

**State of Hawaii
COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources**

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS

PA'AKEA STREAM, EAST MAUI

Instructions: Please print in ink or type and send completed petition with attachments to the Commission on Water Resource Management, P.O. Box 621, Honolulu, Hawaii 96809. Petition must be accompanied by a non-refundable filing fee of \$25.00 payable to the Dept. of Land and Natural Resources. The Commission may not accept incomplete applications. For assistance, call the Regulation Branch at 587-0225.

1. PETITIONER

Firm/Name Na Moku 'Aupuni o Ko'olau Hui c/o Native Hawaiian Legal Corporation
 Contact Person Alan Murakami, Attorney Ph: 521-2302
 Address 1164 Bishop Street, Honolulu, Hawai'i 96813

2. STREAMFLOW DATA

USGS stream gaging station 16514000 Period of Record Data to follow.
Gage Inactive
 Location/Reach SEE ATTACHED
 (Attach a USGS map, scale 1"=2000', and a property tax map showing diversion location referenced to established property boundaries.)

TABLE 1. PERIOD OF RECORD AVERAGE MONTHLY STREAMFLOW WITHIN THE AFFECTED STREAM REACH, IN CFS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
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STREAMFLOW DATA TABLES TO FOLLOW.

Annual Median flow in cfs =

TABLE 2. PROPOSED AVERAGE MONTHLY STREAMFLOW DIVERSION FROM AFFECTED STREAM REACH, IN CFS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
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UNDETERMINED; SUFFICIENT FOR TARO FARMING AND/OR GATHERING.

Annual Median flow in cfs =

RESTORATION

TABLE 3. AVERAGE MONTHLY STREAMFLOW IN AFFECTED STREAM REACH AFTER RESTORATION (min release flow), IN CFS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
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NATURAL STREAMFLOW EXCEPT FOR EXERCISE OF APPURTENANT WATER RIGHTS.

Annual Median flow in cfs =

3. EXISTING INSTREAM AND OFFSTREAM WATER USES FOR ENTIRE STREAM REACH

TMK	OWNER	USE
		RESEARCH IN PROGRESS.

(If more space is necessary, attach an extended list following above format)

4. ANTICIPATED IMPACTS ON STREAM AND BASIS FOR SUCH IMPACTS:

RESTORATION OF INSTREAM NATURAL HABITAT AND BIOTA, AND BENEFICIAL APPURTENANT AND GATHERING USES.

(Attach supporting documentation, plans, letters, etc.)

May 24, 2001

Date

Signature

NATIVE HAWAIIAN LEGAL CORPORATION

Alan Murakami Partner
 Attorney for Na Moku 'Aupuni o Ko'olau Hui

For Official Use

Date Received

Date Accepted

Paakea and Waiaaka Streams

Paakea Stream is headed at 1,800 ft altitude 1.7 mi inland from the coast (plate 1). Waiaaka Stream is short, 0.9 mi long, and heads at 1,400 ft altitude. Both streams rise from sea level to 600 ft altitude 0.5 mi from the coast (a gradient of 1,320 ft/mi) and both valleys are incised 260 ft below the upland surface at this altitude. Both stream valleys lie on lava flows of the Hana Volcanics along their entire lengths except for a small exposure of Honomanu Basalt near the coast in Waiaaka Stream valley (Stearns and Macdonald, 1942). Numerous springs have been mapped along both streams (plate 1). All base flow in both streams is captured by the Koolau Ditch at 1,300 ft (table 4).

During 1932–47, these streams and Kapaula and Hanawi Streams to the east were gaged at altitudes ranging from 500 to 650 ft to determine the feasibility of extending one of the lower altitude ditches from the west to capture water gained downstream from the Koolau Ditch (Takasaki and Yamanaga, 1970). On Paakea Stream, gaging station 5140, at 650 ft altitude, measured a minimum daily flow of about 1.29 Mgal/d (table 2, plate 1). The estimated average annual base flow at this gaging station is about 2.53 Mgal/d (table 2, fig. 15P). The minimum daily flow measured at gaging station 5130 on Waiaaka Stream was about 0.29 Mgal/d and the estimated average annual base flow is 0.53 Mgal/d (table 2, fig. 15P). No water budgets were calculated for either stream subbasin.

PA`AKEA

DURATION CURVE STATISTICAL CHARACTERISTICS FOR ...
 STATION ID: 16514000 PAAKEA GULCH NEAR NAHIKU, MAUI, HI
 PARAMETER CODE = 00060
 STATISTIC CODE - 00003 MEAN

DURATION DATA VALUES ARE INTERPOLATED FROM DURATION TABLE:
 DATA ARE NOT ANALYTICALLY FITTED TO A PARTICULAR STATISTICAL DISTRIBUTION,
 AND THE USER IS RESPONSIBLE FOR ASSESSMENT AND INTERPRETATION.

ADDITIONAL CONDITIONS FOR THIS RUN ARE:
 STATISTICS ARE BASED ON LOGARITHMS (BASE 10).
 NUMBER OF VALUES IS REDUCED FOR EACH NEAR-ZERO OR ZERO VALUE.

NUMBER OF VALUES = 19 (NUMBER OF NEAR-ZERO VALUES = 0)
 LISTING OF DATA FOLLOWS:

PERCENT OF TIME VALUE EQUALLED OR EXCEEDED	DATA VALUE	(LOG =
95.0	3.08	0.48905)
90.0	3.28	(LOG = 0.51540)
85.0	3.44	(LOG = 0.53596)
80.0	3.53	(LOG = 0.54818)
75.0	3.63	(LOG = 0.56007)
70.0	3.73	(LOG = 0.57164)
65.0	3.84	(LOG = 0.58377)
60.0	3.96	(LOG = 0.59772)
55.0	4.09	(LOG = 0.61124)
50.0	4.21	(LOG = 0.62435)
45.0	4.35	(LOG = 0.63883)
40.0	4.54	(LOG = 0.65706)
35.0	4.73	(LOG = 0.67455)
30.0	5.04	(LOG = 0.70231)
25.0	5.46	(LOG = 0.73716)
20.0	6.30	(LOG = 0.79931)
15.0	7.77	(LOG = 0.89026)
10.0	11.7	(LOG = 1.06663)
5.0	18.5	(LOG = 1.26703)

MEAN OF LOGS = 0.68792

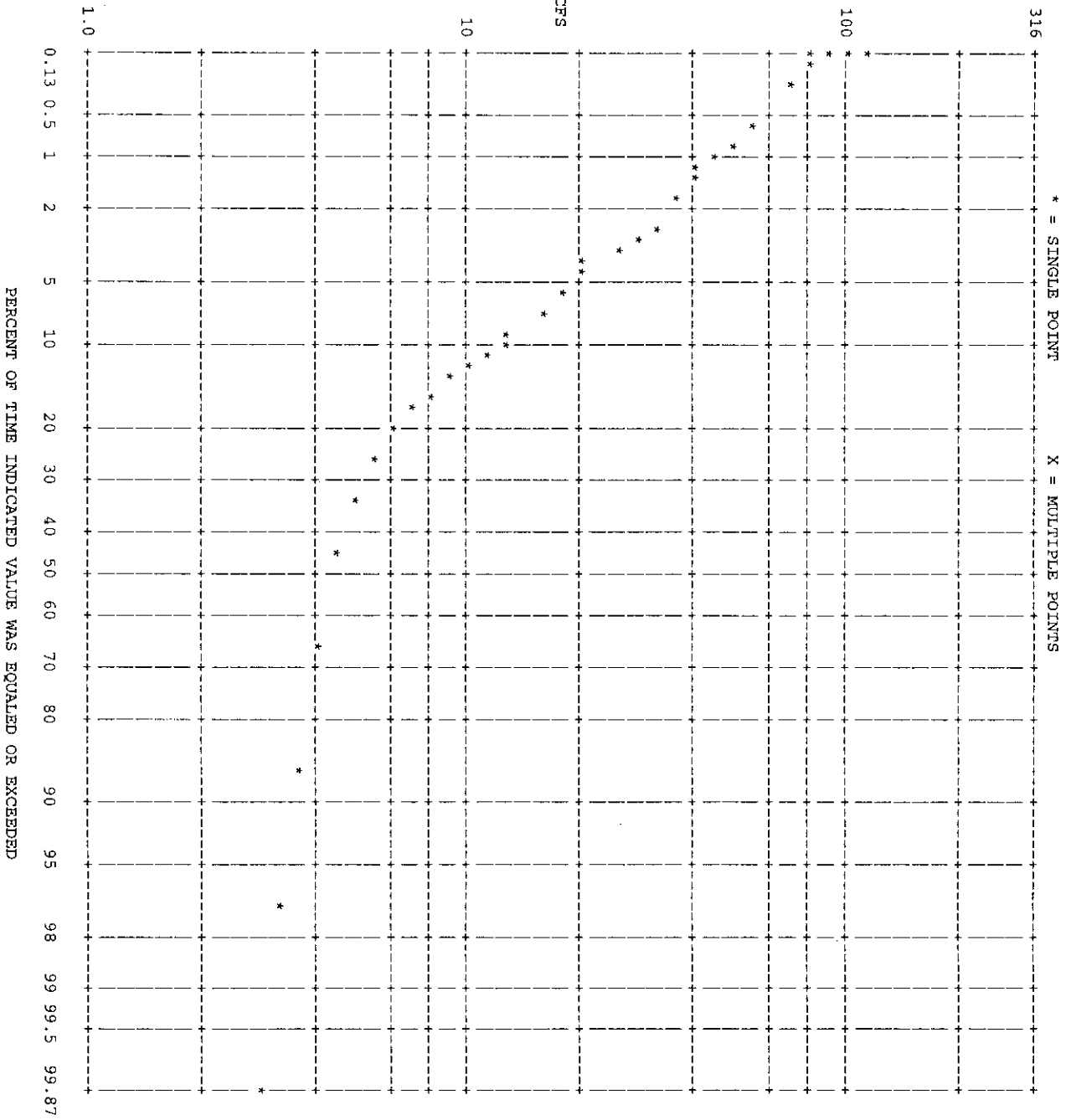
STANDARD DEVIATION OF LOGS = 0.19847 (VARIABILITY INDEX - SEE USGS WSP 1542-A)

COEFFICIENT OF VARIATION = 0.28850

COEFFICIENT OF SKEW = 1.84818

LOG-NORMAL DURATION PLOT FOR PERIOD OCT TO SEP
 STATION ID: 16514000 PAAKEA GULCH NEAR NAHIKU, MAUI, HI
 PARAMETER CODE - 00060 DISCHARGE
 STATISTIC CODE - 00003 MEAN

(YEARS 1932 - 1947)



DVSTAT - DAILY VALUES STATISTICAL PROGRAM

STATION ID - 16514000
 PAAKRA GULCH NEAR NAHIKU, MAUI, HI
 PARAMETER CODE - 00060 DISCHARGE
 STATISTIC CODE - 00003 MEAN

LOWEST MEAN VALUE AND RANKING FOR THE FOLLOWING NUMBER OF CONSECUTIVE DAYS
 FOR PERIOD OCT TO SEP

WATER YEAR	1	3	7	14	30	60	90	120	183
1933 1933	2.90 3	2.90 3	3.07 6	3.14 6	3.22 6	3.37 4	3.53 2	3.58 1	3.96 1
1934 1934	2.90 4	2.90 4	2.99 5	3.03 4	3.14 4	3.84 8	4.24 4	4.10 4	4.35 4
1935 1935	3.20 9	3.20 9	3.20 9	3.20 8	3.30 7	4.25 11	4.29 7	4.38 6	5.07 7
1936 1936	2.80 2	2.83 2	2.87 2	3.09 5	3.16 5	3.76 6	3.71 3	4.11 5	4.56 5
1937 1937	3.20 10	3.27 11	3.34 11	3.41 11	4.32 13	5.03 13	6.86 14	7.02 14	7.59 13
1938 1938	3.60 13	3.60 13	3.77 13	3.86 13	4.16 12	4.65 12	5.03 11	5.50 12	8.17 14
1939 1939	3.60 14	3.70 14	3.86 14	3.94 14	4.79 14	5.59 14	5.70 13	5.76 13	6.46 12
1940 1940	3.20 11	3.30 12	3.40 12	3.44 12	3.68 11	3.96 10	4.28 6	4.77 9	4.87 6
1941 1941	3.20 12	3.20 10	3.29 10	3.31 10	3.51 10	3.79 7	5.11 12	5.40 11	5.92 11
1942 1942	3.10 7	3.13 7	3.17 7	3.26 9	3.47 9	3.84 9	4.41 8	4.67 8	5.74 10
1943 1943	3.10 8	3.13 8	3.17 8	3.19 7	3.35 8	3.74 5	4.68 10	4.59 7	5.36 9
1944 1944	2.90 5	2.90 5	2.90 3	3.02 3	3.08 3	3.19 2	4.27 5	4.08 3	4.32 2
1945 1945	2.70 1	2.77 1	2.84 1	2.87 1	2.91 1	3.04 1	3.30 1	3.70 2	4.32 3
1946 1946	2.90 6	2.90 6	2.90 4	2.90 2	2.96 2	3.32 3	4.59 9	5.04 10	5.32 8

DVSTAT - DAILY VALUES STATISTICAL PROGRAM

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HIGHEST MEAN VALUE AND RANKING FOR THE FOLLOWING NUMBER OF CONSECUTIVE DAYS
 FOR PERIOD OCT TO SEP

WATER YEAR	1	3	7	15	30	60	90	120	183
1933 1933	77.0 5	56.3 5	34.0 5	19.3 6	13.6 6	9.92 7	9.00 8	8.19 8	6.97 10
1934 1934	91.0 4	41.3 6	30.3 7	20.1 5	17.0 4	12.2 4	10.8 4	9.67 4	7.91 5
1935 1935	108 2	82.3 2	45.6 3	24.7 4	15.9 5	11.8 5	9.42 5	8.89 6	7.91 6
1936 1936	76.0 6	39.3 8	22.6 10	14.8 10	12.7 9	9.81 8	8.50 9	7.44 10	7.04 9
1937 1937	74.0 7	57.0 4	38.7 4	24.8 3	18.4 3	14.6 3	15.2 2	12.8 2	11.5 3
1938 1938	105 3	70.7 3	56.3 2	33.6 2	21.6 2	16.4 2	14.2 3	12.8 3	11.8 1
1939 1939	62.0 10	37.7 9	30.5 6	18.6 7	12.7 10	10.5 6	9.28 6	9.03 5	8.12 4
1940 1940	59.0 12	40.0 7	24.7 8	17.0 8	13.3 7	9.41 9	7.82 12	6.80 12	6.42 12
1941 1941	60.0 11	36.7 10	24.6 9	14.4 11	9.68 12	8.25 12	8.27 10	7.73 9	7.51 7
1942 1942	124 1	118 1	85.0 1	54.9 1	32.5 1	20.3 1	16.5 1	13.4 1	11.6 2
1943 1943	68.0 8	32.0 11	17.3 12	13.1 12	9.70 11	8.88 11	7.90 11	7.07 11	6.97 11
1944 1944	38.0 14	22.8 14	13.3 14	8.67 14	6.74 14	6.33 14	6.07 14	5.81 13	5.51 14
1945 1945	50.0 13	25.3 13	16.3 13	11.4 13	9.56 13	7.05 13	6.27 13	5.52 14	5.77 13
1946 1946	65.0 9	31.0 12	20.7 11	16.7 9	12.9 8	9.35 10	9.26 7	8.52 7	7.36 8

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ANNUAL AND/OR SEMI-ANNUAL VALUES

MEAN VALUE AND RANKING FOR PERIOD INCLUDED IN LOW-VALUE ANALYSIS (OCT-SEP)			MEAN VALUE AND RANKING FOR PERIOD INCLUDED IN HIGH-VALUE ANALYSIS (OCT-SEP)		
WATER YEAR RANGE			WATER YEAR RANGE		
1933 1933	5.25	3	1933 1933	5.25	12
1934 1934	6.12	8	1934 1934	6.12	7
1935 1935	6.16	9	1935 1935	6.16	6
1936 1936	5.82	5	1936 1936	5.82	10
1937 1937	8.87	14	1937 1937	8.87	1
1938 1938	8.65	12	1938 1938	8.65	3
1939 1939	6.96	11	1939 1939	6.96	4
1940 1940	6.00	7	1940 1940	6.00	8
1941 1941	6.49	10	1941 1941	6.49	5
1942 1942	8.68	13	1942 1942	8.68	2
1943 1943	5.74	4	1943 1943	5.74	11
1944 1944	4.76	1	1944 1944	4.76	14
1945 1945	4.96	2	1945 1945	4.96	13
1946 1946	5.97	6	1946 1946	5.97	9