

CHARMAINE TAVARES
MAYOR

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JEFFREY K. ENG
DIRECTOR
ERIC H. YAMASHIGE, P.E., L.S.
DEPUTY DIRECTOR

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OFFICE OF THE MAYOR

**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI**

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Telephone (808) 270-7816 • Fax (808) 270-7833

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OFFICE OF THE
COUNTY CLERK

September 26, 2007

Honorable Charmaine Tavares
Mayor, County of Maui
200 South High Street
Wailuku, Hawaii 96793

For Transmittal To:

Honorable Michelle Anderson, Chair
Water Resources Committee
Maui County Council
200 South High Street
Wailuku, Hawaii 96793

Dear Chair Anderson:

SUBJECT: WATER USE AND DEVELOPMENT PLAN (WR-4)

This is in response to your request of August 27, 2007. For your information, I have attached copies of the availability worksheets for each system.

System capacity

System capacity is listed as "24 Hours" or "GPM" on each availability worksheet. This amount translates to rated capacity and peak flow for each source with disregard to system standards, aquifer limitations, and other limiting factors.

System sustainable yield (per industry standards)

Sections 111.04 and 111.08 of the 2002 State of Hawaii Water System Standards set criteria for surface and ground water capacity. For surface water systems, the demand shall not exceed 80 % of the average daily inflow from the source. Total pump capacity for each site is based on criteria that yields the

RECEIVED AT WR MEETING ON 6/15/16
(Michelle Anderson)

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maximum pumpage. The criteria that applies to the County of Maui are listed below.

- Meet maximum day demand with an operating time of 16 hours simultaneously with maximum fire flow required independent of the reservoir. The standby unit may be used to determine the total flow required.
- Maximum day demand during the duration of fire plus fire demand less 3/4 of reservoir storage.
- Meet maximum day demand with an operating time of 16 hours. The largest pumping unit shall be considered out of service (standby).

Maximum daily demand is calculated as 1.5 times average day demand. Available capacity based on these criteria is found in the "2/3 of 2/3" columns of each availability worksheet.

The Department has historically applied modified standards that take into consideration the legal sustainable yield set for pumped aquifers, longer pumping times, etc. Please refer to the "2/3" column of the availability worksheets.

Current gallons per day (gpd) served

The 12-month moving average (MAV) production is listed in the availability worksheets. It should be noted that there is a 10-34 percent discrepancy between the amount produced at the source and amount consumed/billed due to billing cycle delays, system losses and other factors. Six-month average billed consumption for each system as of June 2007 was as follows:

Central Maui System:	21.877 MGD
West Maui System:	5.300 MGD
Upcountry System:	7.373 MGD
Hana System:	0.192 MGD
Molokai system	0.776 MGD

Reservations/wait lists gpd

Please find the amount reserved on each availability worksheet. The amount represented by the Upcountry wait list is listed on the Upcountry availability worksheet as well.

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Entitled land not yet serviced by water meters

While what is considered entitled land may need some clarification, the availability worksheets list meters that are installed but not yet showing consumption as "recently issued meters" and subdivisions that are pending near term. Recently issued meters are committed source and the demand is inferred based on empirical data. Pending subdivisions may or may not have partial approvals but meter applications are not yet approved. The Department does not commit or guarantee water source until a meter application or reservation is reviewed and approved.

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at Ext. 7816.

Sincerely,



JEFFREY K. ENG
Director of Water Supply

Attachments

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Central Maui - Availability Worksheet

As of: 06/30/07

lao Aquifer	GPM	24 Hrs.	2/3	2/3 of 2/3	90% SY	EUP *	Last 12 Mos	MAV Use	MAV +21%	REMAINING CAPACITY		REMAINING CAPACITY		REMAINING CAPACITY	
										BY SYSTEM STANDARDS		BY PROPOSED INTERIM METHOD		BY HISTORICALLY USED MODIFIED STANDARD	
										2/3 of 2/3 - MAV	2/3 - MAV+21%	2/3 - MAV			
Mokuhau 1	2,500	3,600,000	2,400,000	1,600,000		1,994,000	519,770,000	1,424,027	1,723,073						
Mokuhau 2		0	0	0		0	0	0	0						
Mokuhau 3	4,040	5,817,600	3,678,400	2,585,600		2,221,000	907,842,000	2,487,238	3,009,558						
Waihee 1	2,880	3,859,200	2,572,800	1,715,200		1,480,000	795,531,000	1,932,962	2,338,884						
Waihee 2	2,680	3,859,200	2,572,800	1,715,200		2,439,000	993,042,000	2,720,663	3,292,002						
Waihee 3	3,550	5,112,000	3,408,000	2,272,000		1,513,000	880,308,000	2,411,803	2,918,261						
Waiehu Heights 1	950	1,368,000	912,000	608,000		165,000	27,241,000	74,633	90,306						
Waiehu Heights 2	1,060	1,526,400	1,017,600	678,400		1,415,000	502,781,000	1,377,482	1,666,753						
Kapaniwa	610	878,400	585,600	390,400	* TBD	585,600	296,244,000	811,627	982,069						
Wailuku Shaft	3,512	5,057,280	3,371,520	2,247,680		5,771,000	1,834,161,000	5,025,099	6,060,369						
lao Tank Site Well	none yet														
Waikapu Tank Site Well	none yet														
SUBTOTAL	31,078,080	31,078,080	20,716,720	13,812,480	18,000,000	17,583,600	6,666,920,000	18,265,534	22,101,296	-4,453,054	1,382,576	-266,534			
* EUP stands for Existing Use Permits Where these have been issued. Request for total of 19,289 MGD in progress at CWRM. Although interim method initially allows >SY, largest pump out brings this to below permitted, about 16.8 mgd.															
lao Non-Ground	Median Flow	80% Inflow	Med less one SD				Last 12 Mos	MAV Use	MAV +21%						
lao Tunnel	1,602,403	1,281,922	1,364,130				651,243,000	1,784,227	2,158,915						
	1,602,403	1,281,922	1,364,130				651,243,000	1,784,227	2,158,915	-502,305	876,993	-502,305			
standard of 80% inflow more conservative than 1 SD here															
lao Treatment Plant Capacity	Peak Day	Avg Day*	80% Inflow	Med Less 1 SD**			Last 12 Mos	MAV Use	MAV +21%						
	3,476,820	1,500,000	659,486	659,486			415,917,000	1,139,499	1,378,793						
*Rated capacity of treatment plant is 2,317,890 but actual performance is lower due to hydraulic issues.															
	3,476,820	1,500,000	659,486	659,486			415,917,000	1,139,499	1,378,793	360,501	121,207	360,501			
Waihee Aquifer	GPM	24 Hrs.	2/3	2/3 of 2/3	50% SY		Last 12 Mos	MAV Use	MAV +21%						
North Waihee # 1	1,150	1,656,000	1,104,000	736,000			381,396,000	1,044,921	1,264,354						
North Waihee # 2	1,060	1,526,400	1,017,600	678,400			298,781,000	818,578	990,479						
Kaooa 1	1,200	1,728,000	1,152,000	768,000			525,211,000	1,438,934	1,741,110						
Kaooa 2	1,275	1,836,000	1,224,000	816,000			410,105,000	1,123,575	1,359,526						
Kaooa	none yet						0	0	0						
Mafuwa	none yet						0	0	0						
Waioala	none yet														
Waioala	none yet														
SUBTOTAL	6,746,400	6,746,400	4,497,600	2,898,400	4,000,000		1,615,493,000	4,426,008	5,355,470	-1,427,808	857,870	-426,908			
Although interim method initially allows > 50% SY, largest pump out brings this to below permitted, about 3.3 mgd.															
TOTAL BEFORE REMOVING PUMP	42,903,703	42,903,703	27,988,242	18,834,496			9,349,573,000	25,615,266	30,994,475	-6,780,772	-6,780,772	-2,946,239	-2,946,239	2,382,974	-833,346
LARGEST PUMPS OUT OF SERVICE										-3,401,900	-19,782,372	-2,654,460	-5,656,632	NO ADJUSTMENT	
DEMAND ADJUSTMENTS															
Reserved Other Than DHHL										-101,990	-10,284,362	-101,990	-5,752,622	-101,990	-950,336
DHHL Outstanding										-78,903	-10,362,563	-78,903	-5,830,632	-78,903	-1,013,336
Reserved															
Near Term - Not Reserved															
Recently Issued Meters										-863,763	-11,225,125	-863,763	-6,694,385	-863,763	-1,677,099
Subdivisions															
Subd Approved but Meters Not Yet Approv										-1,775,274	-13,001,399	-1,775,274	-8,469,669	-1,775,274	-3,652,373
NEAR TERM SUPPLY ADJUSTMENTS	GPM	24 Hours	2/3 Capacity	2/3 of 2/3	Agreement Limit	Sustainable Yield	Adjustment								
Maui Lani Wells	1500	2,160,000	1,440,000	1,440,000	1,200,000	1,000,000				1,000,000	-14,794,188	1,000,000	-10,262,448	1,000,000	-6,445,162
Waikapu South Well							no adjustment yet - pump size depends on testing								
Waialea Treatment Plant	Peak Day	Avg Day	80% Inflow	Med Less 1 SD**			no adjustment yet - plant still in design								
	9,000,000	6,000,000	N/A Yet	N/A Yet											
PENDING DEMAND ADJUSTMENTS - NEAR TO MID TERM															
Open Subdivisions - Not Yet Approved										2,792,789	-19,794,188	-2,792,789	-11,262,448	2,792,789	-6,445,162

East Maui Availability Worksheet

As of 06/30/07

								REMAINING CAPACITY BY SYSTEM STANDARDS		REMAINING CAPACITY BY PROPOSED INTERIM METHOD		REMAINING CAPACITY BY HISTORICALLY USED MODIFIED STANDARD	
	GPM*	24 Hrs	2/3	2/3 of 2/3	Last 12 Mos	MAV Use	MAV+15%						
Hana**													
Hamoia 597	225	324,000	216,000	144,000	41,685,000	114,205	131,336						
Wakiu 550	283	407,520	271,680	181,120	48,939,000	134,079	154,191						
Hamoia 2	not yet												
		-----	-----	-----	-----	-----	-----						
		731,520	487,680	325,120	90,624,000	248,285	285,528		76,835		202,152		239,395
LARGEST PUMP OUT								-181,120	-104,285	-271,680	-69,528	-271,680	-32,285
RESERVED								-600	-104,885	-600	-70,128	-600	-32,885
DHHL								0	-104,885	0	-70,128	0	-32,885
RECENTLY ISSUED METER APPROVALS								6,000	-98,885	6,000	-64,128	6,000	-26,885
SUBDIVISIONS													
Approved- No Meters Yet								-2,744	-101,629	-2,744	-66,872	-2,744	-29,629
Pending								-33,078	-134,707	-33,078	-99,950	-33,078	-62,707
Keanae**													
Keanae 592	105	151,200	100,800	67,200	13,508,000	37,008	42,559						
Keanae 2	not yet	could be on line in short notice as backup											
		-----	-----	-----	-----	-----	-----						
		151,200	100,800	67,200	13,508,000	37,008	42,559		30,192		58,241		63,792
LARGEST PUMP OUT								-67,200	-37,008	-100,800	-42,559	-100,800	-37,008
RESERVED								-600	-37,608	-600	-43,159	-600	-37,608
DHHL								0	-37,608	0	-43,159	0	-37,608
RECENTLY ISSUED METER APPROVALS								0	-37,608	0	-43,159	0	-37,608
SUBDIVISIONS													
Approved- No Meters Yet								0	-37,608	0	-43,159	0	-37,608
Pending								-804	-38,412	-804	-43,963	-804	-38,412
SUPPLY ADJUSTMENTS													
Keanae 2	105	151,200	100,800	67,200				67,200	29,592	100,800	56,837	100,800	62,388

Molokai - Availability Worksheet

As Of Date 06/30/07

	GPM	24 Hrs	2/3	2/3 of 2/3	EUP ****	Last 12 Mos	MAV Use	MAV + 15%	Subtotal Remaining Capacity Standards <small>(2/3 of 2/3 - MAV)</small>	Subtotal Remaining Capacity Interim <small>(2/3-(MAV +0.15))</small>	Subtotal Remaining Capacity Historical <small>(2/3-MAV)</small>	Reserved	DHHL Not DWS Sys	Sub'd Apprv'd Not Issued	Remaining Capacity Standards <small>(2/3 of 2/3 - MAV)</small>	Remaining Capacity Interim Standard <small>(2/3-(MAV +0.15))</small>	Remaining Capacity Historical Method <small>(2/3 - MAV)</small>
Kaunakakai - Kawela																	
Kualapuu**	800	1,152,000	768,000	512,000	516,000	258,357,000	707,827	814,002									
Kawela**	300	432,000	288,000	192,000	330,000	97,709,000	267,696	307,850									
		1,584,000	1,056,000	704,000	846,000	356,066,000	975,523	1,121,852	271,523	65,852	80,477	-1,200	0	0	-270,323	-67,052	79,277
Largest Pump Out Kualapuu is backed up by DHHL system, so the largest DWS pump is not considered "out" here.																	
Kawela capacity includes largest pump out for that side, because Kawela has a backup pump of same size																	
Ualapue																	
	500	720,000	480,000	320,000	185,000	112,335,000	307,767	353,932	12,233	126,068	172,233	0	0	0	12,233	126,068	172,233
Largest Pump Out Ualapue has a back up pump so amount listed already represents largest pump out																	
**** EUP stands for Existing Use Permits already issued from the aquifers in which these wells are situated.																	
Kualapuu Existing Use Permits - SY & DY = 5 MGD																	
Owner / User	Well No.	Well Name	EUP ****	Remaining	DHHL Per State Water Projects Plan												
Hawaii State Department	0801-01	DHHL # 1	0.367		Note: Updating Update & Correction with DHHL's new Molokai Island Plan. SWPP docs show identical amounts in 2003,2005,2010,2015												
Hawaii State Department	0801-02	DHHL # 2	0		USE	2005	2010	2015	2020								
Hawaii State Department		Reservation	2.905		Dept of Ed for HHL Projects	2700	2,700	2,700	2,700								
Kaluaokoi Land, LLC	0901-01	Well # 17	1.018		Hooilehua Aq lots - Potable	22870	22,870	22,870	22,870								
Maui County Department	0801-03	Kualapuu Mauka	0.516		Hooilehua Aq lots - Non-Potable	548930	548,930	548,930	548,930	Non Potable							
Maui County Department	1059-01	Waikalae Tunnel	0.036		Hooilehua Other	5400	5,400	5,400	5,400								
			4.842	0.158	Hooilehua Residential Lots - Unit 1	12000	12,000	12,000	12,000								
					Hooilehua Residential Lots - Unit 2	36000	36,000	36,000	36,000								
					Kalamaula	8400	8,400	8,400	8,400								
					Kalamaula Commercial	3840	3,840	3,840	3,840								
					Kalamaula Residential Lots	74400	74,400	74,400	74,400								
Kawela Aquifer Existing Use Permits - SY & DY = 5 MGD																	
Owner / User	Well No.	Name	EUP ****	Remaining													
Curtis, David	0352-10	Kamalo-Curtis	0.012														
Granger, R.M.	0456-17	Johnson	0.016														
Iaea, John William Sr.	0456-16	Kawela Iaea # 3	0.017														
Inouye, Shigenobu	0352-11	Shige's Farm	0.004														
Kaunakuawa Ranch	0354-03	Kaunakuawa Ranch	0.017														
Kawela Plantation Homec	0456-04	Breadfruit Well	0.285														
Kawela Plantation Homec	0457-04	Ag # 1	0.000														
Kawela Plantation Homec	0456-09	DW # 1	0.000														
Kawela Plantation Homec	0456-08	DW # 2	0.000														
Kawela Plantation Homec	0456-06	DW # 3	0.000														
Maui County Department	0457-01	Kawela Shaft	0.330														
Teves, Harvey (was Bost	0354-07	Bostwick Well 1	0.045														
T.T. Meyer, Inc.	0354-01	Meyer Inc. # 1	0.029														
T.T. Meyer, Inc.	0354-02	Meyer Inc. # 2	0.040														
T.T. Meyer, Inc.	0354-04	Meyer Inc. # 4	0.005														
			0.8	4.2													
Ualapue Aquifer Existing Use Permits - SY & DY = 8 MGD																	
Owner / User	Well No.	Name	EUP ****	Remaining													
HSPA	0448-01	Mapulehu Shaft #	0.003														
Hawaiian Research, Ltd.	0350-07	Manawai # 1	0.015														
Kerner, Greg	0448-03	Mapulehu Shaft	0.007														
Mahealani Ranch	0352-09	Kamalo	0.010														
Manaba, Desmond	0350-01	Keawanui Sall	0.240														
Maui County Department	0449-01	Ualapue Shaft	0.185														
Oceanic Institute	0350-09	Oceanic Institute	0.750														
Ort, Stanley & Francis	0447-02	Puko'o Farm	0.003														
Petro, Pearl Friel	0549-01	Mapulehu Tunnel	0.010														
Shephard, James	0449-06	Kaluasaha-Shepha	0.008														
Urauchi, John N.	0352-12	Urauchi # 1	0.001														
Westcoatt, Wren	0350-05	Westcoatt	0.004														