08 to Jun. 15	3.79
Dec. 08 to Dec. 15	1.20	Jun. 15 to Jun. 22	2.90
Dec. 15 to Dec. 22	2.10	Jun. 22 to Jun. 29	5.50
Dec. 22 to Dec. 29	1.30	Jun. 29 to Jul. 06	3.16
Dec. 29 to Dec. 31	1.10 estimated (b)	Jul. 06 to Jul. 13	2.52
Jan. 01 to Jan. 05	1.40 estimated (b)	Jul. 13 to Jul. 20	.65
Jan. 05 to Jan. 12	.35	Jul. 20 to Jul. 27	.58
Jan. 12 to Jan. 19	1.25	Jul. 27 to Aug. 03	1.35
Jan. 19 to Jan. 26	.35	Aug. 03 to Aug. 10	2.80
Jan. 26 to Feb. 02	.75	Aug. 10 to Aug. 17	2.00
Feb. 02 to Feb. 09	.09	Aug. 17 to Aug. 24	4.72
Feb. 09 to Feb. 17	1.46	Aug. 24 to Aug. 31	1.56
Feb. 17 to Feb. 23	.87	Aug. 31 to Sep. 08	3.30
Feb. 23 to Mar. 02	1.50	Sep. 08 to Sep. 14	3.08
Mar. 02 to Mar. 09	2.11	Sep. 14 to Sep. 21	2.20
Mar. 09 to Mar. 16	.83	Sep. 21 to Sep. 28	1.78
Mar. 16 to Mar. 23	.43	Sep. 28 to Sep. 30	.54 estimated (d)
Mar. 23 to Mar. 30	2.71		

CAL YR 1997 Total 166.98
WTR YR 1998 Total 116.07

(a) Estimated value based on accumulation rain can reading of 4.00 inches from Sep. 29 to Oct. 06
(b) Estimated value based on accumulation rain can reading of 2.50 inches from Dec. 29 to Jan. 05
(c) Estimated value when rain can was missing due to vandalism
(d) Estimated value based on accumulation rain can reading of 2.16 inches from Sep. 28 to Oct. 05

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220443159235601. State Key Number 1068.0 Left Branch Opaekea rain gage near Kapaa, Kauai.

LOCATION.--Lat 22°04′43″, long 159°23′56″, Hydrologic Unit 20070000, in USGS stream-gaging station 16071500 on left bank, 5.0 mi west of Kapaa Beach Park and 0.7 mi northeast of Wailua Reservoir.

PERIOD OF RECORD.--1960 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 470 ft (from topographic map).

REMARKS.--Records good. Recorded rainfall read in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.62	.12	1.31	.21	.00	.15	.42	.00	.05	.45	.22
2	.41	.02	.04	.14	.00	.00	.22	.01	.28	.21	.02	.58
3	1.22	.00	.01	.10	.00	.00	.04	.09	.07	.36	.09	.71
4	.28	.01	.00	.01	.00	.00	.00	.13	.36	.41	.00	.41
5	.18	.01	.00	.78	.00	.00	.31	.00	.06	.13	.46	.01
6	.12	.00	.27	.00	.00	.56	.21	.02	.01	.06	.07	.00
7	.12	.00	1.12	.00	.00	.80	.29	.05	.05	.28	.10	.03
8	.01	.00	.56	.00	.00	.20	.40	.18	.05	.12	.01	.00
9	.00	.01	.49	.00	.00	.00	.56	.72	.30	.11	.75	.12
10	.32	.00	.01	.00	.00	.02	.17	.12	.23	.05	.10	.18
11	.05	.21	.00	.00	.00	.00	.08	.58	.18	.24	.13	.00
12	.40	.00	.00	.00	.00	.00	.31	.11	.28	.00	.04	.23
13	.01	.10	.00	.00	.05	.00	.28	.04	.51	.27	.07	.16
14	.03	.01	.10	.00	.12	.00	.29	.45	.17	.34	.09	.16
15	.04	.00	.22	.00	.20	.00	.01	.14	.11	.50	.28	.24
16	.04	.01	.17	.00	.01	.00	.00	.12	.00	.00	.04	.07
17	.13	.00	.15	.05	.00	.00	.00	.87	.07	.00	.08	.02
18	.13	.87	.32	.37	.00	.00	.00	.67	.04	.00	.09	.06
19	.02	.18	.59	.12	.00	.00	.54	.28	.04	.00	.03	.04
20	.01	.00	.04	.11	.00	.00	.17	.23	.15	.07	.09	.08
21	.10	.00	.00	.00	.38	.02	.20	.09	.11	.05	.36	.23
22	.01	.04	.07	.00	.25	.02	.49	.00	.45	.00	1.03	.13
23	.85	.31	.00	.00	.00	.01	.19	.38	.60	.01	.07	.11
24	.06	.88	.18	.00	.12	.00	.50	.10	.43	.04	.04	.02
25	.13	.10	.27	.00	.07	.05	.06	.23	.21	.19	.10	.04
26	.12	.32	.14	.00	.01	.80	.29	.15	.18	.33	.14	.12
27	.09	.55	.05	.04	.01	.04	.08	.04	.41	.02	.31	.27
28	.13	.26	1.66	.00	.05	.18	.01	.08	.76	.05	.37	.04
29	.12	.24	.70	.00	---	.25	.03	.02	.16	.08	.25	.08
30	.10	.01	.02	.00	---	.14	.02	.06	.24	.22	.02	.01
31	.03	---	.09	.01	---	.19	---	.00	---	.03	.08	---
TOTAL	5.28	4.76	7.39	3.04	1.48	3.28	5.90	6.38	6.51	4.22	5.76	4.37

CAL YR 1997 TOTAL 84.25
WTR YR 1998 TOTAL 58.37

220817159374401. State Key Number 1080.0 Paukahana rain gage near Waimea, Kauai.

LOCATION.--Lat 22°08′17″, long 159°37′44″, Hydrologic Unit 20070000, 2.0 mi east of Kokee lodge and 7.0 mi south southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage. Elevation of gage is 3,700 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

REVISIONS.--The accumulated rainfall, in inches, from August 2, 1996 to October 25, 1996 has been revised to 8.0 inches. This supersedes the figure published in the water data report for 1996.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 06	1.1 estimated (a)
Oct. 25 to Dec. 09	10.3
Dec. 09 to Dec. 31	3.2 estimated (b)
Jan. 01 to Feb. 12	6.5 estimated (b)
Feb. 12 to Apr. 06	6.6
Apr. 06 to Jun. 03	15.7
Jun. 03 to Aug. 11	6.5
Aug. 11 to Sep. 30	4.6 estimated (c)

CAL YR 1997 TOTAL 68.9
WTR YR 1998 TOTAL 54.5

220739159373001. State Key Number 1082.0 Waiakoali rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07′39″, long 159°37′30″, Hydrologic Unit 20070000, 2.4 mi east southeast of Kokee Lodge and 7.4 mi south southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage with a custom made reduced 1 to 2 ratio rain-gage catchment. Elevation of gage is 3,420 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 06	1.0 estimated (d)
Oct. 06 to Dec. 09	11.6
Dec. 09 to Dec. 31	3.2 estimated (e)
Jan. 01 to Feb. 12	6.4 estimated (e)
Feb. 12 to Apr. 06	5.4
Apr. 06 to Jun. 03	15.2
Jun. 03 to Aug. 11	5.6
Aug. 11 to Sep. 30	5.9 estimated (f)

CAL YR 1997 Total 74.5
WTR YR 1998 Total 54.3

(a) Estimated values based on accumulation rain can reading of 5.3 inches from Aug. 11 to Oct. 06
(b) Estimated values based on accumulation rain can reading of 9.7 inches from Dec. 09 to Feb. 12
(c) Estimated values based on accumulation rain can reading of 6.0 inches from Aug. 11 to Oct. 13
(d) Estimated values based on accumulation rain can reading of 4.8 inches from Aug. 11 to Oct. 06
(e) Estimated values based on accumulation rain can raading of 9.6 inches from Dec. 09 to Feb. 12
(f) Estimated values based on accumulation rain can reading of 7.6 inches from Aug. 11 to Oct. 13

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220713159361201. State Key Number 1083.0 Mohihi crossing rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07′13″, long 159°36′12″, Hydrologic Unit 20070000, 3.8 mi east of Kokee Lodge and 7.5 mi south of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 3,420 ft (from topographic map).

REMARKS.--Records good for period of daily record. Accumulated rainfall recorded in tenths of an inch and recording rainfall recorded in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	2.66	.71	.00	.81	.00	.60	.82	.00	.01	.49	1.08
2	.19	.03	.98	.13	.00	.00	.47	.04	.07	.05	.01	.26
3	.88	.05	.16	.59	.00	.00	.35	.33	.01	.15	.00	.31
4	.38	.00	.00	.01	.30	.00	.02	.16	.01	.21	.03	.07
5	.09	.00	.01	2.01	.00	.00	.14	.02	.01	.01	.38	.00
6	.07	.00	.33	.89	.00	.00	.15	.01	.00	.00	.07	.00
7	.18	.01	.33	.04	.00	.00	.13	.07	.01	.34	.04	.00
8	.13	.23	1.06	.00	.01	.00	.41	.24	.02	.17	.11	.02
9	.00	.01	.15	.00	.00	.00	3.76	.52	.01	.05	.14	.09
10	.28	.00	.23	.00	.01	.18	1.65	.33	.02	.10	.02	.00
11	.00	.07	.22	.00	.00	.00	.69	.44	.01	.09	.63	.01
12	.01	.03	.13	.00	.00	.00	1.59	.43	.02	.00	.22	.08
13	.74	.03	.00	.00	.11	.00	.61	.09	.26	.13	.20	.03
14	.01	.01	.01	.00	.01	.00	.55	.31	.09	.28	.06	.09
15	.01	.00	.01	.00	.60	.00	.01	.10	.09	.12	.21	.02
16	.01	.00	.10	.10	.09	.00	.04	.03	.00	.00	.04	.03
17	.01	.03	.09	.38	.00	.00	.00	.58	.00	.00	.09	.06
18	.17	.91	.00	.17	.00	.00	.05	.72	.10	.00	.00	.00
19	.02	.32	.07	.04	.00	.00	.00	.08	.05	.00	.00	.02
20	.00	.01	.04	.06	.00	.02	.04	.04	.21	.00	.27	.16
21	.55	.02	.24	.00	.63	.49	.05	.20	.15	.01	.12	.21
22	.20	.19	.03	.61	.42	.55	.14	.10	.59	.00	.24	.03
23	.03	.39	.01	.02	.06	.31	.01	.28	.54	.00	1.29	.00
24	.03	1.69	.03	.00	.04	.06	.14	.13	.12	.08	.07	.00
25	.01	.40	.12	.00	.05	.07	.00	.11	.10	.03	.04	.00
26	.16	.15	.02	.00	.00	.32	.12	.00	.18	.01	.11	.00
27	.28	1.02	.03	.24	.00	.14	.45	.00	.25	.00	.09	.03
28	.05	.73	.02	.00	.00	.05	.05	.00	.73	.00	.15	.17
29	.00	.27	1.53	.00	---	.32	.12	.00	.44	.04	.04	.08
30	.00	.01	.12	.00	---	.15	.17	.00	.28	.21	.00	.11
31	.07	---	.00	.06	---	.17	---	.00	---	.05	.11	---
TOTAL	4.63	9.27	6.78	5.35	3.14	2.83	12.51	6.18	4.37	2.14	5.27	2.96

CAL YR 1997 Total 86.94
WTR YR 1998 Total 65.43

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220927159355001. State Key Number 1084.0 Kilohana rain gage near Hanalei, Kauai.

LOCATION.--Lat 22°09'27", long 159°35'50", Hydrologic Unit 20070000, 4.1 mi east southeast of Kalalau Beach and 4.9 mi south southwest of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Electronic data logger with a tipping bucket catchment (0.01 in. per tip). Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Recording rainfall in hundredths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.59	4.95	.89	.00	1.20	.11	1.83	1.60	.00	.06	1.91	1.91
2	.64	.02	1.58	.04	.00	.00	1.22	.11	.26	.24	.00	.83
3	1.77	.07	.57	.36	.00	.00	.89	1.20	.02	.83	.03	1.24
4	1.18	.03	.00	.01	.56	.01	.15	.29	.36	1.10	.07	.58
5	.21	.00	.01	1.92	.00	.00	1.49	.08	.02	.02	1.01	.03
6	.10	.00	1.30	.50	.00	.00	.40	.12	.00	.02	.17	.00
7	.05	.02	3.23	.03	.00	.12	.21	.35	.01	.80	.40	.04
8	.01	.96	3.93	.01	.01	.00	.93	1.08	.01	.37	.16	.01
9	.00	.03	.99	.00	.01	.01	5.45	1.58	.03	.39	.78	.17
10	.16	.00	.96	.00	.01	.19	4.02	1.93	.18	.37	.14	.09
11	.07	.78	.25	.00	.00	.00	2.52	2.07	.02	.29	.82	.07
12	.13	.21	.20	.00	.00	.00	2.22	2.79	.04	.06	.61	.07
13	.40	.10	.00	.00	.34	.00	2.27	.59	1.06	.38	.12	.05
14	.01	.00	.01	.01	.04	.01	1.90	1.90	.61	.65	.32	.08
15	.06	.00	.18	.00	1.63	.00	.12	.49	.30	.25	.72	.06
16	.04	.00	.35	.08	.46	.00	.03	.31	.01	.00	.29	.05
17	.02	.11	.10	1.26	.00	.00	.01	2.79	.01	.00	1.06	.06
18	.16	.75	.00	.24	.01	.00	.00	2.73	.43	.00	.00	.17
19	.03	1.01	.06	.11	.00	.00	.02	.25	.22	.00	.00	.04
20	.00	.32	.02	.01	.00	.01	.19	.19	.73	.03	.51	.08
21	.44	.09	1.19	.00	2.64	.80	.54	.24	.61	.03	.43	.06
22	.19	.43	.19	.16	.72	.69	.30	.23	1.46	.00	.44	.03
23	.02	.68	.01	.00	.10	.38	.08	.59	1.65	.02	.89	.02
24	.02	2.26	.06	.00	.04	.15	.22	.22	.82	.30	.32	.01
25	.01	.70	.14	.01	.03	.46	.01	.20	.58	.11	.09	.00
26	.47	.27	.03	.01	.00	.77	.22	.00	.63	.01	.26	.01
27	.49	1.77	.00	.50	.00	.35	.90	.03	.72	.01	.52	.04
28	.05	.80	.01	.00	.00	.18	.05	.02	2.19	.14	.31	.18
29	.00	1.20	3.42	.00	---	.89	.12	.00	1.69	.35	.06	.19
30	.02	.01	.44	.00	---	.40	.39	.02	.44	.71	.04	.15
31	.40	---	.03	.15	---	.70	---	.00	---	.17	.10	---
TOTAL	7.74	17.57	20.15	5.41	7.80	6.23	28.70	24.00	15.11	7.71	12.58	6.32

CAL YR 1997 Total 161.15
WTR YR 1998 Total 159.32

RAINFALL RECORDS

HAWAII, ISLAND OF KAUAI--Continued

220703159351201. State Key Number 1085.0 Mohihi-Koaie divide rain gage near Waimea, Kauai.

LOCATION.--Lat 22°07′03″, long 159°35′12″, Hydrologic Unit 20070000, 5.0 mi east of Kokee Lodge and 7.5 mi south of Kailiu Point.

PERIOD OF RECORD.--1910 to current year. Prior to October 1992, unpublished records are in files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service accumulation rain gage. Elevation of gage is 4,000 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 16	3.3 estimated (a)
Oct. 16 to Dec. 31	21.3 estimated (b)
Jan. 01 to Jan. 14	2.9 estimated (b)
Jan. 14 to May 28	29.0
May 28 to Aug. 19	13.2
Aug. 19 to Sep. 30	6.2 estimated (c)

CAL YR 1997 Total 94.6
WTR YR 1998 Total 75.9

(a) Estimated values based on accumulation rain can reading of 15.8 inches from Jul. 02 to Oct. 16
(b) Estimated values based on accumulation rain can reading of 24.2 inches from Oct. 16 to Jan. 14
(c) Estimated values based on accumulation rain can reading of 9.8 inches from Aug. 19 to Oct. 23

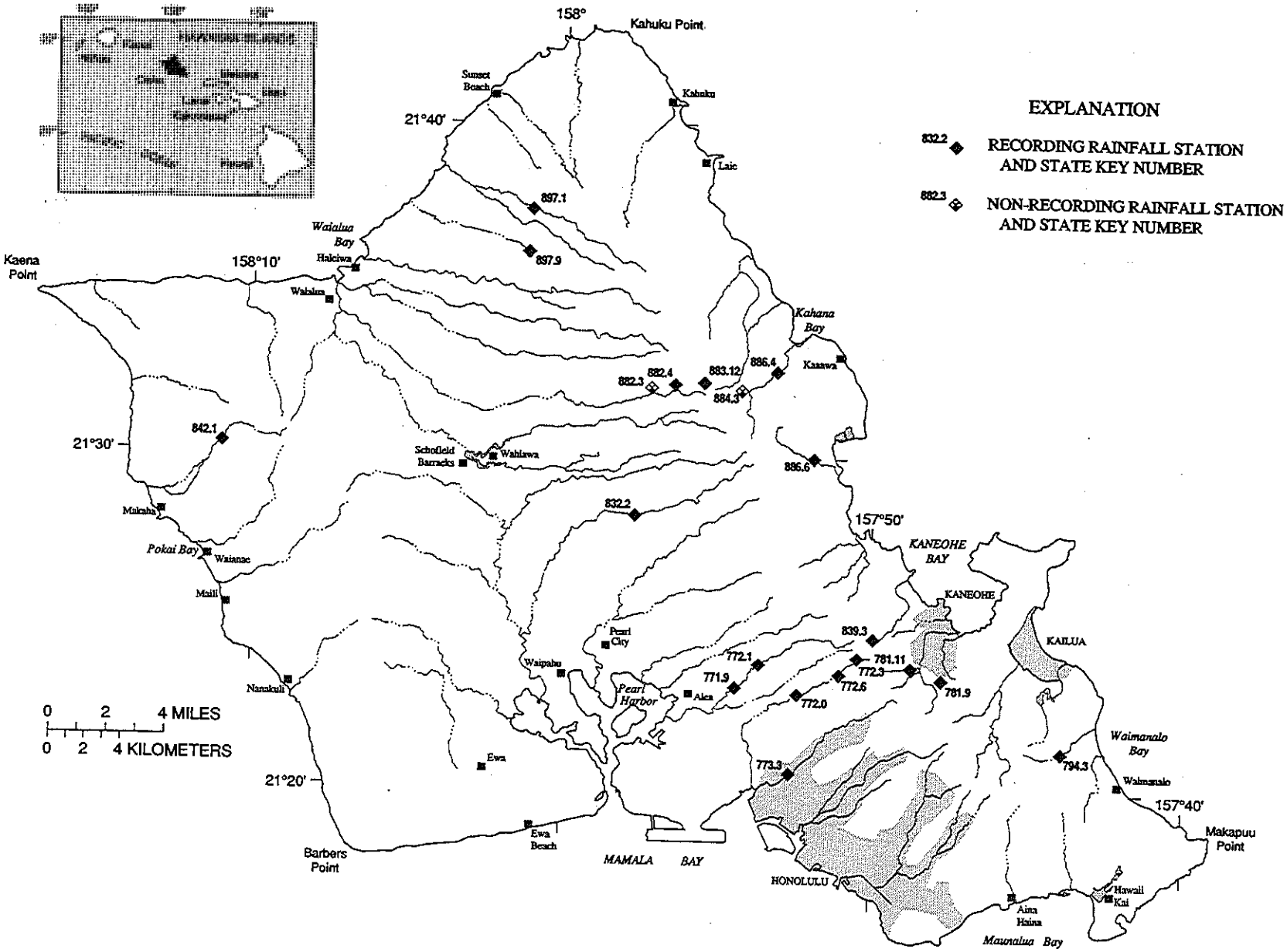


Figure 22. Locations of rainfall stations on Oahu.

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212428157511201. State Key Number 771.11 North Halawa Valley rain gage at tunnel portal near Kaneohe, Oahu.

LOCATION.--Lat 21°24′28″, long 157°51′12″, Hydrologic Unit 20060000, on roof of Halawa portal control center, 3.2 mi west of Kaneohe Post Office and 2.4 mi southwest of Ahuimanu School.

PERIOD OF RECORD.--Continuous-record station, July 15, 1998 to current year.

GAGE.--Standard 8-in. National Weather Service collector attached to a 7 5/16-in. rain can with float-type recorder system. Elevation of the gage is 1,100 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	.10	.90
2	---	---	---	---	---	---	---	---	---	---	.10	1.20
3	---	---	---	---	---	---	---	---	---	---	.10	.20
4	---	---	---	---	---	---	---	---	---	---	.10	.00
5	---	---	---	---	---	---	---	---	---	---	.10	.00
6	---	---	---	---	---	---	---	---	---	---	.60	.20
7	---	---	---	---	---	---	---	---	---	---	.40	.00
8	---	---	---	---	---	---	---	---	---	---	.40	.10
9	---	---	---	---	---	---	---	---	---	---	1.00	.30
10	---	---	---	---	---	---	---	---	---	---	.20	.20
11	---	---	---	---	---	---	---	---	---	---	.00	.00
12	---	---	---	---	---	---	---	---	---	---	.10	.70
13	---	---	---	---	---	---	---	---	---	---	.10	.10
14	---	---	---	---	---	---	---	---	---	---	.10	.50
15	---	---	---	---	---	---	---	---	---	---	.10	.40
16	---	---	---	---	---	---	---	---	---	.10	.30	.40
17	---	---	---	---	---	---	---	---	---	.00	.00	.10
18	---	---	---	---	---	---	---	---	---	.00	.00	.10
19	---	---	---	---	---	---	---	---	---	.00	.00	.20
20	---	---	---	---	---	---	---	---	---	.20	.20	.30
21	---	---	---	---	---	---	---	---	---	.00	.10	1.60
22	---	---	---	---	---	---	---	---	---	.00	1.10	.00
23	---	---	---	---	---	---	---	---	---	.00	.10	.10
24	---	---	---	---	---	---	---	---	---	.00	.00	.10
25	---	---	---	---	---	---	---	---	---	.50	.70	.30
26	---	---	---	---	---	---	---	---	---	.20	.10	.20
27	---	---	---	---	---	---	---	---	---	.00	.20	.00
28	---	---	---	---	---	---	---	---	---	.40	.40	.10
29	---	---	---	---	---	---	---	---	---	.30	.10	.40
30	---	---	---	---	---	---	---	---	---	.30	.20	.00
31	---	---	---	---	---	---	---	---	---	.00	.10	---
TOTAL	---	---	---	---	---	---	---	---	---	---	7.10	8.70

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU

212304157542201. State Key Number 771.9 North Halawa rain gage near Honolulu, Oahu.

LOCATION.--Lat 21°23′04″, long 157°54′22″, (Waipahu quadrangle, 1983, 1:24000) Hydrologic Unit 20060000, in USGS stream-gaging station 16226200, on right bank, 0.6 mi north of Oahu Prison, 1.0 mi south of Keaiwa Heiau, and 1.7 mi east of Aiea High School.

PERIOD OF RECORD.--Continuous-record station, May 1, 1983 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage receiver and 7 5/16-in. rain can with float-type system attached to a digital recorder. Elevation of gage is 160 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.6	.2	.1	.0	.0	.1	.3	.0	.0	.0	.0
2	.2	.0	.2	.0	.0	.0	.6	.0	.0	.0	.0	.0
3	.9	.0	.1	.2	.0	.0	.1	.0	.0	.1	.0	.0
4	.3	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.4	.0	.0	.2	.0	.2	.2	.0	.0
6	.3	.0	.0	.0	.0	.4	.0	.2	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.2	.0	.0	.1	.1	.0
8	.5	.0	.0	.0	.0	.0	.2	.1	.0	.2	.0	.0
9	.2	.0	.2	.0	.0	.0	.9	.0	.0	.2	.0	.0
10	.2	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0
11	1.4	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.0
12	.2	.1	.0	.0	.0	.0	.2	.3	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.1	.2	.0	.1	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.1	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0
16	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
18	.1	.3	.1	.3	.0	.0	.0	.1	.0	.0	.0	.0
19	.0	.0	.1	.0	.0	.0	.0	.1	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.7	.0	.0	.1
21	.2	.0	.0	.0	.0	.0	.0	.1	.5	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.1	.1
23	.1	.0	.1	.0	.0	.0	.0	.1	.1	.0	.0	.0
24	.0	.1	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0
25	.0	.5	.3	.0	.0	.0	.0	.0	.0	.0	.3	.0
26	.1	.0	.1	.0	.0	.2	.0	.0	.3	.0	.2	.0
27	.0	.6	.0	.0	.0	.1	.3	.0	.0	.0	.0	.0
28	.0	.2	.1	.0	.0	.1	.0	.0	.8	.0	.0	.0
29	.1	.2	.0	.0	---	.0	.0	.0	.5	.3	.0	.0
30	.0	.0	.1	.0	---	.3	.0	.0	.3	.0	.0	.0
31	.0	---	.0	.0	---	.3	---	.0	---	.0	.0	---
TOTAL	4.8	2.6	1.8	1.4	0.0	1.4	3.2	2.0	4.1	1.4	0.8	0.2

CAL YR 1997 TOTAL 44.5
WTR YR 1998 TOTAL 23.7

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212253157522201. State Key Number 772.0 Moanalua rain gage near Honolulu, Oahu.

LOCATION.--Lat 21°22′53″, long 157°52′22″, Hydrologic Unit 20060000, 1.8 mi northeast of Tripler Hospital, and 5.0 mi north of Honolulu Post Office.

PERIOD OF RECORD.--Accumulated-rainfall station, June 1926 (revised) to December 8, 1964. Continuous-record station, December 8, 1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector attached to a 7 5/16-in. rain can with float-type recorder system. An electronic data logger was installed on February 6, 1997 replacing the digital recorder. Housed with recording crest-gage. Elevation of the gage is 340 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	1.0	.2	.3	.0	.0	.1	.6	.0	.0	.0	.4
2	.4	.1	.3	.0	.0	.1	.6	.0	.2	.0	.0	.3
3	1.8	.0	.1	.3	.0	.2	.2	.3	.1	.3	.0	.1
4	.8	.0	.0	.0	.0	.0	.0	.0	.1	.2	.2	.0
5	.1	.2	.0	.3	.0	.0	.4	.0	.6	.2	.1	.0
6	.7	.0	.3	.0	.0	.0	.1	.9	.0	.0	.2	.3
7	.1	.0	.3	.0	.0	.0	.5	.1	.0	.3	.1	.0
8	1.4	.2	.4	.0	.0	.0	.8	.2	.2	.7	.0	.0
9	.0	.1	.1	.0	.0	.0	.9	.1	.1	.2	.1	.0
10	.9	.0	.0	.0	.0	.0	.2	.1	.0	.1	.1	.0
11	.8	.2	.0	.0	.0	.0	.0	.3	.2	.0	.0	.0
12	.1	.3	.0	.0	.0	.0	.3	.4	.5	.0	.0	.4
13	.0	.0	.0	.0	.1	.0	.4	.2	.1	.2	.0	.0
14	.0	.1	.0	.0	.0	.0	.0	.1	1.2	.2	.1	.1
15	.4	.0	.1	.0	.0	.0	.0	.1	.3	.8	.1	.1
16	.2	.0	.4	.0	.0	.0	.0	.0	.0	.0	.1	.1
17	.0	.0	.6	.6	.0	.0	.1	.0	.3	.0	.0	.1
18	.2	.3	.4	.4	.0	.0	.1	.2	.0	.0	.0	.2
19	.0	.0	.1	.0	.0	.0	.1	.3	.2	.0	.0	.0
20	.1	.0	.1	.0	.0	.0	.2	.1	1.3	.0	.1	.2
21	.7	.0	.0	.0	.0	.0	.2	.2	1.1	.0	.0	.4
22	.4	.0	.1	.1	.4	.0	.2	.3	.2	.0	.8	.2
23	.2	.1	.3	.0	.0	.2	.1	.1	.5	.0	.0	.0
24	.1	.6	.2	.0	.1	.0	.1	.0	.9	.0	.1	.1
25	.0	.7	.4	.0	.2	.3	.0	.0	.1	.0	.7	.2
26	.2	.0	.2	.0	.1	.6	.0	.0	.9	.0	.1	.0
27	.0	1.5	.2	.0	.0	.2	.1	.0	.2	.0	.0	.3
28	.2	.7	.3	.0	.0	.2	.0	.1	.7	.0	.1	.1
29	.1	1.0	.1	.0	---	.3	.0	.0	.8	.3	.1	.2
30	.1	.2	.6	.0	---	.3	.0	.1	.4	.2	.1	.1
31	.0	---	.0	.0	---	.5	---	.2	---	.0	.0	---
TOTAL	10.0	7.3	5.8	2.0	0.9	2.9	5.7	5.0	11.2	3.7	3.2	3.9

CAL YR 1997 TOTAL 95.6
WTR YR 1998 TOTAL 61.6

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212346157533701. State Key Number 772.1 North Halawa rain gage near Aiea, Oahu.

LOCATION.--Lat 21°23'46 "(revised), long 157°53'37 ", Hydrologic Unit 20060000, 2.7 mi above confluence with South Halawa Stream, 2.7 mi northeast of Aiea Post Office, and 6.5 mi northwest of Honolulu.

PERIOD OF RECORD.--Continuous-record station, August 6, 1929 to June 30, 1933, June 3, 1953 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--A 12-in. collector and 10-in. storage tank with float-type recorder system. Elevation of gage is 320 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in 0.083 of an inch increments.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.75	.17	.17	.00	.00	.00	.33	.00	.00	.00	.17
2	.25	.00	.25	.00	.00	.08	.58	.00	.00	.00	.00	.08
3	1.50	.00	.00	.17	.00	.00	.17	.08	.00	.08	.00	.08
4	.50	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00	.00
5	.08	.00	.00	.42	.00	.00	.25	.00	.08	.17	.00	.00
6	.33	.00	.08	.00	.00	.17	.08	.33	.00	.00	.00	.08
7	.08	.00	.25	.00	.00	.00	.25	.00	.00	.08	.08	.00
8	.17	.00	.42	.00	.00	.00	.42	.08	.00	.42	.00	.00
9	.00	.08	.00	.00	.00	.00	.75	.08	.00	.17	.00	.00
10	.33	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00
11	1.17	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00
12	.00	.25	.00	.00	.00	.00	.00	.25	.17	.00	.00	.17
13	.00	.00	.00	.00	.00	.00	.17	.25	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.08	.42	.08	.00	.08
15	.00	.00	.00	.00	.00	.00	.00	.00	.08	.50	.00	.08
16	.08	.00	.25	.00	.00	.00	.00	.00	.00	.00	.00	.08
17	.00	.00	.33	.58	.00	.00	.08	.00	.25	.00	.00	.00
18	.17	.17	.25	.17	.00	.00	.08	.08	.00	.00	.00	.08
19	.00	.00	.00	.00	.00	.00	.00	.42	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.08	1.17	.00	.08	.17
21	.17	.00	.00	.00	.00	.00	.08	.00	.83	.00	.00	.17
22	.25	.00	.08	.00	.25	.00	.08	.25	.17	.00	.33	.00
23	.08	.00	.17	.00	.00	.00	.08	.00	.17	.00	.00	.00
24	.00	.33	.08	.00	.00	.08	.00	.00	.42	.00	.00	.08
25	.08	.50	.33	.00	.00	.17	.00	.00	.08	.00	.25	.08
26	.08	.00	.08	.00	.17	.33	.00	.00	.75	.00	.08	.00
27	.00	.92	.08	.00	.00	.17	.00	.00	.00	.00	.00	.00
28	.00	.50	.17	.00	.00	.08	.00	.00	.67	.00	.00	.17
29	.17	.42	.08	.00	---	.17	.00	.00	.42	.25	.00	.25
30	.00	.08	.42	.00	---	.25	.00	.00	.33	.00	.00	.00
31	.00	---	.00	.00	---	.50	---	.00	---	.00	.00	---
TOTAL	5.49	4.00	3.49	1.51	0.42	2.00	3.32	2.56	6.01	1.83	0.82	1.82

CAL YR 1997 TOTAL 57.15
WTR YR 1998 TOTAL 33.27

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212359157502601. State Key Number 772.3 Moanalua rain gage no. 1 at altitude 1,000 ft near Honolulu, Oahu.

LOCATION.--Lat 21°23′59″, long 157°50′26″, (Kaneohe quadrangle, 1959, 1:24000) Hydrologic Unit 20060000, 2.7 mi southwest of Kaneohe Post Office, and 4.2 mi northeast of Tripler Hospital.

PERIOD OF RECORD.--Continuous-record station, June 25, 1968 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in. rain can with recorder. An electronic data logger was installed on February 5, 1997 replacing the digital recorder. Elevation of gage is 1,000 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	3.3	.6	2.6	.1	.0	.1	.4	.0	.0	.1	.8
2	1.0	.1	.2	.0	.0	.3	.2	.1	.6	.1	.2	.7
3	2.8	.2	.1	.0	.0	.0	.1	.5	.3	1.0	.1	.2
4	1.3	.0	.0	.1	.0	.0	.0	.1	.8	1.0	.3	.1
5	.3	1.7	.0	.3	.0	.0	.5	.0	.3	.4	.1	.0
6	.4	.0	.6	.0	.0	.0	.1	1.0	.0	.1	.2	.4
7	.4	.0	.6	.0	.0	.0	.7	.1	.2	.3	.5	.0
8	1.0	1.2	.4	.0	.0	.0	.3	.0	1.3	1.0	.5	.0
9	1.6	.1	.2	.0	.0	.0	.4	.1	.1	.3	1.1	.3
10	.7	.1	.1	.0	.0	.0	.1	.0	.0	.2	.2	.2
11	.9	.4	.0	.0	.0	.0	.0	.3	.2	.0	.0	.0
12	.0	.8	.0	.0	.0	.2	.1	.4	.7	.1	.0	.4
13	.0	.0	.0	.0	.0	.0	.3	.1	.2	.6	.0	.1
14	.0	.0	.0	.0	.0	.0	.0	.1	.5	.2	.2	.3
15	.6	.0	.0	.0	.0	.0	.0	.0	1.2	1.0	.1	.1
16	.2	.0	.7	.0	.0	.0	.0	.0	.1	.0	.0	.5
17	.0	.0	.2	2.3	.0	.0	.0	.2	.3	.1	.0	.0
18	.3	.2	2.1	.3	.0	.0	.1	.1	.0	.0	.0	.3
19	.0	.0	.1	.0	.0	.0	.2	.4	.2	.0	.1	.1
20	.1	.0	.2	.0	.0	.0	1.2	.1	1.0	.0	.0	.1
21	.3	.0	.0	.0	.2	.0	.5	.2	.8	.1	.0	1.1
22	.6	.0	.1	.0	.2	.0	.6	.5	.1	.0	1.0	.1
23	.0	.1	.3	.0	.0	.3	.2	.2	.3	.0	.1	.0
24	.0	.6	.2	.0	.1	.1	.2	.0	1.9	.0	.0	.0
25	.1	.1	.5	.0	.1	.5	.1	.0	.2	.0	.5	.1
26	.1	.1	.1	.0	.9	.8	.1	.1	1.4	.2	.0	.2
27	.0	1.8	.4	.3	.1	.1	.4	.0	.2	.0	.1	.0
28	.1	.5	1.2	.0	.0	.1	.3	.0	.8	.3	.4	.0
29	.1	.6	.1	.0	---	.4	.0	.1	.8	.2	.1	.5
30	.0	.7	3.3	.0	---	.3	.0	.0	.6	.4	.0	.0
31	.0	---	.7	.0	---	.3	---	.1	---	.0	.1	---
TOTAL	12.9	12.6	13.0	5.9	1.7	3.4	6.8	5.2	15.1	7.6	6.0	6.6

WTR YR 1998 TOTAL 96.8

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212329157510501. State key Number 772.6 Moanalua rain gage near Kaneohe, Oahu.

LOCATION.--Lat 21°23′29″, long 157°51′05″, (Kaneohe quadrangle, 1959, 1:24000) Hydrologic Unit 20060000, in USGS stream-gaging station 16227500, on left bank 3.3 mi northeast of Tripler Hospital, and 3.6 mi southwest of Kaneohe Post Office.

PERIOD OF RECORD.--Continuous-record station, August 29, 1968 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector attached to 7 5/16-in. rain can with a digital recorder. An electonic data logger was installed on February 5, 1997 replacing the digital recorder. Elevation of gage is 660 ft above mean sea level (from topographic map).

REMARKS.--Records good except for period of no record, January 16 to March 18, which is poor. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	1.6	.3	1.2	---	---	.0	.5	.0	.0	.0	.8
2	.9	.0	.1	.0	---	---	.4	.1	.6	.0	.2	.8
3	3.0	.1	.0	.2	---	---	.2	.6	.3	.7	.1	.2
4	1.3	.0	.0	.1	---	---	.0	.0	.5	.7	.3	.0
5	.2	1.0	.0	.4	---	---	.6	.0	.6	.4	.1	.0
6	.4	.0	.5	.0	---	---	.1	1.3	.0	.1	.3	.2
7	.4	.0	.6	.0	---	---	.8	.1	.2	.4	.5	.0
8	2.6	.9	.1	.0	---	---	.4	.1	1.0	.9	.3	.0
9	.6	.2	.1	.0	---	---	.6	.1	.1	.2	.7	.2
10	.8	.0	.0	.0	---	---	.1	.1	.1	.3	.1	.1
11	.8	.4	.0	.0	---	---	.0	.3	.3	.0	.0	.0
12	.1	.5	.0	.0	---	---	.2	.4	.7	.1	.1	.2
13	.0	.0	.0	.0	---	---	.3	.2	.2	.6	.0	.1
14	.0	.0	.0	.0	---	---	.0	.2	1.0	.2	.3	.0
15	.6	.0	.0	.0	---	---	.0	.0	.9	1.1	.1	.1
16	.3	.0	.7	.0	---	---	.0	.0	.1	.0	.0	.0
17	.0	.0	.3	---	---	---	.1	.2	.6	.0	.0	.1
18	.3	.3	.8	---	---	a.1	.1	.1	.2	.0	.0	.0
19	.0	.0	.0	---	---	.0	.3	.5	.4	.0	.0	.0
20	.1	.1	.3	---	---	.0	.9	.1	1.4	.1	.2	.0
21	.8	.0	.0	---	---	.0	.5	.3	1.1	.0	.0	.0
22	.6	.0	.2	---	---	.0	.5	.5	.2	.0	1.2	.0
23	.1	.1	.5	---	---	.3	.3	.1	.3	.0	.0	.0
24	.0	.6	.2	---	---	.1	.1	.0	1.8	.0	.0	.0
25	.1	.4	.5	---	---	.5	.2	.0	.3	.2	.6	.0
26	.2	.1	.1	---	---	.8	.0	.1	1.5	.1	.2	.0
27	.0	2.0	.4	---	---	.2	.3	.0	.3	.0	.0	.0
28	.0	.2	.9	---	---	.1	.3	.0	.7	.2	.4	.0
29	.2	.6	.2	---	---	.4	.0	.0	1.2	.3	.1	.0
30	.0	.1	2.5	---	---	.4	.0	.1	.5	.5	.1	.0
31	.0	---	.4	---	---	.4	---	.3	---	.0	.1	---
TOTAL	14.4	9.2	9.7	---	---	---	7.3	6.3	17.1	7.1	6.0	2.8
MEAN	.5	.3	.3	---	---	---	.2	.2	.6	.2	.2	.1
MAX	3.0	2.0	2.5	---	---	---	.9	1.3	1.8	1.1	1.2	.8
MIN	.0	.0	.0	---	---	---	.0	.0	.0	.0	.0	.0

(a) No record January 16 (1130 hrs) to March 18 (1130 hrs). Faucet on rain can not closed.

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212029157523601. State Key Number 773.3 Kalihi rain gage at Kalihi, Oahu.

LOCATION.--Lat 21°20′29″, long 157°52′36″, Hydrologic Unit 20060000, in USGS stream-gaging station 16229300 on left bank, 0.4 mi northwest of Bishop Museum, and 2.4 mi northwest of Honolulu Post Office.

PERIOD OF RECORD.--Continuous-record station, July 1962 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage with tipping-bucket attachment. An electronic data logger records rainfall at 30-minute intervals. Elevation of gage is 70 ft above mean sea level (from topographic map).

REMARKS.--Records fair, January 26 to April 27. Rainfall recorded in tenths of an inch. For the rest of the year, rainfall was adjusted by the ratio of rain can readings divided by the total tips of the tipping bucket.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.55	.18	.18	.00	.00	.10	.10	.00	.00	.00	.00
2	.09	.00	.09	.00	.00	.00	.70	.00	.00	.00	.00	.00
3	.64	.00	.09	.28	.00	.00	.00	.00	.00	.05	.00	.00
4	.37	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
5	.00	.00	.00	.46	.00	.00	.10	.00	.05	.05	.05	.00
6	.18	.00	.00	.00	.00	1.40	.00	.10	.00	.00	.00	.11
7	.00	.00	.09	.00	.00	.00	.00	.00	.00	.05	.00	.00
8	.00	.00	.37	.00	.00	.00	.20	.10	.00	.05	.00	.00
9	.18	.00	.09	.00	.00	.00	.90	.05	.00	.10	.00	.00
10	.46	.00	.00	.00	.00	.00	.30	.00	.00	.00	.00	.00
11	.64	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00
12	.00	.09	.00	.00	.10	.00	.30	.16	.05	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.10	.00	.05	.00	.00
14	.00	.00	.00	.00	.00	.00	.10	.00	.05	.00	.00	.00
15	.09	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00
16	.00	.00	.09	.00	.00	.00	.00	.05	.00	.00	.00	.00
17	.00	.00	.09	.28	.00	.00	.00	.00	.00	.00	.00	.00
18	.09	.28	.09	.18	.00	.00	.00	.05	.00	.00	.00	.00
19	.00	.00	.09	.09	.00	.00	.00	.05	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.05	.21	.00	.00	.05
21	.18	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
22	.18	.00	.00	.00	.00	.00	.10	.10	.10	.00	.11	.00
23	.18	.00	.18	.00	.00	.00	.00	.00	.21	.00	.00	.00
24	.09	.46	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.37	.09	.00	.10	.00	.00	.00	.00	.00	.11	.00
26	.09	.00	.00	.00	.00	.10	.00	.00	.10	.00	.00	.00
27	.09	.46	.09	.00	.00	.10	.00	.00	.00	.00	.00	.00
28	.00	.18	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00
29	.00	.28	.09	.00	---	.30	.00	.00	.16	.05	.00	.00
30	.00	.00	.00	.00	---	.20	.00	.00	.05	.05	.00	.00
31	.00	---	.00	.00	---	.20	---	.00	---	.00	.00	---
TOTAL	3.55	2.67	1.81	1.47	0.20	2.30	2.80	1.17	1.24	0.56	0.27	0.16

CAL YR 1997 TOTAL 33.73
WTR YR 1998 TOTAL 18.20

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212342157484401. State Key Number 781.11 Luluku rain gage at altitude 220 ft near Kaneohe, Oahu.

LOCATION.--Lat 21°23′42″, long 157°48′44″, Hydrologic Unit 20060000, in USGS stream-gaging station 16270900 on right bank, 0.5 mi upstream from mouth, 1.4 mi southwest of Castle High School, and 1.9 mi south of Kaneohe Post Office.

PERIOD OF RECORD.--Continuous-record station, April 1984 to September 1998 (discontinued). Station was relocated 400 ft downstream in 1984. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service tipping-bucket rain gage. Elevation of gage is 220 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.0	1.7	.8	3.1	.0	.4	.0	.2	.0	.0	.0	.0
2	e.3	.0	.0	.1	.0	1.5	.1	.0	.2	.0	.0	.8
3	.9	.1	.0	.3	.0	.0	.2	.1	.2	.1	.0	.3
4	.7	.1	.0	.1	.0	.0	.0	.0	.3	.4	.0	.0
5	.2	1.2	.0	.5	.0	.1	.1	.0	.2	.2	.0	.0
6	.0	.0	.1	.0	.0	.0	.1	.3	.0	.0	.1	.1
7	.2	.1	.6	.0	.0	.0	.2	.1	.0	.0	.0	.0
8	.0	.1	.1	.0	.0	.0	.3	.0	.4	.2	.3	.0
9	.2	.1	.2	.0	.0	.0	.2	.1	.0	.2	.4	.0
10	.3	.0	.0	.0	.0	.0	.1	.0	.0	.1	.1	.1
11	.6	.1	.0	.0	.0	.0	.0	.1	.1	.1	.0	.0
12	.1	.4	.0	.0	.0	.0	.1	.0	.3	.0	.0	.1
13	.0	.0	.0	.0	.0	.0	.1	.0	.0	.3	.0	.1
14	.0	.0	.0	.0	.0	.0	.0	.1	.1	.3	.0	.0
15	.2	.0	.0	.0	.0	.0	.0	.0	.5	.4	.0	.1
16	.0	.0	.3	.0	.0	.0	.0	.0	.1	.0	.0	.3
17	.0	.0	.0	.7	.0	.0	.0	.0	.1	.0	.1	.0
18	.3	.3	1.4	.1	.0	.0	.1	.2	.1	.0	.0	.0
19	.1	.0	.1	.0	.1	.0	.4	.3	.1	.0	.0	.1
20	.0	.0	.3	.0	.0	.0	.4	.0	.5	.0	.0	.0
21	.2	.0	.0	.0	.0	.0	.3	.0	.4	.0	.0	.5
22	.1	.0	.0	.0	.0	.1	.2	.3	.1	.0	.1	.0
23	.0	.0	.2	.0	.0	---	.0	.1	.2	.0	.0	.0
24	.0	.0	.0	.0	.0	---	.0	.0	.7	.0	.0	.0
25	.0	.1	.1	.0	.1	---	.1	.1	.1	.0	.3	.0
26	.1	.0	.1	.0	.8	---	.0	.0	.3	.0	.0	.0
27	.0	.4	.1	.2	.1	---	.1	.0	.0	.0	.0	.0
28	.0	.3	1.8	.0	.0	---	.1	.0	.2	.0	.0	.3
29	.1	.2	.0	.0	---	---	.0	.0	.7	.0	.0	.0
30	.0	.4	.6	.0	---	---	.0	.0	.3	.1	.0	.0
31	.0	---	.8	.0	---	a--	---	.0	---	.0	.0	---
TOTAL	4.6	5.6	7.6	5.1	1.1	2.7	3.2	2.0	6.2	2.4	1.4	2.8

CAL YR 1997 TOTAL 74.7
WTR YR 1998 TOTAL 44.7

e Estimated
(a) Total accumulated rainfall from Mar. 23 to Mar. 31 is 0.60 inch

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212322157474401. State Key Number 781.9 Right Branch Kamooalii rain gage near Kaneohe, Oahu.

LOCATION.--Lat 21°23′22″, long 157°47′44″, Hydrologic Unit 20060000, in USGS stream-gaging station 16265600 on left bank, 0.3 mi south of Hawaiian Memorial Park Cemetery, 1.0 mi northwest of Pali Golf Course, and 1.3 mi south of Castle High School.

PERIOD OF RECORD.--Continuous-record station, February 1, 1983 to current year. Prior to 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage receiver and 7 5/16-in. rain can with float-type system attached to a digital recorder. Elevation of gage is 195.16 ft above mean sea level (from levels by the Hawaii State Department of Transportation, Highways Division).

REMARKS.--Records fair. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	1.5	.6	3.0	---	.1	.0	.0	.0	.0	.0	.0
2	.2	.0	.0	.0	---	1.2	.1	.0	.0	.0	.0	.0
3	.9	.1	.0	.3	---	.0	.0	.0	.0	.0	.0	.0
4	.6	.0	.0	.2	---	.1	.0	.0	.0	.0	.0	.0
5	.3	1.6	.0	1.1	---	.0	.1	.0	.0	.0	.0	.0
6	.0	.0	.1	.0	---	.0	.0	.0	.0	.0	.0	.0
7	.1	.0	.4	.0	---	.0	.1	.0	.0	.0	.0	.0
8	.0	.1	.2	.0	---	.2	.1	.0	.0	.0	.0	.0
9	.1	.0	.2	.0	a--	.0	.0	.0	.0	.0	.0	.0
10	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.6	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.1	.2	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.1	.0	.0	---	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.2	---	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0	.0
18	.1	.6	1.4	---	.0	.0	.1	.0	.0	.0	.0	.0
19	.0	.0	.1	---	.1	.0	e.1	.0	.0	.0	.0	.0
20	.0	.0	.0	---	.0	.0	e.3	.0	.0	.0	.0	.0
21	.1	.0	.0	---	.0	.0	e.2	.0	.0	.0	.0	.0
22	.1	.0	.1	---	.1	.0	e.2	.0	.0	.0	.0	.0
23	.0	.0	.1	---	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.3	.0	---	.0	.1	.0	.0	.0	.0	.0	.0
25	.0	.0	.1	---	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	---	.6	.0	.0	.0	.0	.0	.0	.0
27	.0	.9	.1	---	.0	.1	.1	.0	.0	.0	.0	.0
28	.1	.2	1.9	---	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.1	.4	---	---	.1	.0	.0	.0	.0	.0	.0
30	.0	1.0	.3	---	---	.0	e.0	.0	.0	.0	.0	.1
31	.1	---	.7	---	---	.1	---	.0	---	.0	.0	---
TOTAL	3.7	6.8	6.9	---	---	2.0	1.5	0.0	0.0	0.0	0.0	0.1

WTR YR 1998 TOTAL 27.3

e Estimated
(a) Total accumulated rainfall from Jan. 15 to Feb. 9 is 0.9 inch

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212114157435001. State Key Number 794.3 Waimanalo rain gage at Waimanalo, Oahu.

LOCATION.--Lat 21°21′14″, long 157°43′50″, Hydrologic Unit 20060000, in USGS stream-gaging station 16249000, 260 ft downstream from Kalanianaole Highway, and 2.3 mi northwest of Waimanalo Post Office.

PERIOD OF RECORD.--Continuous-record station, January 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage attached to a tipping-bucket counter and recorder. An electonic data logger on a float system was installed on March 26, 1998 replacing the digital recorder. Elevation of gage is 20 ft above mean sea level (from topographic map).

REMARKS.--Records are poor, October 1 to March 26; records are fair, March 26 to September 30. Rainfall recorded in increments of 0.10 inch, October 1 to March 26, and 0.12 inch, March 26 to September 30.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	.00	.00	.00	.00	.00	.36
2	---	---	---	---	---	---	.00	.00	.00	.00	.00	.12
3	---	---	---	---	---	---	.12	.24	.00	.12	.00	.00
4	---	---	---	---	---	---	.00	.00	.12	.12	.00	.00
5	---	---	---	---	---	---	.12	.00	.00	.12	.00	.00
6	---	---	---	---	---	---	.00	.36	.00	.00	.00	.12
7	---	---	---	b--	---	---	.00	.00	.00	.00	.12	.00
8	---	---	---	---	---	---	.00	.00	.00	.12	.12	.00
9	---	---	---	---	---	---	.12	.00	.00	.12	.12	.00
10	---	---	---	---	---	---	.00	.00	.00	.00	.12	.00
11	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
12	---	---	---	---	---	---	.12	.00	.12	.00	.00	.00
13	---	---	---	---	---	---	.00	.00	.00	.12	.00	.00
14	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
15	---	---	---	---	---	---	.00	.00	.00	.24	.00	.00
16	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
17	---	---	---	---	---	---	.00	.00	.12	.00	.00	.00
18	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
19	---	---	---	---	---	---	.00	.00	.12	.00	.00	.00
20	---	---	---	---	---	---	.00	.00	.00	.00	.00	.00
21	---	---	---	---	---	---	.12	.00	.24	.00	.00	.00
22	---	---	---	---	---	---	.00	.24	.24	.00	.00	.00
23	a--	---	---	---	---	---	.00	.00	.24	.00	.00	.00
24	---	---	---	---	c--	---	.00	.00	.00	.00	e.00	.00
25	---	---	---	---	---	---	.00	.00	.00	.00	.00	.12
26	---	---	---	---	---	d--	.00	.00	.24	.00	.00	.00
27	---	---	---	---	---	.00	.00	.00	.00	.00	.12	.00
28	---	---	---	---	---	.00	.00	.00	.12	.12	.00	.00
29	---	---	---	---	---	.12	.00	.00	.12	.00	.00	.00
30	---	---	---	---	---	.12	.00	.00	.12	.12	.00	.00
31	---	---	---	---	---	.00	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	---	0.60	0.84	1.80	1.20	0.60	0.72

(a) No record Sep. 12 to Oct. 23
(b) Total accumulated rainfall from Oct. 23 (1515 hrs) to Jan. 7 (1450 hrs) is 9.6 inches
(c) Total accumulated rainfall from Jan. 7 (1455 hrs) to Feb. 24 (0915 hrs) is 0.0 inches
(d) Total accumulated rainfall from Feb. 24 (0925 hrs) to Mar. 26 (0945 hrs) is 0.0 inches. Partial daily record Mar. 26 from 1315 hrs to 2400 hrs
(e) Total accumulated rainfall from May 13 (1430 hrs) to Aug. 24 (1100 hrs) is 0.5 inches greater (4.2 inches compared with 3.7 inches)

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212813157574001. State Key Number 832.2 Kipapa rain gage near Wahiawa, Oahu.

LOCATION.--Lat 21°28′13″, long 157°57′40″, Hydrologic Unit 20060000, on left bank of stream 1,700 ft below Forest Reserve Boundary, 4.9 mi southeast of Wahiawa Post Office, and 6.3 mi northeast of Waipahu. The rain gage was housed in the same shelter with USGS stream-gaging station 16212800, but was relocated to a new shelter 15 ft downstream on January 19, 1994.

PERIOD OF RECORD.--Continuous-record station, January 2, 1957 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in. storage can with a float-type recorder system. Elevation of gage is 690 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.40	.30	.20	.00	.00	.50	.60	.00	.00	.00	.20
2	.00	.00	.60	.00	.00	.00	.90	.00	.10	.10	.00	.10
3	1.60	.00	.00	.10	.00	.00	.00	.10	.10	.30	.00	.00
4	.40	.00	.00	.60	.10	.00	.00	.00	.00	.20	.00	.00
5	.40	.00	.00	.30	.00	.00	.60	.00	.10	.20	.00	.00
6	.70	.00	.00	.00	.00	.00	.20	.40	.00	.00	.10	.10
7	.00	.10	.20	.00	.00	.00	.30	.00	.00	.20	.10	.00
8	.00	.00	.60	.00	.00	.10	.60	.30	.30	.40	.00	.00
9	.00	.00	.00	.00	.00	.00	1.90	.00	.10	.10	.00	.00
10	.00	.00	.00	.00	.00	.00	.70	.00	.00	.20	.00	.00
11	.10	.10	.00	.00	.10	.00	.00	.40	.10	.10	.00	.00
12	.10	.10	.00	.00	.00	.00	.50	.50	.30	.00	.00	.10
13	.00	.10	.00	.00	.00	.00	.20	.70	.20	.20	.10	.00
14	.00	.00	.10	.00	.00	.00	.10	.30	.90	.20	.10	.00
15	.00	.00	.10	.00	.10	.00	.00	.20	.00	.20	.10	.00
16	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.10	.30	.40	.00	.00	.00	.10	.10	.00	.00	.20
18	.10	.30	.00	.20	.00	.00	.00	.40	.00	.00	.00	.10
19	.00	.20	.00	.10	.00	.00	.00	.20	.00	.00	.00	.00
20	.10	.00	.00	.00	.00	.00	.20	.10	1.10	.00	.00	.20
21	.40	.00	.00	.00	.00	.00	.10	.30	.90	.00	.00	.10
22	.60	.00	.00	.00	.20	.00	.10	.10	.40	.00	.30	.10
23	.20	.00	.20	.00	.10	.10	.10	.10	.30	.00	.00	.00
24	.00	.40	.00	.00	.10	.00	.10	.10	.60	.00	.10	.00
25	.30	.50	.60	.00	.10	.40	.00	.00	.10	.00	.10	.10
26	.20	.00	.30	.00	.10	1.00	.10	.00	.90	.00	.20	.00
27	.20	.70	.10	.00	.00	.30	.20	.00	.30	.00	.10	.20
28	.10	.30	.20	.00	.00	.20	.00	.10	.80	.10	.00	.00
29	.20	.40	.20	.00	---	.20	.00	.00	.50	.80	.00	.30
30	.00	.10	.30	.00	---	.50	.00	.00	.30	.20	.00	.00
31	.00	---	.00	.00	---	.70	---	.10	---	.00	.10	---
TOTAL	5.70	3.80	4.20	1.90	0.90	3.50	7.40	5.10	8.50	3.50	1.40	1.80

WTR YR 1998 TOTAL 47.70

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

212434157495601. State Key Number 839.3 Haiku rain gage near Heeia, Oahu.

LOCATION.--Lat 21°24′34″, long 157°49′56″, near main building of Omega Station, 1.9 mi southwest of Kaneohe Post Office, and 2.0 mi south of Ahuimanu School.

PERIOD OF RECORD.--Continuous-record station, June 2, 1986 to September 1998 (discontinued). Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain gage receiver and 7 5/16-in. storage can with a float-type system attached to a digital recorder. Elevation of gage is 460 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	3.0	.4	3.1	.0	.0	.0	.1	.0	.0	.0	.5
2	.7	.0	.0	.2	.0	.3	.0	.0	.0	.0	.0	.5
3	1.4	.1	.0	.0	.0	.0	.0	.1	.4	.5	.0	.0
4	.9	.0	.0	.0	.0	.0	.0	.0	.3	.4	.1	.1
5	.2	1.6	.0	.5	.0	.0	.2	.0	.2	.2	.0	.0
6	.3	.0	.2	.1	.0	.0	.0	.4	.0	.0	.1	.1
7	.5	.0	.3	.0	.0	.0	.2	.0	.2	.1	.2	.0
8	.5	.2	.2	.0	.0	.0	.1	.0	.4	.2	.3	.0
9	1.2	.1	.1	.0	.0	.0	.2	.0	.0	.2	.6	.2
10	.3	.0	.1	.0	.0	.0	.0	.0	.1	.0	.2	.1
11	.7	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.5	.0	.0	.0	.0	.0	.2	.2	.0	.0	.3
13	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.1
15	.1	.0	.0	.0	.0	.0	.0	.0	.2	.1	.0	.1
16	.1	.0	.5	.0	.0	.0	.0	.0	.0	.1	.0	.2
17	.0	.0	.0	.8	.0	.0	.0	.1	.0	.0	.2	.0
18	.0	.1	1.6	.1	.0	.0	.1	.0	.0	.0	.0	.1
19	.0	.1	.1	.0	.0	.0	.2	.1	.1	.0	.0	.0
20	.0	.0	.2	.0	.0	.0	.5	.1	.5	.0	.0	.1
21	.2	.0	.0	.0	.0	.0	.2	.1	.3	.0	.0	.6
22	.1	.0	.0	.0	.0	.0	.2	.2	.1	.0	.4	.0
23	.0	.0	.4	.0	.0	.0	.1	.0	.0	.0	.0	.0
24	.0	.2	.1	.0	.0	.0	.0	.0	.6	.0	.0	.0
25	.0	.0	.2	.0	.0	.1	.0	.0	.1	.0	.3	.0
26	.1	.0	.0	.0	1.6	.2	.1	.0	.4	.1	.0	.1
27	.0	.8	.1	.0	.1	.1	.2	.0	.1	.0	.1	.0
28	.0	.1	1.5	.0	.0	.0	.1	.0	.3	.0	.2	.0
29	.0	.1	.0	.0	---	.1	.0	.0	.4	.1	.0	.3
30	.0	.8	1.1	.0	---	.2	.0	.0	.3	.1	.0	.0
31	.1	---	1.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	7.4	7.9	8.1	4.8	1.7	1.0	2.4	1.4	5.3	2.5	2.7	3.4

CAL YR 1997 TOTAL 90.2
WTR YR 1998 TOTAL 48.6

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213016158105901. State Key Number 842.1 Makaha rain gage near Makaha, Oahu.

LOCATION.--Lat 21°30′16″, long 158°10′59″, Hydrologic Unit 20060000, in USGS stream-gaging station 16211600, on right bank, 1.5 mi northeast of Kaneaki Heiau, and 3.4 mi northeast of Makaha.

PERIOD OF RECORD.--Continuous-record station, July 1959 to current year. Prior to October 1992, unpublished records in files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in., 4-ft tall rain can with a float-type system attached to an electronic data logger. Readings are taken at 30-minute intervals. Elevation of gage is 957 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.00	.10	.00	.50	.10	.00	.30	.00	.00	.40	.10
2	.00	.00	.70	.00	.00	.00	.50	.00	.00	.00	.00	.50
3	.30	.00	.10	.10	.00	.00	.00	.00	.00	.10	.00	.00
4	.00	.00	.00	.30	.30	.00	.00	.00	.10	.00	.00	.00
5	.10	.10	.00	.20	.00	.00	.20	.00	.00	.10	.00	.00
6	.00	.00	.00	.00	.00	.10	.00	.30	.00	.00	.00	.00
7	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.20	.00
8	.00	.30	.20	.00	.00	.00	.10	.00	.00	.00	.00	.00
9	1.00	.00	.00	.10	.00	.00	1.00	.00	.00	.00	.00	.00
10	.50	.00	.10	.00	.00	.00	.20	.00	.00	.00	.00	.00
11	.50	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.10	.10	.10	.00	.00	.00	.10	.10	.00	.00	.10	.00
13	.00	.00	.00	.00	.30	.00	.10	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00
16	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	1.00	.10
17	.00	.10	.00	1.80	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.40	.00	.10	.00	.00	.00	.10	.00	.00	.00	.00
19	.00	.10	.00	.00	.00	.00	.00	.10	.10	.00	.00	.00
20	.00	.30	.00	.10	.00	.00	.00	.00	.50	.00	.00	.10
21	.10	.00	.00	.00	.00	.10	.10	.00	.00	.00	.00	.10
22	.00	.00	.00	.20	.30	.20	.00	.10	.00	.00	.10	.00
23	.10	.10	.20	.00	.10	.10	.00	.00	.10	.00	.00	.00
24	.00	.80	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
25	.00	.60	.00	.00	.00	.10	.40	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.40	.00	.00	.20	.00	.00	.00
27	.00	.50	.00	.30	.00	.10	.20	.00	.00	.00	.00	.00
28	.00	.20	.10	.00	.00	.10	.10	.00	.10	.10	.00	.10
29	.00	.10	.80	.00	---	.00	.00	.00	.20	.10	.00	.00
30	.00	.30	.60	.00	---	.00	.10	.00	.10	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	2.70	5.10	3.30	3.20	1.50	1.30	3.10	1.10	1.50	0.60	1.80	1.00

CAL YR 1997 TOTAL 55.60
WTR YR 1998 TOTAL 26.20

213205157571001. State Key Number 882.3 Poamoho rain gage no. 3 near Wahiawa, Oahu.

LOCATION.--Lat 21°32′05″, long 157°57′10″, Hydrologic Unit 20060000, on right side of Poamoho Trail, and 0.2 mi northeast from trail marker.

PERIOD OF RECORD.--Accumulated-rainfall station, July 12, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--A 3-in. diameter, 5-ft tall aluminum non-recording gage. Elevation of gage is 1,800 ft above mean sea level (from topographic map).

REMARKS.--Record good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Aug. 06 to Nov. 07	34.6
Nov. 07 to Nov. 28	4.1
Nov. 28 to Mar. 11	18.7
Mar. 11 to Jun. 16	30.6
Jun. 16 to Aug. 05	17.3
Aug. 05 to Dec. 14	44.6

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213211157562400. State Key Number 882.4 Poamoho rain gage no. 2 near Wahiawa, Oahu.

LOCATION.--Lat 21°32′11″, long 157°56′24″, Hydrologic Unit 20060000, on Poamoho trail 1.0 mi west of junction with Koolau Summit Trail, and 5.3 mi northeast of Leilehua High School in Wahiawa.

PERIOD OF RECORD.--Continuous-record station, June 8, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector on a 10-in. storage can with a float-type system attached to an electronic data logger. Elevation of gage is 1,960 ft above mean sea level (from topographic map).

REMARKS.--Record good for periods when logger was operational and poor when it malfunctioned. Rainfall recorded in increments of 0.188 inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.75	.37	1.69	---	.00	.38	c.00	---	---	---	.38
2	.19	.19	.19	.00	---	.00	.75	---	---	---	---	.75
3	2.63	.00	.19	.00	---	.19	.00	---	---	---	---	.38
4	.75	.19	.00	.19	---	.00	.00	---	---	---	---	.00
5	.38	.38	.00	.38	---	.00	.75	---	---	---	d.00	.00
6	.56	.00	.38	.00	b.00	.00	.38	---	---	---	.00	.19
7	1.31	.37	1.69	.00	.00	.00	.38	---	---	---	.19	.19
8	1.31	.38	.19	.00	.00	.19	1.13	---	---	---	.38	.00
9	.19	.19	.19	.00	.00	.00	.56	---	---	---	.38	.38
10	.00	.00	.00	.00	.00	.00	.19	---	---	---	.19	.38
11	.19	.56	.00	.00	.00	.00	.19	---	---	---	.00	.00
12	.19	.94	.19	.00	.00	.00	.00	---	---	---	.19	.56
13	.00	.56	.00	a.00	.00	.00	.19	---	---	---	.38	.19
14	.00	.00	.19	---	.00	.00	.00	---	---	---	.00	.19
15	.19	.00	.19	---	.19	.00	.00	---	---	---	.00	.38
16	.00	.00	.75	---	.00	.00	.00	---	---	---	.19	.19
17	.00	.00	.38	---	.00	.00	.00	---	---	---	.19	.19
18	.56	.19	1.31	---	.00	.00	.19	---	---	---	.19	.00
19	.00	.00	.75	---	.00	.00	.19	---	---	---	.00	.19
20	.00	.19	.38	---	.00	.00	1.69	---	---	---	.38	.38
21	.94	.00	.00	---	.00	.00	.19	---	---	---	.37	.56
22	1.88	.00	.19	---	.94	.19	.75	---	---	---	3.38	.19
23	1.50	.38	.38	---	.00	.38	.75	---	---	---	.19	.38
24	.00	.94	.19	---	.75	.00	1.31	---	---	---	.19	1.31
25	.19	.75	.38	---	.56	.38	.19	---	---	---	.00	.94
26	.19	.00	.19	---	.00	1.31	.00	---	---	---	.19	.00
27	.00	1.69	.75	---	1.31	.38	.19	---	---	---	.19	.38
28	.19	.75	.56	---	.00	.19	.19	---	---	---	.37	.19
29	.38	1.50	.94	---	---	.38	.00	---	---	---	.38	.19
30	.00	.56	1.13	---	---	.56	.00	---	---	---	.19	.00
31	.19	---	.19	---	---	.94	---	---	---	---	.00	---
TOTAL	13.91	11.46	12.24	---	---	5.09	10.54	---	---	---	---	9.06

CAL YR 1997 TOTAL 171.24
WTR YR 1998 TOTAL 117.15

(a) Partial daily record from 0015 hrs to 1115 hrs; no record Jan. 13 (1130 hrs) to Feb. 6 (0945 hrs). Total accumulated rainfall for this period is 3.65 inches
(b) Partial daily record from 1000 hrs to 2400 hrs
(c) Partial daily record from 0015 hrs to 0130 hrs; no record May 1 (0145 hrs) to Jun. 16 (1030 hrs). Total accumulated rainfall for this period is 18.49 inches (logger was removed)
(d) Partial daily record from 1100 hrs to 2400 hrs; no record Jun. 16 (1045 hrs) to Aug. 5 (1000 hrs). Total accumulated rainfall for this period is 18.59 inches

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213215157552800. State Key Number 883.12 Poamoho rain gage no. 1 near Wahiawa, Oahu.

LOCATION.--Lat 21°32′15″, long 157°55′28″, Hydrologic Unit 20060000, at junction of Poamoho and Koolau summit trails, and 6.2 mi northeast of Leilehua High School in Wahiawa.

PERIOD OF RECORD.--Continuous-record station, June 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector on a 10-in. storage can with a float-type system attached to an electronic data logger. Elevation is 2,480 ft above mean sea level (from topographic map).

REMARKS.--Records good when logger was operational and poor when it malfunctioned. Rainfall recorded in increments of 0.188 inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	.38	2.63	.00	1.13	.00	---	c--	---	---	.19
2	.19	---	.00	1.69	.38	.00	.56	---	.56	---	---	.56
3	2.25	---	.19	.00	.19	.00	.00	---	.38	---	---	.56
4	.56	---	.00	.00	.00	.19	.00	---	.38	---	---	.00
5	.56	---	.19	.19	.00	.38	.75	---	1.31	---	d.00	.00
6	.38	---	.00	.38	.00	.00	.38	---	.00	---	.00	.38
7	.94	---	1.50	.00	.00	.19	.19	---	.00	---	.19	.00
8	1.88	---	.38	.00	.00	.00	.94	---	1.31	---	.19	.00
9	.38	---	.19	.00	.00	.19	.38	---	.00	---	.75	.75
10	.00	---	.00	.00	.00	.19	.00	---	.19	---	.19	.38
11	.19	---	.19	.00	.00	.00	.00	---	.19	---	.00	.00
12	.00	---	.00	.00	.00	.00	.19	---	.75	---	.56	.56
13	.00	---	.00	.00	.00	.00	.00	---	.19	---	.19	.37
14	.00	---	.00	.00	.00	.00	.00	---	.94	---	.00	.00
15	.38	---	.19	.00	.00	.00	.00	---	.75	---	.00	.38
16	.00	---	.56	.00	.00	.00	.00	---	.00	---	.56	.19
17	.00	---	.19	.00	.00	.00	.00	---	.00	---	1.13	.19
18	.56	---	2.44	1.31	.00	.00	.00	---	.00	---	.19	.00
19	.00	---	.75	1.13	.00	.00	.75	---	.00	---	.00	.00
20	.00	---	.75	.00	.00	.00	1.87	---	.75	---	.19	.00
21	.75	---	.19	.00	.00	.00	.00	---	.94	---	.38	1.13
22	1.13	---	.00	.00	.00	.00	.75	---	.56	---	2.25	.00
23	.75	---	.19	.00	.00	.00	.75	---	.00	---	.00	.75
24	.19	---	.56	.00	.37	.00	.94	---	.38	---	.19	1.13
25	.00	---	.19	.00	.00	.00	.00	---	---	---	.00	.75
26	a.19	---	.19	.00	.38	.56	.19	---	---	---	.00	.19
27	---	b.00	.00	.00	1.13	.00	.38	---	---	---	.19	.00
28	---	.00	1.13	.00	.19	.19	---	---	---	---	.56	.19
29	---	.75	.94	.00	---	.19	---	---	---	---	.56	.38
30	---	.56	1.13	.19	---	.38	---	---	---	---	.19	.00
31	---	---	1.50	.00	---	.56	---	---	---	---	.19	---
TOTAL	---	---	13.92	7.52	2.64	4.15	---	---	---	---	---	9.03

WTR YR 1998 TOTAL 112.67

(a) Partial daily record from 0030 hrs to 1100 hrs; no record Oct. 26 (1130 hrs) to Nov. 7 (1300 hrs), station vandalized. Total accumulated rainfall during this period was 2.32 inches
(b) Partial daily record from 1230 hrs to 2400 hrs; no record Nov. 7 (1330 hrs) to Nov. 28 (1200 hrs), recorder removed. Total accumulated rainfall during this period was 6.72 inches
(c) No record Apr. 28 (0030 hrs) to Jun. 1 (2400), float wheel stuck. Total accumulated rainfall during this period was 12.14 inches
(d) Partial daily record from 1230 hrs to 2400 hrs; no record Jun. 25 (0030 hrs) to Aug. 5 (1550 hrs), float wheel stuck. Total accumulated rainfall during this period was 14.39 inches

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213221157541501. State Key Number 884.3 Punaluu rain gage near Punaluu, Oahu.

LOCATION.--Lat 21°32′21″, long 157°54′15″, Hydrologic Unit 20060000, 4.9 mi south of Hauula School, and 1.5 mi south of USGS stream-gaging station on Punaluu Ditch 16302000.

PERIOD OF RECORD.--Accumulated-rainfall station, July 14, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector with standard 8-in. can, and an auxiliary 3-in. diameter, 5-ft high measuring can. Elevation of gage is 750 ft above mean sea level (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Sep. 23 to Dec. 22	9.7
Dec. 22 to Feb. 25	37.0
Feb. 25 to May 7	12.7
May 7 to Oct. 14	55.3

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213237157530701. State Key Number 886.4 Kahana rain gage at altitude 95 ft near Kahana, Oahu.

LOCATION.--Lat 21°32′37″, long 157°53′07″, Hydrologic Unit 20060000, on right bank, 600 ft upstream from Kawa Stream, about 40 ft bankward from USGS stream-gaging station 16296500, 1.1 mi southwest of Kahana, and 2.2 mi southwest of Swanzy Beach Park in Kaaawa.

PERIOD OF RECORD.--Accumulated-rainfall station, December 23, 1958 to May 11, 1961, February 19, 1990 to June 17, 1994. Continuous-record station, May 11, 1961 to February 19, 1990, June 17, 1994 to current year. Prior to October 1992, unpublished records in files of the U.S. Geological Survey.

GAGE.--An electronic data logger with a float system using an 8-in. receiver and 7 5/16-in. diameter by 4-ft tall rain can takes readings at 30-minute intervals. Elevation of gage is 95 ft above mean sea level (from topographic map).

REMARKS.--Records good except for periods of no daily record, December 21 to April 7, which are poor.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.80	.40	---	---	---	---	.20	.10	.20	.20	.10
2	.2	.00	.00	---	---	---	---	.00	.30	.10	.10	.30
3	1.4	.00	.10	---	---	---	---	.10	.10	.80	.10	.20
4	.3	.00	.00	---	---	---	---	.00	.30	.30	.00	.00
5	.3	.70	.00	---	---	---	---	.00	.20	.30	.00	.00
6	.2	.00	.00	---	---	---	---	.20	.00	.00	.10	.10
7	.9	.00	1.70	---	---	---	b.10	.10	.00	.10	.10	.00
8	1.2	.20	.10	---	---	---	.50	.10	1.00	.20	.30	.00
9	.6	.00	.00	---	---	---	.10	.00	.10	.20	.40	.40
10	.00	.00	.20	---	---	---	.10	.00	.00	.00	.10	.30
11	.1	.20	.00	---	---	---	.00	.10	.10	.10	.00	.00
12	.2	.10	.00	---	---	---	.00	.20	.50	.00	.10	.20
13	.00	.00	.00	---	---	---	.10	.00	.10	.80	.10	.40
14	.00	.00	.20	---	---	---	.00	.20	.20	.20	.10	.00
15	.2	.10	.00	---	---	---	.00	.00	.50	.10	.00	.20
16	.10	.00	.20	---	---	---	.00	.00	.10	.10	.10	.20
17	.00	.00	.10	---	---	---	.00	.40	.20	.00	.60	.00
18	.3	.10	1.00	---	---	---	.00	.10	.10	.00	.00	.00
19	.00	.10	.10	---	---	---	.30	.40	.00	.00	.00	.00
20	.00	.30	.70	---	---	---	.50	.20	.40	.00	.10	.10
21	.2	.00	a.00	---	---	---	.20	.00	.10	.00	.20	.50
22	.3	.00	---	---	---	---	.50	.10	.10	.00	.60	.00
23	.10	.20	---	---	---	---	.20	.10	.30	.00	.00	.00
24	.00	.20	---	---	---	---	.20	.00	.80	.00	.10	.10
25	.00	.10	---	---	---	---	.20	.00	.20	.20	.00	.20
26	.10	.00	---	---	---	---	.60	.00	.30	.00	.00	.00
27	.00	.30	---	---	---	---	.30	c.30	.10	.00	.20	.00
28	.10	.10	---	---	---	---	.00	.00	.30	.10	.20	.10
29	.00	.40	---	---	---	---	.00	.10	.60	.30	.00	.10
30	.10	.60	---	---	---	---	.00	.20	.20	.00	.00	.00
31	.00	---	---	---	---	---	---	.00	---	.00	.10	---
TOTAL	6.90	6.50	---	---	---	---	---	3.10	7.30	4.10	3.90	3.50
MEAN	.22	.22	---	---	---	---	---	.10	.24	.13	.13	.12
MAX	1.40	2.80	---	---	---	---	---	.40	1.00	.80	.60	.50
MIN	.00	.00	---	---	---	---	---	.00	.00	.00	.00	.00

WTR YR 1998 TOTAL 64.00

(a) Partial daily record from 0015 hrs to 1030 hrs. No record, battery failed
(b) Partial daily record from 1415 hrs to 2400 hrs. No record from Dec. 17 (1045 hrs) to Apr. 7 (1415 hrs), battery failed. Total accumulated rainfall during this period was 20.0 inches
(c) Total accumulated rainfall from Apr. 7 to May 27 was 0.5 inches greater than amount shown

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213000157515401. State Key Number 886.6 Waikane rain gage at altitude 75 ft at Waikane, Oahu.

LOCATION.--Lat 21°30′00″, long 157°51′54″, Hydrologic Unit 20060000, in USGS stream-gaging station 16294900, 0.3 mi downstream from Waikeekee Stream, 0.7 mi west of Waikane, and 1.2 mi northwest of Waiahole School.

PERIOD OF RECORD.--Continuous-record station, February 18, 1960 to October 2, 1985, May 17, 1994 to current year. Accumulated-rainfall station, October 2, 1985 to May 17, 1994. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 7 5/16-in., 4-ft tall rain can with a float-type system attached to an electronic data logger. Readings are taken at 15-minute intervals. Elevation of gage is 75 ft above mean sea level (from topographic map).

REMARKS.--Records good when the logger was operational and poor when it malfunctioned November 16, 1997 to January 16, 1998. Daily record read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.50	---	---	.20	.00	.00	.30	.00	.00	.10	.10
2	.10	.00	---	---	.00	.10	.00	.00	.00	.10	.00	.60
3	.60	.20	---	---	.00	.00	.00	.00	.30	.40	.20	.10
4	.10	.00	---	---	.00	.20	.00	.10	.00	.20	.10	.00
5	.00	.90	---	---	.00	.00	.20	.00	.20	.10	.00	.00
6	.00	.00	---	c--	.00	.00	.00	.00	.00	.00	.10	.00
7	.20	.00	---	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.10	.80	---	.00	.00	.30	.00	.00	.20	.00	.10	.00
9	.10	.10	---	.00	.00	.00	.00	.10	.10	.00	.10	.10
10	.00	.00	---	.00	.00	.00	.00	.10	.00	.00	.10	.00
11	.30	.00	---	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.10	---	.00	.00	.00	.00	.10	.30	.00	.00	.10
13	.00	.00	---	.00	.00	.00	.10	.00	.00	.50	.00	.10
14	.10	.00	---	.00	.00	.00	.00	.10	.10	.20	.00	.00
15	.00	.00	---	.00	.00	.00	.00	.00	.30	.10	.00	.10
16	.00	a.00	---	.00	.00	.00	.00	.00	.00	.00	.10	.00
17	.00	---	b--	.80	.00	.00	.00	.10	.10	.00	.00	.00
18	.10	---	---	.00	.00	.00	.10	.10	.00	.00	.00	.20
19	.00	---	---	.00	.10	.00	.10	.10	.00	.00	.00	.00
20	.00	---	---	.00	.00	.00	.60	.00	.30	.00	.00	.00
21	.10	---	---	.00	.00	.10	.10	.10	.10	.00	.00	.10
22	.10	---	---	.00	.00	.00	.10	.00	.00	.00	.20	.00
23	.00	---	---	.00	.00	.10	.00	.10	.10	.00	.10	.00
24	.00	---	---	.00	.00	.00	.00	.00	.30	.00	.00	.00
25	.00	---	---	.00	.10	.00	.50	.00	.10	.00	.00	.00
26	.00	---	---	.00	.50	.10	.00	.00	.20	.10	.00	.00
27	.00	---	---	.30	.00	.00	.20	.10	.10	.00	.10	.00
28	.00	---	---	.00	.00	.10	.20	.00	.30	.00	.00	.00
29	.00	---	---	.00	---	.00	.00	.00	.10	.10	.00	.00
30	.00	---	---	.00	---	.00	.10	.00	.10	.10	.00	.00
31	.00	---	---	.00	---	.10	---	.10	---	.00	.00	---
TOTAL	1.90	---	---	---	0.90	1.10	2.30	1.50	3.30	1.90	1.30	1.50

WTR YR 1998 TOTAL 38.9

(a) Partial daily record from 0015 hrs to 2045 hrs. Recorder stopped
(b) No record from Nov. 16 (2045 hrs) to Dec. 17 (1400 hrs), recorder stopped. Total accumulated rainfall during this period was 3.8 inches
(c) No record from Dec. 17 (1415 hrs) to Jan. 6 (1000 hrs), recorder stopped. Total accumulated rainfall during this period was 12.7 inches

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213725158010401. State Key Number 897.1 Kamananui rain gage at Pupukea Military Road near Maunawai, Oahu.

LOCATION.--Lat 21°37′25″, long 158°01′04″, Hydrologic Unit 20060000, on left bank, at USGS stream-gaging station 16325000, 75.0 ft upstream from Pupukea Military Road, and 3.5 mi southeast of Maunawai.

PERIOD OF RECORD.--Continuous-record station, July 1, 1963 to current year. Prior to October 1992, unpublished records are in the files of the Geological Survey.

GAGE.--Standard 8-in. National Weather Service collector and 8-in. rain can attached to a tipping-bucket counter. An electronic data logger was installed on March 26, 1996 to record rainfall at 15-minute intervals. Elevation of gage is 590 ft above mean sea level (from topographic map).

REMARKS.--Records good January 14 to April 23. For the rest of the year, rainfall was adjusted by the ratio of rain can readings divided by the total tips of the tipping bucket. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.12	.36	.18	.30	.00	.10	.25	.00	.08	.00	.43
2	.37	.00	.18	.00	.00	.00	.30	.08	.08	.16	.00	.43
3	1.95	.09	.00	.09	.00	.10	.10	.08	.08	.25	.11	.32
4	.19	.00	.00	.09	.50	.00	.00	.00	.00	.08	.11	.00
5	.28	.00	.00	.46	.00	.00	.20	.00	.00	.00	.00	.00
6	.46	.00	.18	.09	.00	.00	.10	.74	.00	.00	.00	.32
7	.37	.00	.55	.00	.00	.00	.20	.08	.00	.16	.11	.00
8	.00	.18	.36	.00	.00	.00	.60	.49	.57	.25	.21	.00
9	.00	.00	.00	.00	.00	.00	.80	.08	.00	.08	.00	.00
10	.00	.00	.27	.00	.00	.00	.30	.08	.08	.16	.11	.11
11	.00	.27	.00	.00	.00	.00	.00	.16	.08	.08	.32	.00
12	.19	.36	.00	.00	.00	.00	.30	.66	.49	.08	.00	.11
13	.00	.27	.00	.00	.00	.00	.20	.25	.08	.16	.11	.11
14	.00	.00	.09	.00	.00	.00	.00	.16	.49	.25	.00	.11
15	.00	.00	.27	.00	.10	.00	.00	.08	.16	.33	.32	.00
16	.09	.00	.64	.00	.00	.00	.00	.08	.00	.00	.00	.00
17	.00	.00	.36	1.00	.00	.00	.00	.08	.16	.00	.00	.11
18	.09	.18	.00	.30	.00	.00	.00	.08	.16	.00	.00	.00
19	.00	.27	.09	.30	.00	.00	.10	.08	.25	.00	.00	.11
20	.09	.64	.46	.00	.00	.00	.10	.08	.90	.00	.00	.53
21	.56	.00	.00	.00	.00	.10	.30	.16	.66	.00	.11	.11
22	.46	.00	.09	.00	.20	.00	.10	.00	.16	.00	.32	.00
23	.28	.18	.09	.10	.10	.20	.30	.00	.33	.00	.11	.00
24	.00	.36	.09	.00	.10	.00	.00	.08	.57	.00	.00	.32
25	.37	.27	.46	.00	.10	.70	.00	.00	.08	.00	.11	.00
26	.00	.09	.18	.00	.40	.50	.25	.00	.49	.00	.00	.00
27	.09	1.18	.18	.10	.20	.20	.00	.00	.16	.00	.21	.11
28	.00	.18	.18	.00	.10	.20	.08	.08	.33	.00	.11	.11
29	.00	.55	.27	.00	---	.10	.00	.00	.49	.11	.00	.11
30	.00	.46	.46	.00	---	.30	.08	.00	.33	.00	.11	.00
31	.00	---	.00	.00	---	.60	---	.16	---	.00	.00	---
TOTAL	5.84	6.65	5.81	2.71	2.10	3.00	4.51	4.07	7.18	2.23	2.48	3.45

WTR YR 1998 TOTAL 50.03

RAINFALL RECORDS

HAWAII, ISLAND OF OAHU--Continued

213608158011101. State Key Number 897.9 Pupukea Road rain gage at altitude 1,160 ft near Haleiwa, Oahu (formerly published as Pupukea Road rain gage at altitude 1,600 ft near Haleiwa, Oahu).

LOCATION.--Lat 21°36′08″, long 158°01′11″, Hydrologic Unit 20060000, 4.3 mi southeast of Maunawai, 5.5 mi east of Haleiwa Beach Park, and 400 ft left of the road on the ridge.

PERIOD OF RECORD.--Continuous-record station, November 1, 1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service rain collector attached to a 8-in. storage can with a recording float-type system. On January 23, an electronic data logger was installed to replace the recorder. Elevation of gage is 1,160 ft above mean sea level (from topographic map).

REMARKS.--Records good. Rainfall recorded in 0.12 of an inch increments.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.84	.48	.36	.12	.00	.24	.72	.00	.12	.00	.36
2	.00	.12	.12	.00	.00	.00	.84	.12	.00	.12	.00	.24
3	1.80	.00	.12	.00	.00	.00	.00	.24	.12	.60	.00	.24
4	.36	.00	.00	.12	.36	.00	.00	.00	.00	.00	.12	.00
5	.36	.00	.00	.72	.00	.00	.48	.00	.00	.12	.24	.00
6	.48	.00	.12	.00	.00	.00	.24	.96	.00	.00	.12	.12
7	.12	.00	.60	.00	.00	.00	.24	.00	.00	.12	.24	.00
8	.00	.24	.48	.00	.00	.00	.60	.24	.36	.36	.00	.00
9	.00	.00	.00	.00	.00	.00	1.08	.24	.12	.00	.12	.00
10	.00	.00	.12	.00	.00	.00	.24	.12	.00	.24	.12	.00
11	.00	.12	.00	.00	.00	.00	.12	.36	.12	.12	.12	.00
12	.24	.24	.12	.00	.00	.00	.12	.60	.36	.12	.12	.12
13	.00	.36	.00	.12	.00	.00	.48	.48	.12	.24	.12	.00
14	.00	.00	.12	.00	.00	.00	.00	.48	.60	.12	.00	.00
15	.00	.00	.24	.00	.00	.00	.00	.12	.12	.48	.12	.24
16	.12	.00	.60	.00	.12	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.12	1.68	.00	.00	.00	.24	.12	.00	.00	.00
18	.00	.12	.00	.72	.00	.00	.00	.12	.12	.00	.00	.12
19	.00	.24	.00	.36	.00	.00	.12	.24	.24	.00	.00	.00
20	.12	.36	.24	.00	.00	.00	.00	.12	1.68	.12	.24	.48
21	.36	.00	.00	.00	.00	.00	.12	.24	.96	.00	.00	.12
22	.72	.00	.00	.00	.48	.00	.36	.12	.72	.00	.24	.12
23	.12	.36	.36	.00	.00	.24	.12	.00	.36	.00	.00	.00
24	.00	.60	.00	.00	.12	.00	.00	.12	.84	.00	.12	.12
25	.24	.60	.24	.00	.00	.36	.00	.00	.24	.00	.00	.12
26	.12	.00	.36	.00	.12	.60	.24	.00	.84	.00	.12	.12
27	.12	1.44	.00	.12	.12	.24	.00	.00	.24	.00	.12	.00
28	.00	.48	.24	.00	.00	.24	.12	.00	.84	.00	.00	.24
29	.12	.96	.36	.00	---	.12	.00	.00	.60	.48	.12	.12
30	.00	.24	.60	.00	---	.48	.00	.12	.48	.00	.12	.00
31	.00	---	.00	.00	---	.72	---	.00	---	.00	.00	---
TOTAL	5.40	7.32	5.64	4.20	1.44	3.00	5.76	6.00	10.20	3.36	2.52	2.88
MEAN	.17	.24	.18	.14	.05	.10	.19	.19	.34	.11	.08	.10
MAX	1.80	1.44	.60	1.68	.48	.72	1.08	.96	1.68	.60	.24	.48
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

WTR YR 1998 TOTAL 57.72

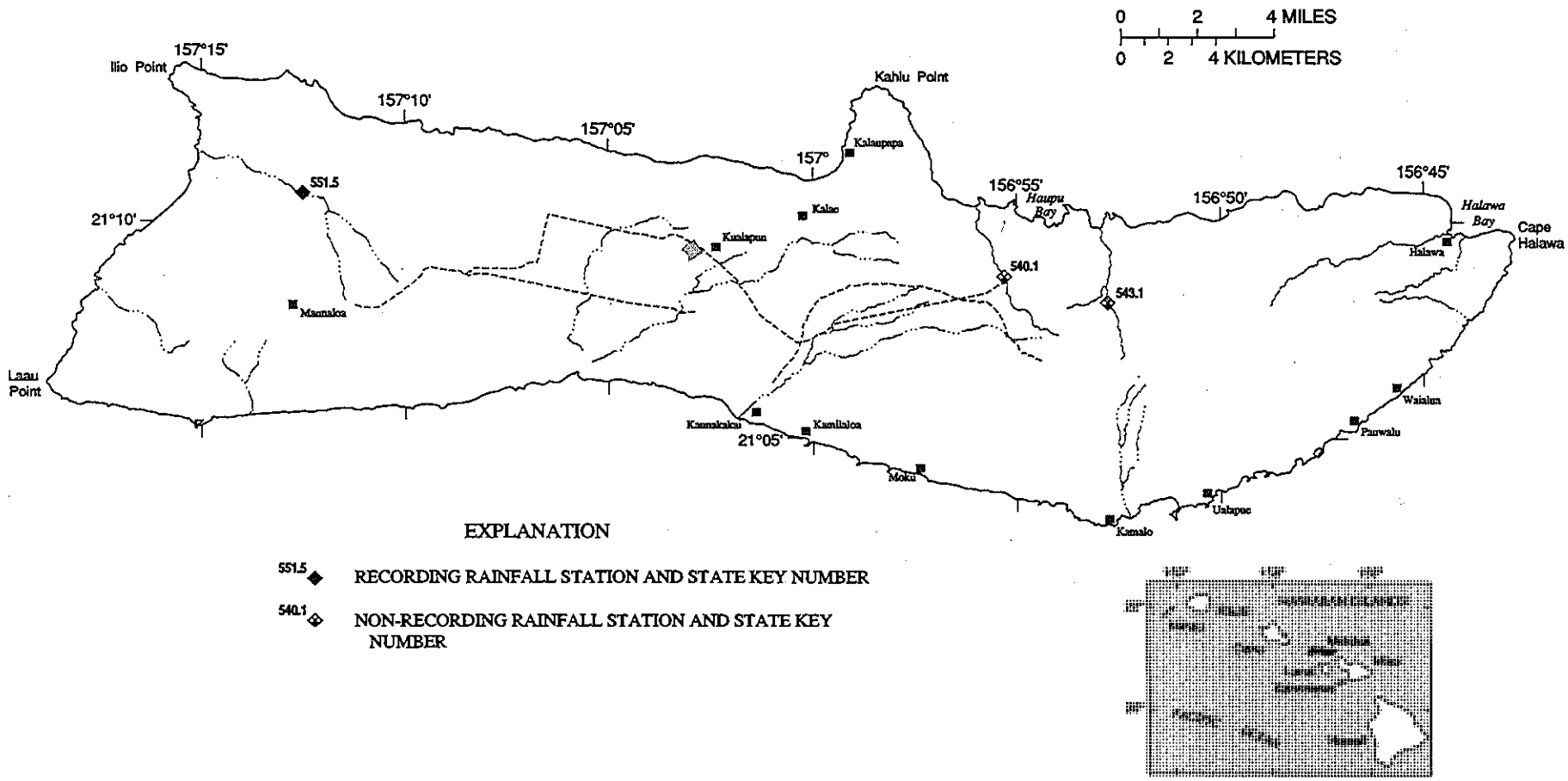


Figure 23. Locations of rainfall stations on Molokai.

RAINFALL RECORDS

HAWAII, ISLAND OF MOLOKAI

210843156551801. State Key Number 540.1 Waikolu rain gage at altitude 900 ft, near Kalaupapa, Molokai.

LOCATION.--Lat 21°08′43″, long 156°55′18″, Hydrologic Unit 20050000, on left bank near USGS stream-gaging station 16405500, 1.8 mi southwest of Haupu Bay, 2.3 mi upstream from mouth, and 5.2 mi southeast of Kalaupapa.

PERIOD OF RECORD.--1957 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard rain gage with reduced 1:2 catchment. Elevation of gage is 900 ft (from topographic map).

REMARKS.--Records good. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Oct. 08	0.5(a)
Oct. 08 to Dec. 09	25.6
Dec. 09 to Dec. 31	5.7(b)
Jan. 01 to Feb. 03	5.3(b)
Feb. 03 to May 22	16.4
May 22 to Jun. 16	4.0
Jun. 16 to Sep. 30	26.1(c)

CAL YR 1997 TOTAL 78.8
WTR YR 1998 TOTAL 83.6

(a) Estimated value based on accumulation can reading of 4.0 inches from Jul. 30 to Oct. 08
(b) Estimated value based on accumulation can reading of 11.0 inches from Dec. 09 to Feb. 03
(c) Estimated value based on accumulation can reading of 41.6 inches from Jun. 16 to Dec. 02

RAINFALL RECORDS

HAWAII, ISLAND OF MOLOKAI--Continued

211039157123101. State Key Number 551.5 Kakaako rain gage near Mauna Loa, Molokai.

LOCATION.--Lat 21°10′39″, long 157°12′31″, Hydrologic Unit 20050000, in the USGS stream-gaging station 16411400 on left bank, 1.0 mi downstream of Kamakahi Gulch, and 3.0 mi north of Mauna Loa school.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. An electronic data logger (0.01 in. per tip) was installed on April 20, 1999 replacing the digital recorder. Elevation of gage is 380 ft (from topographic map).

REMARKS.--Records fair. Rainfall recorded in tenths of an inch through April 20, 1999 and hundredths of an inch afterwards.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	.2	.00	.01	.00	.00	.00	.00
2	.00	---	---	---	b--	.00	.2	.00	.00	.00	.00	.08
3	.00	---	---	---	.00	.00	.1	.00	.00	.06	.00	.01
4	.20	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
5	---	---	---	---	.00	.1	.00	.00	.00	.00	.00	.00
6	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.06
7	---	---	---	---	.00	.00	.00	.00	.00	.06	.01	.00
8	---	---	a--	---	.00	.00	.00	.00	.00	.00	.05	.00
9	---	---	---	---	.00	.00	.1	.00	.00	.00	.02	.00
10	---	---	---	---	.00	.00	.00	.01	.00	.00	.00	.00
11	---	---	---	---	.00	.00	.00	.00	.00	.01	.02	.00
12	---	---	---	---	.00	.00	.1	.01	.00	.00	.00	.00
13	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
14	---	---	---	---	.00	.00	.00	.00	.00	.06	.00	.00
15	---	---	---	---	.00	.00	.00	.00	.00	.25	.00	.00
16	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.06
17	---	---	---	---	.00	.00	.00	.03	.00	.00	.00	.03
18	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
19	---	---	---	---	.00	.00	.1	.01	.00	.00	.00	.00
20	---	---	---	---	.00	.00	.00	.00	.03	.00	.00	.00
21	---	---	---	---	.00	.00	.00	.00	.21	.00	.00	.01
22	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
23	---	---	---	---	.00	.00	.00	.00	.02	.00	.00	.00
24	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.17
25	---	---	---	---	.00	.00	.78	.00	.04	.00	.02	.00
26	---	---	---	---	.00	.00	.00	.00	.14	.00	.10	.00
27	---	---	---	---	.00	.00	.01	.00	.01	.00	.00	.00
28	---	---	---	---	.00	.00	.00	.00	.00	.05	.00	.01
29	---	---	---	---	---	.00	.00	.00	.01	.01	.00	.03
30	---	---	---	---	---	.1	.02	.00	.00	.00	.00	.02
31	---	---	---	---	---	.00	---	.00	---	.00	.00	---
TOTAL	---	---	---	---	---	0.40	1.41	0.07	0.46	0.50	0.22	0.48

WTR YR 1998 TOTAL 11.44

(a) Total accumulated rainfall from Oct. 6 (1450 hrs) to Dec. 8 (1215 hrs) was 5.4 inches (station vandalized)
(b) Total accumulated rainfall from Dec. 8 (1215 hrs) to Feb. 2 (1345 hrs) was 2.3 inches (station vandalized)

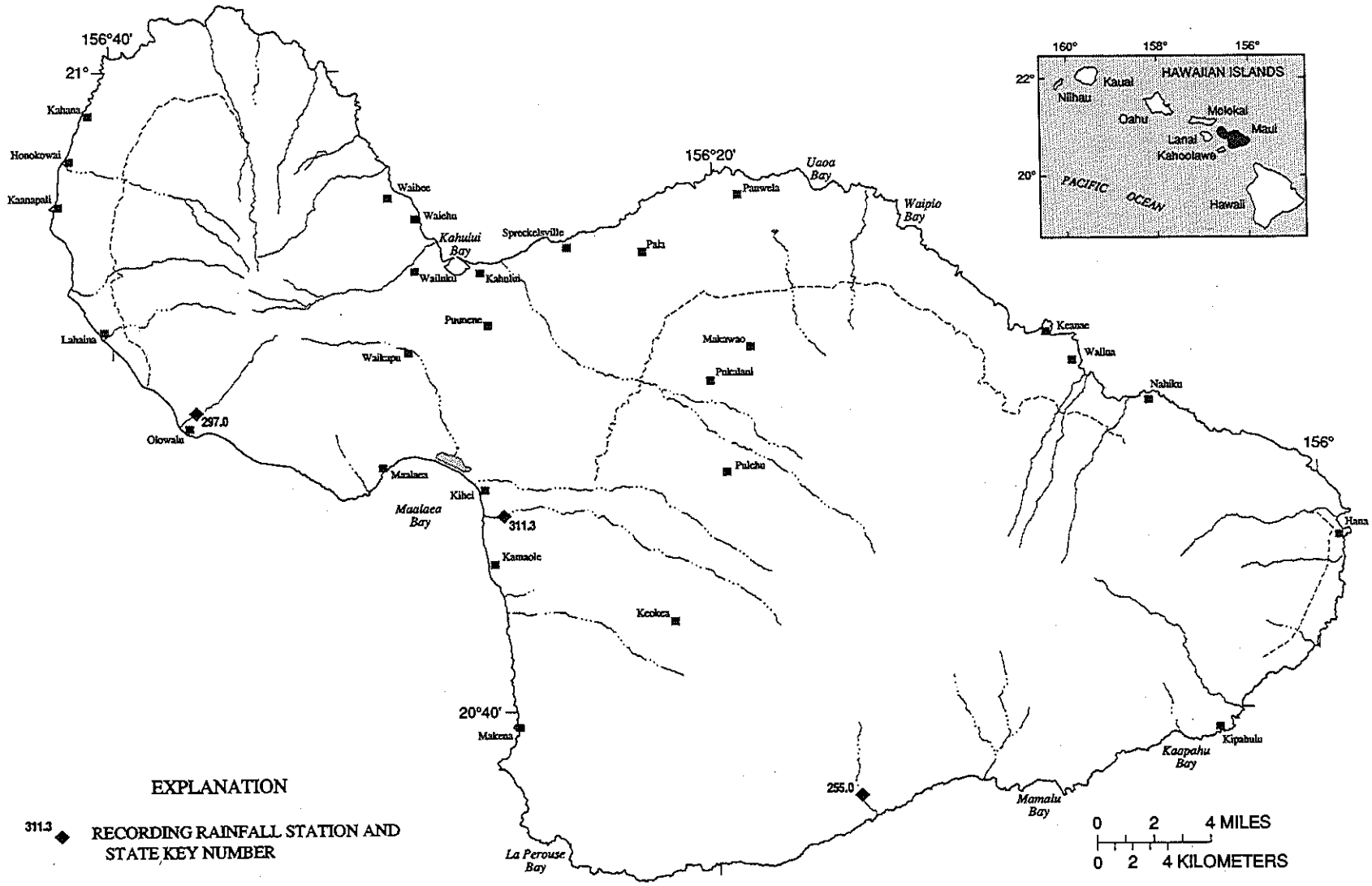


Figure 24. Locations of rainfall stations on Maui.

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI

203721156151601. State Key Number 255.0 Kepuni Gulch rain gage near Kaupo, Maui.

LOCATION.--Lat 20°37′21″, long 156°15′16″, Hydrologic Unit 20020000, next to the discontinued USGS stream-gaging station 16500100 on right bank, 120 ft upstream from bridge on Highway 31, 400 ft upstream from Kamole Gulch, 1.1 mi east of Kahikinui house, and 8.5 mi west of Kaupo.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. Elevation of gage is 740 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.3	.0	.0	.0	.0	.0	.0	.4	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0
18	.0	.2	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
30	.0	.3	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
31	.0	---	.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	0.2	1.3	0.8	1.2	0.0	0.1	0.1	0.0	0.4	0.0	0.2	0.2

CAL YR 1997 TOTAL 26.4
WTR YR 1998 TOTAL 4.5

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI--Continued

204923156371501. State Key Number 297.0 Olowalu rain gage at Olowalu, Maui.

LOCATION.--Lat 20°49′23″, long 156°37′15″, Hydrologic Unit 20020000, in USGS stream-gaging station 16646200 on downstream side of center pier of plantation road bridge, 0.6 mi northeast of Olowalu, and 5.5 mi southeast of Lahaina.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. Elevation of gage is 130 ft (from topographic map).

REMARKS.--Records good except for estimated record. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	e.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0
5	e.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
6	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	e.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	e.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	e.0	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0
10	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	e.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	e.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	e.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
31	.0	---	.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	0.0	0.9	0.0	0.3	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0

e Estimated

CAL YR 1997 TOTAL 12.5
WTR YR 1998 TOTAL 1.6

RAINFALL RECORDS

HAWAII, ISLAND OF MAUI--Continued

204606156270301. State Key Number 311.3 Kulanihakoi rain gage near Kihei, Maui.

LOCATION.--Lat 20°46′06″, long 156°27′03″, Hydrologic Unit 20020000, in USGS stream-gaging station 16660000 on right bank, 0.5 mi northeast of Lihue Cemetery, 0.8 mi upstream from mouth, and 1.3 mi southeast of Kihei.

PERIOD OF RECORD.--1963 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey and at the National Weather Service.

GAGE.--Standard 8-in. National Weather Service rain gage with recording tipping bucket attachment. Elevation of gage is 35 ft (from topographic map).

REMARKS.--Records good. Rainfall recorded in tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	---	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.1	.0	---	.0	.0	.0	.0	.0	.0	.0
31	.0	---	.0	.0	---	.0	---	.0	---	.0	.0	---
TOTAL	0.2	1.2	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CAL YR 1997 TOTAL 24.6
WTR YR 1998 TOTAL 1.9

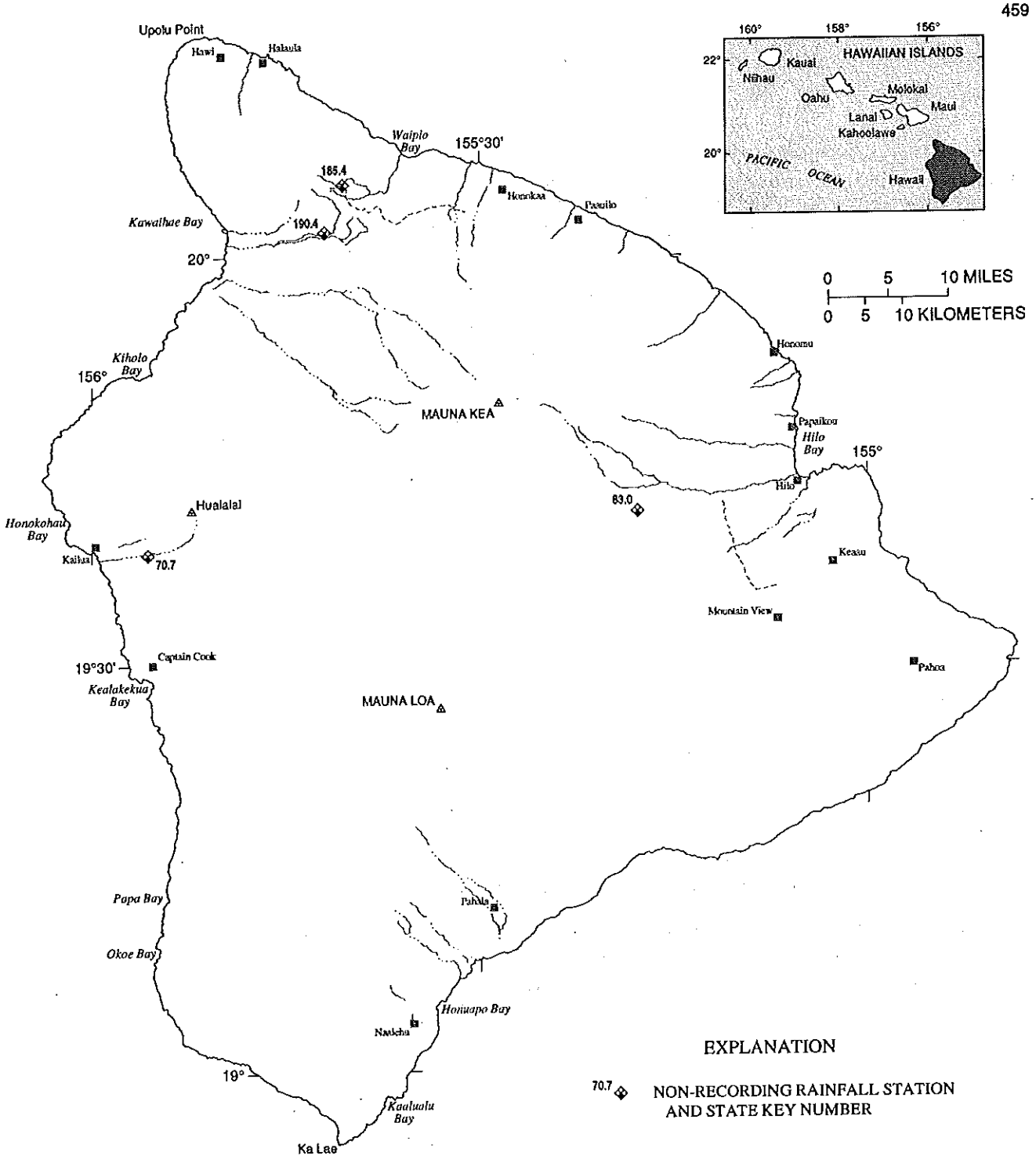


Figure 25. Locations of rainfall stations on Hawaii.

RAINFALL RECORDS

HAWAII, ISLAND OF HAWAII

193812155554501. State Key Number 70.7 Waiaha rain gage at Luawai, near Holualoa, Hawaii.

LOCATION.--Lat 19°38′12″, long 155°55′45″, Hydrologic Unit 20010000, 20 ft downstream of recording crest gage Waiaha Stream at Luawai, near Holualoa (16759300) on right bank, 1.8 mi northeast of Holualoa School, and 4.2 mi southeast of Honokohau School.

PERIOD OF RECORD.--1960 to December 1997 (discontinued). Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 2,580 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Dec. 18	7.3 estimate (a)

(a) Estimated value based on accumulated reading of 8.3 inches from Sep. 25 to Dec. 18, 1997

194117155174801. State Key Number 83.0 Quarry at Saddle Road rain gage, Hawaii.

LOCATION.--Lat 19°41′17″, long 155°17′48″, Hydrologic Unit 20010000, 200 ft north of 16 mi marker on Saddle Road west of Hilo, at old quarry site.

PERIOD OF RECORD.--1967 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 4,140 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Sep. 12 to Dec. 22	15.6
Dec. 22 to Feb. 09	0.1
Feb. 09 to Mar. 18	1.2
Mar. 18 to May 29	23.7
May 29 to Jul. 28	13.6
Jul. 28 to Oct. 05	21.5

200515155404201. State Key Number 185.4 Upper Hamakua Ditch rain gage below Kawaiki Stream near Kamuela, Hawaii.

LOCATION.--Lat 20°05′15″, long 155°40′42″, Hydrologic Unit 20010000, 15 ft from USGS stream-gaging station 16720500 on right bank, and 800 ft downstream of Kawaiki Stream.

PERIOD OF RECORD.--1964 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 4,020 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Dec. 02	>34.2 estimate (a)
Dec. 02 to Dec. 31	30.0 estimate (b)
Jan. 01 to Jan. 29	8.9 estimate (b)
Jan. 29 to Apr. 01	41.2
Apr. 01 to May 20	44.0
May 20 to Jul. 22	44.8
Jul. 22 to Sep. 23	39.2
Sep. 23 to Sep. 30	5.0 estimate (c)

CAL YR 1997 TOTAL >228.4
WTR YR 1998 TOTAL >247.3

200148155420501. State Key Number 190.4 Keanuiomano rain gage near Kamuela, Hawaii.

LOCATION.--Lat 20°01′48″, long 155°42′05″, Hydrologic Unit 20010000, in USGS stream-gaging station 16756500 on left bank, 150 ft upstream from junction of State Highway 19 and 25, and 2.0 mi west of Kamuela.

PERIOD OF RECORD.--1963 to current year. Prior to October 1992, unpublished records are in the files of the U.S. Geological Survey.

GAGE.--Standard 8-in. National Weather Service nonrecording rain gage. Elevation of gage is 2,410 ft (from topographic map).

REMARKS.--Records fair. Cumulative rainfall read in nearest tenths of an inch.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
INTERMITTENT READINGS

Period	Rainfall
Oct. 01 to Dec. 05	7.7 estimate (d)
Dec. 05 to Dec. 31	1.5 estimate (e)
Jan. 01 to Jan. 29	0.7 estimate (e)
Jan. 29 to Apr. 01	2.0
Apr. 01 to May 21	11.1
May 21 to Jul. 27	5.5
Jul. 27 to Sep. 30	1.9 estimate (f)

CAL YR 1997 TOTAL 28.6
WTR YR 1998 TOTAL 30.4

> Estimated value based on accumulated reading of >44.2 inches from Sep. 17 to Dec. 02, 1997
(a) Estimated value based on accumulated reading of >44.2 inches from Sep. 17 to Dec. 02, 1997
(b) Estimated value based on accumulated reading of 38.9 inchee from Dec. 02, 1997 to Jan 29, 1998
(c) Estimated value based on accumulated reading of 43.4 inches from Sep. 23 to Nov. 18, 1998
(d) Estimated value based on accumulated reading of 9.7 inches from Sep. 18 to Dec. 05, 1997
(e) Estimated value based on accumulated reading of 2.2 inches from Dec. 05, 1997 to Jan 29, 1998
(f) Estimated value based on accumulated reading of 2.0 inches from Jul. 27 to Oct. 01, 1998

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
	Length	
inch (in.)	2.54×10^{1}	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^{0}	kilometer
	Area	
acre	4.047×10^{3}	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi^2)	2.590×10^{0}	square kilometer
	Volume	
gallon (gal)	3.785×10^{0}	liter
	3.785×10^{0}	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^{3}	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft^3)	2.832×10^{1}	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft^3/s) d]	2.447×10^{3}	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^{3}	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
	Flow	
cubic foot per second (ft^3/s)	2.832×10^{1}	liter per second
	2.832×10^{1}	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^{1}	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
	Mass	
ton (short)	9.072×10^{-1}	megagram or metric ton

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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