

SOUTH WAIEHU STREAM FLOW SUMMARIES

EXHIBIT 4

**South Waiehu Stream Flow
(1910-1917)
USGS Station # 16610000**

South Waiehu Stream Flow for 1910-1917 as measured
by the USGS gage located above all diversions ⁷.

in millions of gallons per day		1910												For the Year		
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.			
South Waiehu	Max	--	--	--	--	--	--	--	--	--	--	--	--	8.40	8.40	--
	Min	--	--	--	--	--	--	--	--	--	--	--	--	2.20	2.20	--
	Mean	--	--	--	--	--	--	--	--	--	--	--	--	3.77	5.27	--

in millions of gallons per day		1911												For the Year
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
South Waiehu	Max	48.00	63.00	28.00	30.00	78.00	39.00	25.00	22.00	87.00	6.50	9.10	4.70	87.00
	Min	3.40	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	3.40
	Mean	9.69	10.30	5.97	6.53	13.80	5.88	5.24	5.26	16.30	4.53	5.17	4.34	7.73

in millions of gallons per day		1913												For the Year
		Jan.	Feb.	Mar. (13 days)	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
South Waiehu	Max	--	--	5.50	17.00	32.00	12.00	2.50	400	18.00	3.00	26.00	39.00	--
	Min	--	--	3.50	3.50	2.00	2.00	1.50	180	1.80	2.00	2.00	2.00	--
	Mean	--	--	3.77	5.64	5.02	2.33	1.91	227	2.79	2.15	4.57	6.42	--

in millions of gallons per day		1914												For the Year
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept. (21 days)	Oct. (13 days)	Nov.	Dec.	
South Waiehu	Max	28.00	6.00	34.00	36.00	73.00	54.00	36.00	41.00	72.00	11.00	16.00	14.00	73.00
	Min	2.50	3.50	2.80	3.00	4.50	5.50	6.80	980	2.80	7.50	5.00	6.00	2.50
	Mean	7.76	4.11	6.90	9.30	28.40	11.10	12.70	15.80	16.20	8.64	8.68	8.91	12.00

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in millions of gallons per day		1915												For the Year	
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.		
Scuth Waiehu	Max	16.00	16.00	8.80	14.00	12.00	8.80	10.00	5.50	6.00	25.00	30.00	8.80	30.00	30.00
	Min	4.50	4.20	4.50	4.50	4.20	4.20	4.20	4.00	4.00	4.50	5.00	4.50	4.50	4.00
	Mean	5.89	6.40	5.43	6.89	5.42	5.71	5.37	4.55	4.75	7.16	7.82	5.65	7.82	5.91

in millions of gallons per day		1916												For the Year	
		Jan. (.7 days)	Feb. (6 days)	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept. (22 days)	Oct. (13 days)	Nov.	Dec.		
Scuth Waiehu	Max	100.00	--	--	31.00	21.00	5.60	7.70	6.30	7.00	9.10	7.70	9.10	4.00	--
	Min	5.00	--	--	5.00	5.00	5.00	5.00	5.00	4.50	4.00	4.00	4.00	4.00	--
	Mean	19.80	--	--	10.00	6.39	5.14	5.28	4.45	5.48	5.13	4.95	4.88	4.88	--

in millions of gallons per day		1917												For the Year	
		Jan. (.7 days)	Feb. (6 days)	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept. (22 days)	Oct. (13 days)	Nov.	Dec.		
Scuth Waiehu	Max	4.50	5.00	17.00	--	--	--	--	--	--	--	--	--	--	--
	Min	4.00	4.00	4.00	--	--	--	--	--	--	--	--	--	--	--
	Mean	4.06	4.25	4.61	--	--	--	--	--	--	--	--	--	--	--

⁷ Data from Territorial Planning Board, Surface Water Resources of the Territory of Hawaii i 1901-1938 (1939) ("Surface Water Resources") at 216. Data originally collected by USGS station called "South Waiehu Stream Near Waibuku, Maui" (see, e.g., W. Martin & C. Pierce, Water Resources of Hawaii i 1910-1911 (1913) (Martin & Pierce) at 215) and identified as Station No. 16610000 in Fontaine, USGS, Evaluation of the Surface-Water Quantity, Surface-Water Quality, and Rainfall Data-Collection Programs in Hawaii i, 1994 (1996) at 94.

As stated in Martin & Pierce at 215, "[t]he discharge at this station gives the total flow of the stream."

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Approximate baseflow
of South Waiehu Stream for 1910-1917

in millions of gallons per day	<u>Q90</u>	<u>Q75</u>
1910 (45 days)	2 to 2.5	2.5 to 3
1911	4 to 4.5	4 to 4.5
1913 (288 days)	2 to 2.5	2 to 2.5
1914 (339 days)	3.5 to 4	5 to 6
1915	4.5 to 5	4.5 to 5
1916 (268 days)	4 to 4.5	5 to 6
1917 (90 days)	4 to 4.5	4 to 4.5
Overall 1910-17 (1760 days)	2 to 2.5	4 to 4.5

Data from Surface Water Resources at 216; see note 7.

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