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COMMISSION ON WATER RESOURCE MANAGEMENT

OF THE STATE OF HAWAII

In the Matter of: IAO GROUND WATER MANAGEMENT AREA HIGH-LEVEL SOURCE WATER USE WUPAS AND PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS OF WAIHEE, WAIEHU, IAO, & WAIKAPU STREAMS CONTESTED CASE HEARING	Case No. CCH-MA-06-01 HAWAIIAN COMMERCIAL AND SUGAR COMPANY'S EXCEPTIONS TO THE HEARINGS OFFICER'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER; DECLARATION OF GARRET HEW; DECLARATION OF RICK VOLNER; EXHIBITS "1" – "9"; CERTIFICATE OF SERVICE Hearing Officer: Dr. Lawrence Miike

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HAWAIIAN COMMERCIAL AND SUGAR COMPANY'S EXCEPTIONS TO THE HEARINGS OFFICER'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

I. INTRODUCTION

Pursuant to Minute Order 21 dated April 9, 2009, Hawaiian Commercial and Sugar Company ("***HC&S***") files its exceptions to the Hearing Officer's Proposed Findings of Fact, Conclusions of Law, and Decision and Order (the "***Proposed Findings***").

HC&S respectfully submits that whereas the Hearings Officer did an admirable job executing an extremely daunting task, the policy underlying the Proposed Findings and the amended interim instream flow standards ("***IIFS***") proposed therein is flawed because it assigns absolute priority to stream restoration. The Commission's public trust duty, however, requires a balanced approach. In setting IIFS, the Commission must not elevate any particular water use to the status of a "categorical imperative." The courts have never required the Commission, for example, to give absolute priority to stream restoration. Instead, the Commission must weigh competing demands for use of Nā Wai 'Ehā water to find the balance that best serves the public trust—*i.e.*, "the economic and social interests of the people of this state." In re Water Use Permit Application, 94 Hawai'i 97, 141, 9 P.3d 409, 453 (2000) ("***Waiāhole I***").

There are significant interests at stake here. The amendment of IIFS for Nā Wai 'Ehā streams puts at stake, among other interests, Maui's economic and agricultural interests as well as the ability of the Maui County Department of Water Supply ("***MDWS***") to supply potable water to the people of Maui. The Proposed Findings did not adequately factor these interests in formulating the proposed amended IIFS because they grossly underestimate the impacts of the proposed amended IIFS on HC&S and MDWS, concluding that no water would be available for diversion a mere one day out of ten under the proposed amended IIFS, when the actual impact is

much greater. A reduction in the availability of water for diversion of this magnitude would jeopardize the viability of HC&S, and along with it, 800 jobs and the infusion of over $100 million to the local economy, not to mention the benefits of keeping HC&S' lands as green open spaces in keeping with the rural character of Central Maui. Had the proposed amended IIFS of 13 mgd for ʻĪao Stream been in force during calendar year 2008, it would have resulted in there being no water available at all for the existing MDWS ʻĪao Water Treatment Facility (or for any other user of ʻĪao Stream) one out of every three days. Had the proposed amended IIFS for Waiheʻe Stream been in force in 2008, for more than 4 out of every 5 days, there would have been no Waiheʻe Stream water available for use by HC&S at all and insufficient water for MDWS' proposed Waiale Water Treatment Plant to operate at its 9 mgd capacity. The Proposed Findings do not appear to take these impacts into account.

The testimony in the record indicates that setting the IIFS at much lower flow rates would result in a significant improvement over existing stream conditions in terms of establishing mauka-to-makai flows and creating habitat for native species. A lower IIFS requirement that takes regional and system-wide considerations into account would strike a more appropriate balance between instream and offstream needs inasmuch as it would better enable HC&S' agricultural operations to remain viable and would accommodate MDWS' ability to service the domestic water needs of the people of Maui.

II. OVERVIEW/CONTEXT

A. In Setting IIFS For the Nā Wai ʻEhā Streams, the Commission Must Weigh Competing Interests in the Streams and Find the Balance That "Promote[s] the Best Economic and Social Interests of the People of This State."

The goal of the Commission in fulfilling its duties, including the setting of IIFS, is to promote the public trust in water resources. The public trust requires "that all uses, offstream or instream, public or private, promote the ***best economic and social interests of the people of this***

state." Waiāhole I, 94 Hawai'i at 141, 9 P.3d at 453 (emphasis added). Thus, in discharging its public trust duty, the Commission must ensure that its decisions best serve the public interest. This requirement is firmly embedded in the Water Code, which repeatedly identifies the public interest as the polestar that should guide the Commission's decisionmaking.[1]

What the public interest entails is not susceptible to simple description, or a formulaic approach. It would be error to identify the public interest with a single use like stream restoration, as many have mistakenly espoused the Waiāhole I decision to have dictated. This decision actually articulates many principles that point to the contrary—that the Commission needs to apply different approaches to different situations. For example, in Waiāhole I, the Hawai'i Supreme Court admonishes against elevating resource protection to the status of "a

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[1] Examples of references to the public interest in the Water Code include:

- HRS § 174C-2(c) (stating policy of interpreting Water Code to "be liberally interpreted to obtain maximum beneficial use of the waters of the State" while providing adequate provision for uses "in the public interest")
- HRS § 174C-3 (defining "reasonable-beneficial use" as "the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose and in a manner which is both reasonable and consistent with the state and county land use plans and the public interest.")
- HRS § 174C-41(a) (stating that the Commission shall designate water management areas "to ensure reasonable-beneficial use of the water resources in the public interest.")
- HRS § 174C-54 (providing that if there are competing applications for water use permits for a quantity of water that is inadequate to satisfy all applicants, and mutual sharing is impossible, "then the commission shall approve that application which best serves the public interest.")
- HRS § 174C-71(1) (stating that Commission shall establish instream flow standards "whenever necessary to protect the public interest in waters of the State[.]")
- HRS § 174C-71(2) (authorizing petitions to adopt interim instream flow standards for streams "in order to protect the public interest pending the establishment of a permanent instream flow standard.").

categorical imperative and the precondition to all subsequent considerations." Id. at 142, 9 P.3d at 454. Nor should the Commission necessarily value instream uses above offstream uses, or vice-versa. The Water Code espouses a diverse number of policies which strive for protection of instream ***and*** offstream uses. See HRS § 174C-2. The Court has similarly reminded the Commission of its "dual mandate of 1) protection and 2) maximum reasonable and beneficial use," Waiāhole I, 94 Hawai'i at 139, 9 P.3d at 451, and has "indicated a preference for accommodating both instream and offstream uses where feasible," Waiāhole I, 94 Hawai'i at 142, 9 P.3d at 454.[2] "[R]eason and necessity dictate that the public trust may have to accommodate offstream diversions inconsistent with the mandate of protection, to the unavoidable impairment of public instream uses and values." Id. at 141, 9 P.3d at 453. In other words, the Commission must "duly consider the significant public interest in continuing reasonable and beneficial existing offstream uses." Id. at 150, 9 P.3d at 462. A later decision of the Court similarly stood for the principle that a public trust use may be abridged to accommodate a competing use if, in the balance, the public interest is served, notwithstanding the adverse effect on the public trust use. See In re Contested Case Hr'g on Water Use Permit Application Filed by Kukui (Molokai), Inc., 116 Hawai'i 481, 499, 174 P.3d 320, 338 (2007) ("To the extent that harm to a public trust purpose (*i.e.*, the DHHL's reservation) is alleged, the permit applicant must demonstrate that there is, in fact, no harm, or that any potential harm does not rise to a level that would preclude a finding that the requested use is nevertheless reasonable-beneficial.").

[2] Although this language from Waiāhole I was cited in the section of the Proposed Findings surveying the applicable law, see CoLs 14-16, the actual approach taken to set the amended IIFS deviates from the Court's instructions.

Stated simply, the Commission must engage in a balancing act. It must weigh various water demands to find the balance that best promotes the public trust, *i.e.*, "the best economic and social interests of the people of this state." As the Court in Waiāhole I explained, "the Commission must inevitably weigh competing public and private water uses on a ***case-by-case basis***, according to any appropriate standards provided by law." Id. at 142, 9 P.3d at 454 (emphasis added).

The appropriate balance is of course heavily dependent on the factual context, a point illustrated well by Waiāhole I. There, the closure of Oahu Sugar Company's (***"OsCo"***) sugarcane plantation in Central Oahu freed up large amounts of previously diverted stream water. Those facts prompted the Hawai'i Supreme Court to note:

> [T]he close of sugar operations in Central O'ahu has provided the Commission ***a unique and valuable opportunity*** to restore previously diverted streams while rethinking the future of O'ahu's water uses. The Commission should thus take the initiative in planning for the appropriate instream flows before demand for new uses heightens the temptation simply to accept renewed diversions as a foregone conclusion.

Id. at 97, 149, 9 P.3d 409, 461 (emphasis added). Implicit in the Court's description of the "unique and valuable opportunity" presented by OsCo's closure is the recognition that, had OsCo remained in business, its continuing contributions to the well-being of its employees and the local and state economies would have weighed in favor of preserving this important existing offstream use. But, since the viability of OsCo as a going concern was not in jeopardy, the Court and Commission had significant leeway to shift the balance toward protection of instream values.

That is not the situation here. The facts are very different. HC&S is an existing business that, while clearly struggling, has a critical ongoing need for reliable water sources. The availability of surface water for diversion is essential to HC&S' ability to grow sugarcane at yields that will enable it to remain financially viable. The last two years of drought conditions

have demonstrated how severe irrigation deficits diminish yields and lead to sizable financial losses. Over its 127-year history, HC&S has become an integral part of Maui's economic and social fabric, providing numerous benefits to the Maui community and to the State of Hawai'i. The difference between the situation presented here and the situation presented in Waiāhole cannot be overstated. The balancing of interests that must take place here is unaffected by any "unique and valuable opportunity" of the kind created by the OsCo closure. To the contrary, the importance of the survival of HC&S, the employment of approximately 800 workers, and the continued agricultural use of the approximately 35,000 acres of Maui land presently cultivated by HC&S are strong countervailing factors to the interest of stream restoration that was essentially absent in Waiāhole.

B. The Amendment of IIFS For Na Wai 'Ehā Streams Puts at Stake Maui's Economic and Agricultural Interests and MDWS' Ability to Supply Potable Water to the People of Maui

The Proposed Findings' emphasis on stream restoration suggests to the Commission that it should predominantly be concerned with protecting instream values in setting IIFS. But the public trust doctrine requires that the Commission also actively consider the interests of offstream uses. To fail to do so in this Nā Wai 'Ehā situation would have serious consequences. Among the offstream uses the Commission must consider in its weighing analysis here is agriculture as HC&S is an active user of Nā Wai 'Ehā surface waters. It is a policy in the Water Code that "adequate provision shall be made for," among other things, "agriculture." HRS § 174C-2(c). This policy is a reflection of the constitutional mandate calling for protection of agriculture. See Haw. Const. art. XI, § 3; see also Waiāhole I, 94 Hawai'i at 141, 9 P.3d at 453 ("The public has a definite interest in the development and use of water resources for various reasonable and beneficial public and private offstream purposes, ***including agriculture*** . . . ." (citing Haw. Const. art. XI, § 3; emphasis added)).

As a related matter, also embedded in the Water Code is the principle that water follows land use—*i.e.*, water management decisions should be consistent with land use policy.[3] The declaration of policy in the Water Code states: "The state water code shall be liberally interpreted and applied in a manner which conforms with intentions and plans of the counties in terms of land use planning." HRS § 174C-2(e). Similarly, the Water Code provisions regarding development of water use and development plans contain numerous provisions requiring water use plans to be consistent with county land use plans and policies and state land use classification and policies. See HRS §§ 174C-31(b)(2), (3). HC&S' lands are designated by the state and county for agricultural use. In setting IIFS, then, the Commission needs to address whether there is adequate water to enable these lands designated for agricultural use to continue being used for that purpose—an analysis that is missing in the Proposed Findings.

One of the agricultural uses at stake in this IIFS proceeding is the sugarcane plantation operated by HC&S, a company whose contributions to the economic and social welfare of Maui are tremendous. HC&S is a much greater presence on Maui than OsCo was on Oahu before its closure due both to HC&S' size in this smaller rural community, and the manner in which its water delivery and power generation infrastructure has become intertwined with those of Maui County and Maui Electric Company ("***MECO***").

[3] Even early drafts of the Water Code emphasized this principle. The Advisory Study Commission on Water Resources, which authored the initial draft of the Water Code, identified five basic policies emphasized in the Water Code, the fifth being "water use and land use planning should be linked together. Throughout the recommended code, the need for linkage between water use and land use planning is emphasized." Report of the Advisory Study Commission on Water Resources to the Thirteen Legislature, State of Hawaii at 12 (1985).

HC&S is one of the largest employers in Maui, with approximately 800 full time workers; EMI employs another 17 workers.[4] See Holaday, 9/14/07 written direct testimony, at ¶ 16. HC&S employs the services of many support industries in Hawai'i such as equipment purchase and repair, agricultural input products (fertilizers, herbicides, etc.), and other suppliers of goods and services. According to a report prepared by economist Leroy O. Laney, Ph.D. regarding the importance of HC&S to the Hawai'i economy and conditions for its survival (the "***Laney Report***"), which HC&S submitted to the Commission in connection with the recent amendments to the IIFS for several East Maui streams, approximately 2,300 jobs are dependent on HC&S. See Laney Report at 5. That amounts to 3% of Maui County employment in 2007. Id. HC&S spends $100 plus million each year in this State, predominantly on Maui, which depending upon which multiplier is used, in turn contributes from $124 to $250 million each year, and provides $47 million in wages and benefits to its employees and retirees, many of whom reside on Maui.[5]

The continuation of HC&S' operations has environmental benefits as well. HC&S is a supplier of renewable energy to MECO and its customers. See Holaday, 9/14/07 written direct testimony, at ¶ 17. The cultivation of sugarcane by HC&S keeps Central Maui green, providing an attractive landscape. If HC&S' lands are taken out of cultivation, they would return to an arid

[4] Not only is HC&S a large employer, but the job opportunities it provides are of high quality. HC&S hires farm supervisors, managers, research scientists, mechanics, welders, mill workers, machinery operators, and technicians, to name just some of the positions. See Volner, Tr., 1/29/08, at 166:13 to 167:5; Kennison, Tr., 1/25/08, at 78:11-25. HC&S also has also created many quality jobs for high school graduates through its apprenticeship program. See Holaday, Tr., 1/31/08, at 37:19 to 38:21; Exhibit E-28 at 14.

[5] OHA's expert, Catherine K. Chan-Halbrendt, Ph.D., used multipliers of 1.24 and 1.54, see Exhibit C-46, Laney used the multiplier of 1.5, see Laney Report, Appendix III, and Holaday used the multiplier of 2.5, see Holaday, 9/14/07 written direct testimony, at ¶ 16.

state and present problems with dust control and fire risk. See Holaday, 9/14/07 written direct testimony at ¶ 19.

However, the viability of HC&S is in jeopardy. A&B's 2006 Annual Report states that A&B's four agribusiness related companies (one of which is HC&S) generated an operating profit in 2006 of $6.9 million against revenues of $127.4 million (5.4%). See Exhibit E-8 at 28. HC&S itself has a very slim profit margin. In 2006, HC&S earned net income of approximately $2.6 million. See Holaday, Tr., 1/31/08, at 137:16 to 138:15.

Since the close of evidence in the contested case hearing in March 2008, HC&S has experienced additional economic challenges, much due to the impacts of the severe drought conditions of 2007 and 2008. In 2008, A&B's agribusiness operations reported a $13 million loss, caused entirely by losses at HC&S. See Alexander & Baldwin Inc. Form 10-K filed 2/27/09.[6] In 2009, HC&S expects its losses to be appreciably greater than in 2008, as the full negative impact of the two years of drought will be felt in the 2009 harvest, as well as additional non-operational losses of $2.5 million and losses from an adverse Public Utilities Commission ruling that have significantly decreased power revenues to HC&S. See 2009 First Quarter Earnings Call;[7] Alexander & Baldwin Inc. Form 10-Q filed 5/5/09 ("***Form 10-Q***"), Business Outlook, Agribusiness section.[8] See Form 10-Q, Business Outlook, Agribusiness section.

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[6] The Form 10-K can be accessed at http://ccbn.tenkwizard.com/xml/download.php?format=PDF&ipage=6171597.

[7] An audio recording of the 2009 First Quarter Earnings Call can be accessed at http://www.alexanderbaldwin.com/investor-relations/events-and-presentations/event-details.php?id=2138655).

[8] The Form 10-Q can be accessed at http://ccbn.tenkwizard.com/xml/download.php?format=PDF&ipage=6301800.

HC&S will also be negatively affected by reductions in diversions due to the setting of IIFS for certain East Maui streams. The Commission established IIFS for eight East Maui streams at its meeting on September 24, 2008. Action to set IIFS for additional East Maui streams is pending. Any reductions in diversions that result from the action taken by the Commission in setting the Nā Wai 'Ehā IIFS must be shouldered by HC&S in addition to the impacts of the East Maui IIFS.

If the economic challenges described above were not enough, they are now having to be dealt with in the midst of an historic downturn in the global economy that has swept the State of Hawaii into the depths of a growing fiscal crisis. In the time that has elapsed since the conclusion of the contested case hearing in March 2008, the State has seen the demise or exit of many substantial employers including Aloha Airlines, Molokai Ranch, ATA Charter service, and two Norwegian Cruise Line ships from the Hawai'i circuit, as well as massive layoffs at Maui Land & Pineapple. With the termination of Gay & Robinson's sugarcane operations, HC&S now stands as the last remaining sugarcane plantation in Hawai'i. In light of the difficult economic conditions facing Hawai'i businesses in general, and HC&S in particular, it is an understatement to describe the viability of HC&S as being in a very fragile state. As water is key to HC&S' ability to produce the volumes of sugarcane (yields) necessary to remain viable, and as HC&S plays such a large role in Maui's economic and social fabric, the public interest demands that the Commission consider the impact of its decision on HC&S' viability.

Besides the economic interests at stake, public health concerns are implicated by the upward amendment of the IIFS for Nā Wai 'Ehā streams. The ability of MDWS to deliver potable water to Maui residents is at least partially linked to the viability of HC&S. In East Maui, MDWS accesses the EMI ditch system to take water for treatment and delivery as potable

water to its customers in Makawao, Kula, and Nahiku. See Exhibit E-9 at ¶ 40. In West Maui, MDWS has an agreement with Wailuku Water Company ("***WWC***") to receive 'Īao Stream water from the 'Īao-Waikapū Ditch for its 'Īao Water Treatment Facility. See Finding of Fact ("***FoF***") 238-239 (p. 36); FoF 305 (p. 47). MDWS and A&B are also in the planning stages new source of water for the Maui Community—a surface water treatment plant utilizing an average of 9 mgd from Waihe'e Stream.

Thus, it was unsurprising that, in the context of opposing the potential cessation of EMI's diversions from State watershed lands in East Maui, MDWS argued to the Board of Land and Natural Resources ("***BLNR***") that cessation of EMI's diversions would result in "a public health and economic catastrophe." For this reason, among others, in its Findings of Fact, Conclusions of Law, and Decision and Order issued on March 23, 2007, the BLNR made the following findings:

> 8. The immediate cessation of EMI's diversions would be ***contrary to the public interest*** inasmuch as:
>
> a. ***It would greatly diminish or cut off Maui County [Department of Water Supply's] water service to the Upcountry Maui and Nahiku communities, thereby resulting in public health and economic crises.***
>
> b. It would render [Maui Land and Pineapple's] East Maui pineapple business economically unviable because MLP would lose its only feasible source of water for its East Maui pineapple fields.
>
> c. It would render HC&S and EMI economically unviable because HC&S depends on water delivered by EMI's ditch system, and EMI's economic value is derived from its contribution to the profitability of HC&S' sugar cultivation. Rendering HC&S and EMI economically unviable would result in the loss of over 800 jobs in Maui and the termination of the larger of the two remaining sugar companies in the State of Hawaii.
>
> d. It would reduce Maui Electric Company's ("MECO") ability to provide electricity service to its customers, as HC&S is contractually obligated to supply to MECO on a daily basis a portion of the electricity it generates by burning bagasse and with hydro power generated from the turbines that run on EMI delivered water.

Exhibit E-9 at Conclusion of Law ("***CoL***") C8 (emphasis added). The same ditch system providing water to HC&S' sugarcane plantation serves as a source of water for MDWS to

service its customers, such that if the ditch system were to cease operation, the public health ramifications would be enormous.

As in East Maui, the proposed amended IIFS potentially jeopardize the available supply of potable water to MDWS customers in Central Maui—existing and future. At the contested case hearing, MDWS presented evidence of the shortfall between supply and demand for potable water in the County of Maui; limitations on its ability to develop new water sources; and MDWS' efforts to encourage conservation of water. Clearly, potable water sources available to the people of Maui are already in short supply.

In view of the Commission's public trust duty to balance competing demands so as to "promote the best economic and social interests of the people of this State," it stands to reason that the Commission in this situation cannot give absolute priority to a single trust purpose, such as stream restoration, at the risk of imperiling another trust purpose, like domestic use of water, or an important offstream use that is beneficial to the public interest, like HC&S' agricultural operations. The Commission's public trust duty is to balance competing demands so as to "promote the best economic and social interests of the people of this State." Giving inordinate weight to stream restoration risks imperiling other important public interests, such as domestic uses, economy and employment, and the preservation of agricultural lands and green space.

III. EXCEPTIONS

A. The Proposed Amended IIFS Tips the Balance Too Sharply in Favor of Stream Restoration Without Adequate Consideration of Impacts on the Economy and on Maui's Potable Water Supply

While the task assigned by the Commission to the Hearings Officer in this case was daunting and for the most part admirably executed, HC&S respectfully submits that the underlying policy that served as the foundation for the recommended IIFS amounts is flawed. The Proposed Findings assume that the primary mission of the Commission in setting IIFS is to

restore mauka-to-makai flow in every stream and protect aquatic life. For example, for 'Īao Stream, CoL 207 (p. 164) states: "The Commission ***is required to retain more water in the streams under the IIFS process*** and concludes that restoring flows into 'Īao Stream is the best available tool at its disposal for restoring the streams' amphidromous species." (Emphasis added). CoL 277 (p. 180) is another example:

> The Commission determined that water unavailable for diversion one day out of ten could still serve the needs of offstream uses, although new management strategies will be necessary. To do less for stream restoration would tip the scales too far toward offstream uses, ***when the public trust assumption, at least for the commercial uses of diversions, is in favor of stream restoration***.

(Emphasis added).

As outlined in section II.A of these Exceptions, the Commission should not elevate resource protection to the status of "a categorical imperative and the precondition to all subsequent considerations"—a stance the Commission adopted in Waiāhole but which the Court ultimately rejected. Id. at 142, 9 P.3d at 454. Although Waiāhole I is often cited for the protection it afforded to instream uses, it actually prescribes a balanced approach to water resource management. The charge of the Commission in setting IIFS should not be singularly fixed on stream restoration or even instream values in general.

Moreover, to equate offstream uses as simply "commercial uses" ignores MDWS' dependence on Nā Wai 'Ehā stream water for its domestic water supply and HC&S' contributions to Maui's economy and its role in promoting and protecting agriculture and clean energy production.

The Proposed Findings reflect an extreme imbalance in at least five ways: (1) the proposed amended IIFS, in absolute numbers and as a percentage of existing diversions, drastically reduce the flows available for diversion to a level far below current use rates; (2) the Proposed Findings' grossly understate the severity of the true impacts of the proposed IIFS on

offstream users; (3) the Proposed Findings improperly exclude consideration of the costs to users of coping with the reductions; (4) the Proposed Findings assume without any discussion or analysis that increased pumping of the Kahului aquifer at significant rates, while simultaneously reducing opportunities for recharge, is a practicable alternative that can be employed without any negative ramifications; (5) the Proposed Findings set the period for monitoring flows in Waikapū Stream arbitrarily at 120 days. Each of these shortcomings is discussed in turn.

1. The proposed amended IIFS greatly reduce the amount of flows available for diversion

With a view toward establishing continuous mauka-to-makai flows in every Na Wai Eha stream, the Proposed Findings set the proposed amended IIFS at levels approximating the Q_{90} flow of each stream. Table 1 summarizes the proposed amended IIFS.

Table 1: Summary of Proposed Amended IIFS

	PROPOSED AMENDED IIFS	*CoL*
Waihe'e	**14 mgd** must remain in the river just downstream of the Spreckels Ditch diversion unless the flow at about 605 feet is less than 14 mgd, at which time the flow will be the corresponding amount.	CoL 248 (p. 173)
North Waiehu	**2.2 mgd** must remain in the stream immediately below the North Waiehu Ditch diversion, unless the flow at altitude of 880 feet is less, at which time the flow will be the corresponding amount.	CoL 251 (p. 174)
South Waiehu	**1.3 mgd** must remain in the stream immediately below the Spreckels Ditch diversion, unless the flow at altitude of 870 feet is less, at which time the flow will be the corresponding amount.	CoL 252 (p. 174)
'Īao	**13 mgd** must remaining the stream below the 'Īao-Waikapū and 'Īao-Maniania Ditches, unless the flow at altitude of 780 feet is less, at which time the flow will be the corresponding amount.	CoL 259 (pp. 175-176)
Waikapū	**4 mgd** must remain in the stream below the Reservoir 6 Ditch diversion, unless the flow at 880 feet elevation is less, at which time the flow will be the corresponding amount; provided that if no flows reach Kealia Pond or if flows reach Kealia Pond but surveys find no recruitment, then there will be no IIFS at Reservoir 6.	CoL 266 (pp. 177-178)
TOTAL:	**34.5 mgd** if IIFS for Waikapū Stream at Reservoir 6 is amended **30.5 mgd** if IIFS for Waikapū Stream at Reservoir 6 is not amended	

Table 2 uses the Q_{50} flow to show how much less water is available for diversion as a result of the proposed amended IIFS.

Table 4.1: Summary of Reduction in Nā Wai 'Ehā Water Available For Diversion (Q_{50} Flow))

	EXISTING FLOW (mgd)	*DIFFERENCE (mgd)*	*REVISED FLOW (mgd)*	*REDUCTION (%)*
Waihe'e	34.0	-14.0	20.0	41%
North Waiehu	3.1 to 3.6	-2.2	0.9 to 1.4	71% to 61%
South Waiehu	2.4 to 4.2	-1.3	1.1 to 2.9	54% to 31%
'Īao	25.0	-13.0	12.0	52%
Waikapū	4.8 to 6.3	-4.0	0.8 to 2.3	83% to 63%
TOTALS	**69.3 to 73.1**	**-34.5**	**34.8 to 38.6**	**50% to 47%**

As the Q_{50} represents the median flow of a stream, Table 2 demonstrates that nearly half of the time, there will be nearly 50% less water available for diversion—for HC&S, the MDWS and the kuleanas—as compared to the status quo. On its face, this is a huge reduction of offstream uses. A proposed reduction of this magnitude is very troubling considering the fact that the recent designation of the Na Wai Eha streams as a water management area was motivated largely by the fact that competing demands for the use of this water during drought conditions — which Maui has had more than its share of recently — exceeds the available supply.

2. The Proposed Findings' use of averages to estimate the impact of the proposed amended IIFS on offstream uses dramatically understates the severity of the impacts

The Proposed Findings estimate that no diversions would occur merely 10 percent of the time under the amended IIFS. CoL 276 (pp. 179-180) states, in pertinent part:

> 276. Establishing the IIFS at Q_{90} instead of Q_{100} means that no diversions will be allowed 10 percent of the time, and that, for the other 90 percent of the time, the water available for diversion will be decreased by that amount, unless stream flows are in excess of the sum of the IIFS and offstream uses that have been permitted.

Based on this conclusion, the Proposed Findings "determined that water unavailable for diversion ***one day out of ten*** could still serve the needs of offstream uses, although new management strategies will be necessary." CoL 277 (p. 180) (emphasis added).

For a quick reality check, consider what the proposed IIFS for Iao and Waihee Streams would have really meant for HC&S and the MDWS in calendar year 2008. Exhibits "1" and "2" attached hereto paint a clear picture of the impacts of the proposed amended IIFS. Exhibit "1" is a printout of a chart downloaded from the United States Geological Survey ("***USGS***") website that shows the daily mean discharge in cubic feet per second ("***cfs***") recorded for each day of calendar year 2008 at the USGS stream gauge (16604500) on 'Īao Stream above the first diversion operated by WWC. See Declaration of Garret Hew attached hereto ("***Hew Decl.***") at

¶ 2. HC&S added highlighting to the chart to identify the days in 2008 when the daily mean discharge of ʻĪao Stream at this location was measured at or below the 13 mgd proposed amended IIFS.[9] See id. at ¶ 3. The chart shows that if the IIFS for ʻĪao Stream in 2008 were to have been 13 mgd, ***no diversions at all*** would have been allowed for HC&S or any other offstream user, including MDWS' existing ʻĪao Water Treatment Facility and kuleana uses, for a total of ***122 days*** in 2008, i.e., ***one out of every three days***. See id.; Exhibit "1."

Exhibit "2" is a printout of a chart downloaded from the USGS website that shows the daily mean discharge in cfs recorded for each day of calendar year 2008 at the USGS stream gauge (16614000) on Waiheʻe Stream above the first diversion operated by WWC. See Hew Decl. at ¶ 4. HC&S added highlighting to the chart to identify the days in 2008 when, if the IIFS in place in 2008 had been the 14 mgd, the amount in the Waiheʻe Ditch at the point where it could be utilized by HC&S would be less than the amount necessary to satisfy the sum of the anticipated uses upstream of HC&S. See id. at ¶ 5. To arrive at this figure, HC&S added the 14 mgd proposed amended IIFS to 6.84 mgd for kuleana users, 3 mgd for system losses, and 9 mgd for MDWS' proposed Waiale Water Treatment Plant, for a total of 32.84. This equals 50.80 cfs, rounded to 51 cfs. HC&S then highlighted on Exhibit "2" each day with a recorded flow of 51 cfs or less. There were ***294*** such days in 2008. Thus, if the IIFS in effect in 2008 had been 14 mgd and the proposed Waiale Water Treatment had been constructed and been in operation, HC&S would have received ***no Waiheʻe Stream water at all*** and the Waiale Water Treatment Plant would have been unable to operate at its 9 mgd capacity on ***294 days***, or more than ***4 out of every five days.*** See id.; Exhibit "2."

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[9] The cfs measurement had to be converted into mgd (1.547 cfs = 1 mgd; 13 mgd = 20.1 cfs). Thus, days in which the discharge was recorded at 20 cfs or less were highlighted. See Hew Decl. at ¶ 3.

As a second quick reality check on how the proposed IIFS would really impact HC&S, attached hereto as Exhibit "3" is a graph showing total daily deliveries to Waiale Reservoir for the one-year period of 9/1/06 to 8/1/07. See Volner Decl. at ¶ 3.[10] A horizontal line is inserted across the graph at the point on the *y* axis corresponding to 32 mgd to represent the cumulative impact on HC&S, the last user on the ditch system, of the sum of 14 mgd left in Waihe'e Stream, 1 mgd left in South Waiehu Stream, 13 mgd left in 'Īao Stream and 4 mgd left in Waikapū Stream, as per the proposed amended IIFS.[11] See id. The area below this line conveys a stark visual image of the order of magnitude of the reductions of water available to HC&S caused by the cumulative return of 32 mgd to these streams. The accompanying table, moreover, indicates that for these twelve months, reduced deliveries to HC&S of 32 mgd would have resulted in ***245 days*** of ***no water whatsoever*** being delivered to Waiale Reservoir. See Exhibit "3"; Volner Declaration at ¶ 3.

Admittedly, 2007 and 2008 were drought years and thus the impacts of the proposed IIFS are more severe when looking at data from those years. To be more accurate, HC&S prepared an Excel spreadsheet utilizing daily mean discharge data for Waihe'e and 'Īao Streams published by the USGS on their website for calendar years 2005[12] through 2008 and modeled the flows that would be available to HC&S each day after subtracting system losses, diversions to kuleana

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[10] The graph compresses onto one page all the daily delivery data that was reported in the graphs submitted by HC&S as Exhibit E-11 in the contested case hearing. See Declaration of Rick W. Volner, Jr. attached hereto at ¶ 3.

[11] Although water from Waikapū Stream is not delivered to Waiale Reservoir, the proposed amended IIFS for Waikapū Stream nonetheless impacts deliveries to Waiale Reservoir because Waihe'e Stream water would have to be rerouted past Hopoi chute to replace the Waikapū and Iao Stream water lost due to the IIFS that would otherwise be used to irrigate the Iao Waikapu fields; there is no source other than Waihe'e water that could replace this water. See Volner Declaration at ¶ 3.

[12] 2005 was a particularly wet year and thus tends to offset 2008.

users, and water used by the existing water treatment operated by MDWS. See Declaration of Rick W. Volner, Jr. attached hereto ("***Volner Decl.***") at ¶ 4. For the purposes of this model, no deductions were made for the up to 9 mgd capacity of MDWS' proposed new Waiale Treatment Plant. See id. Attached hereto as Exhibit "4" is a summary sheet showing the results based on the status quo, *i.e.*, no amendment of the IIFS for the Nā Wai 'Ehā Streams. Attached hereto as Exhibit "5" is a summary sheet illustrating the impacts on HC&S on an annualized basis utilizing the same stream flow data but assuming the IIFS are set at the levels in the Proposed Findings. Under this scenario, which assumes no water will be available from Waikapū Stream, Waihe'e Stream water is kept in the Waihe'e Ditch past Hopoi chute to the extent needed to satisfy the irrigation requirements of the 'Īao-Waikapū Fields, since they have no alternative source.

With respect to Waiale Reservoir, under current conditions, some water is available for the reservoir every day of the year. See Exhibit "4" attached hereto. Under the proposed amended IIFS, however, there would be ***159 days*** in the year in which zero flow ("Zero days") would flow into Waiale Reservoir, or ***44% of the year***. See Exhibit "5" attached hereto.

With respect to the 'Īao-Waikapū Fields, under current conditions, some water is available for the fields every day of the year. See Exhibit "4" attached hereto. Moreover, there is enough water every day of the year to meet the 8.7 mgd daily requirement of those fields. See id. Under the proposed amended IIFS, however, there would be ***30 zero days in the year, or 8% of the year***. See Exhibit "5" attached hereto. There would not be enough water to meet the 8.7 mgd daily requirement ***159 days in a year, or 44% of the year***, inclusive of days when no water is available at all. See id.

The impacts of the proposed amended IIFS on MDWS' water treatment facilities are even more drastic. MDWS relies on flows from 'Īao Stream to supply its 'Īao Water Treatment

Facility. See FoF 305 (p. 47). The current capacity of the facility is 3.2 mgd. See id. Currently, there is sufficient water to meet the 3.2 mgd capacity of the water treatment plant every day out of the year. See Exhibit "4" attached hereto. However, reducing offstream diversion of 'Īao Stream by 13 mgd per the proposed amended IIFS would result in ***73 zero days in the year, or 20% of the year***. See Exhibit "5" attached hereto. In ***129 days in the year (35% of the year)***,[13] the flow available for the water treatment plant would be less than its 3.2 mgd capacity. See id.

Clearly, the Proposed Findings grossly understate the impact of the proposed amended IIFS in concluding that no water would be available for offstream uses merely "one day out of ten." It appears that the Proposed Findings anticipated the impacts based on the ***average*** daily flows available for diversion, which can obscure the true severity of the IIFS. The average flow can be skewed by select days in the year of especially high flows, such as during storm events. They can be even more distorted by the fact that these flows, when they occur, are so large they exceed the capacity of the ditch intakes and are thus not fully available for diversion.

The point is illustrated by comparing the average daily flow and median daily flow to Waiale Reservoir calculated in Exhibits "4" and "5." Under current conditions, the total average daily flow into Waiale Reservoir is 34.97 mgd. The total median daily flow into Waiale Reservoir is 27.61 mgd. See Exhibit "4." Under the proposed amended IIFS, however, the total average daily flow into Waiale Reservoir would drop down to 14.86 mgd while the total median daily flow would drop far more precipitously to ***2.37 mgd***. See Exhibit "5." Even more dramatic is the fact that, under the proposed amended IIFS, while the average daily flow in the Spreckels Ditch is 5.53 mgd, the median daily flow in the ditch is 0 mgd, meaning half the time, no water is flowing in the Spreckels Ditch. See id. To put it another way, if the proposed amended IIFS

[13] The 129 days is inclusive of the days when no water is available at all.

were implemented, the total average daily flow to Waiale Reservoir would be reduced from current conditions by approximately 58% (34.97 mgd vs. 14.86 mgd) while the total median daily flow would be reduced by ***more than 90%*** (27.51 mgd vs. 2.37 mgd).

3. The Proposed Findings improperly set IIFS without considering the economic burden to offstream users of coping with reductions in the availability of water for their use

Apart from the overemphasis on achieving stream restoration, the most glaring error in the legal analysis contained in the Proposed Findings is the conclusion that the Commission, in setting the amended IIFS, will not consider the economic impacts, *i.e.*, costs, to offstream users of coping with the amended IIFS. Although the Proposed Findings refer to the Commission's duty to weigh the "economic impact of restricting" noninstream uses in setting IIFS, see CoL 4 (p. 109), the Proposed Findings ultimately give short shrift to arguments that HC&S cannot bear the economic burden of significant reductions in the amount of Nā Wai 'Ehā water available for diversion.[14] The Proposed Findings assume that the amount of water available to offstream users includes water reclaimed by reducing system losses (*e.g.*, seepage) and/or utilizing alternative sources. The assumed availability of that quantity of water enables the Proposed Findings to conclude that the offstream users are left "whole" under the proposed amended IIFS. The Proposed Findings erroneously disregard the cost of reducing system losses or utilizing alternative sources, finding the costs irrelevant to the IIFS-setting process; such costs are to be

[14] Further, to the extent Commission orders HC&S to comply with IIFS at the amounts recommended in the Proposed Findings, the order may constitute a State deprivation of private property without just compensation. In an abundance of caution, HC&S hereby advises the Commission and the parties herein, pursuant to Government & Civic Employees Organizing Comm., CIO v. Windsor, 353 U.S. 364 (1957), of the reservation of its federal claims concerning the application of the State Water Code, HRS chapter 174C, in a manner that violates the Takings Clause of the Fifth Amendment of the United States Constitution. HC&S specifically reserves its right to have its claims for violations of the Fifth Amendment of the United States Constitution adjudicated on a complete record in federal court pursuant to 42 U.S.C. § 1983. See United Parcel Serv., Inc. v. California Public Utilities Comm'n, 77 F.3d 1178 (9th Cir. 1996).

considered in the water use permit application ("***WUPA***") process instead. CoL 283 (p. 181) states:

> ***Finally, on the economic impact of restricting noninstream uses, the costs associated with reducing system losses and developing or renovating alternative sources, if required, will be costs incurred in order to be granted a permit under the WUPAs for the surface water management area. Therefore, the Commission does not consider such costs as part of the economic impact of restricting noninstream uses.*** WWC will also incur revenue losses with the reduction of diverted water, but those reductions will be incurred primarily from reductions in actual use to reasonable use and only in minor part, if at all, from the retention of waters to meet the amended IIFS.

(Emphasis added).

The approach in CoL 283 is erroneous on multiple levels. First, the costs of implementing measures to reduce system losses and utilize alternative sources is part of the economic impact on offstream users that the Commission is statutorily required to consider in setting IIFS. This requirement exists ***irrespective*** of whether the particular stream at issue is within a designated water management area, and thus subject to a separate WUPA proceedings. Second, in situations such as this one, where there is an anticipated WUPA proceeding, the Commission should not wait until the WUPA process to take the costs into consideration because by then, the Commission would have already limited the overall amount of water left for noninstream uses without first having fully analyzed the economic burdens on offstream users. Third, the Water Code requires the Commission to consider the availability of alternative water sources, which would include the costs associated with utilizing such alternative sources. Each point of error is discussed further below.

a. The costs of reducing system losses and utilizing alternative water sources are part of the economic impact on offstream users that must be considered pursuant to HRS § 174C-71(2)(D)

The provisions of the Water Code pertaining to the setting of IIFS state, in pertinent part: "In considering a petition to adopt an interim instream flow standard, the commission shall

weigh the importance of the present or potential instream values with the importance of the present or potential uses of water for noninstream purposes, ***including the economic impact of restricting such uses***." HRS § 174C-71(2)(D) (emphasis added). The Commission's rules contain an identical requirement. See HAR § 13-169-40(c). While acknowledging those provisions, see CoL 4 (p. 109), the Proposed Findings exclude the costs of reducing system losses and developing or renovating alternative sources from the economic impacts that the Commission must consider in the IIFS-setting process.

This defies common sense. Implementing coping mechanisms such as lining a reservoir to reduce seepage or increasing groundwater pumping capacity is extremely expensive. For example, the estimated capital cost to clean and line Waiale Reservoir is approximately $2.5 million. See Declaration of Rick Volner attached hereto at ¶ 8. The estimated capital cost to upgrade Well No. 7 to increase its capacity from 14 to 28 mgd is $1,050,000, and the annual operating cost would be $1,296,333 based on a unit cost of $0.1925 per kilowatt hour of power. See id. at ¶ 7. Furthermore, the capital costs for installation and material install piping and pump stations to enable HC&S to replace 2 mgd of surface water with treated effluent from the Kahului Waste Water Treatment plant is $2.5 to $3 million, as well as additional operating costs to run the pump stations and to purchase the water from the County at its agriculture rate of $0.12 per 1,000 gallons. See id. at ¶ 9. HC&S would also need to comply with permitting requirements and deal with the higher level of particulates in the recycled effluents which have a tendency to clog filter stations and drip tubes. See id.

There is no valid reason why such costs should not be considered part of the "economic impact of restricting [noninstream] uses." HRS § 174C-71(2)(D). Indeed, elsewhere in the Proposed Findings, it is recognized that "[i]n amending the IIFS, the costs of available

alternative water sources for noninstream uses would be included in the economic impact of restricting such uses." CoL 43 (p. 117).

b. Because the IIFS potentially limits the overall amount of water available to offstream users, the Commission must not defer consideration of the economic impact of reductions in water for offstream use until the WUPA process

The Proposed Findings bypasses safeguards in the IIFS process designed to protect offstream uses that are in the public interest. The setting of IIFS requires the weighing of competing demands of instream values and offstream users to determine the balance that "promote[s] the best economic and social interests of the people of this state." Waiāhole I, 94 Hawai'i at 141, 9 P.3d at 453. In carrying out that task, the Commission must consider the economic impact of restricting the amount of water available for offstream uses. If the economic impact of reducing the amount of water available for an offstream use is too great, and there is a public interest in sustaining the use, the public trust would require that the Commission take care not to make continuation of the use economically impracticable. This is the process outlined in the Water Code and the Commission rules. See HRS § 174C-71(2)(D); HAR § 13-169-40(c).

The Proposed Findings, however, take cost considerations that must be examined in the IIFS process and defer them for consideration during the WUPA process. This collapsing of the IIFS setting process into the WUPA process is deeply flawed and not authorized by any provision in the Water Code. Apart from its lack of compliance with the Water Code, this approach is utterly misconceived in that the Commission could reduce the amount of water available for noninstream use without ever fully analyzing the resultant economic burden on offstream uses. By omitting to consider costs of alternatives, the Commission could simply assume that any number of alternative water sources are available to an offstream user, including those that are cost-prohibitive to utilize. The Proposed Findings essentially encourage the

Commission to set IIFS without being fully informed about the economic realities flowing from its decision.

But once the Commission sets an IIFS that ensures less water will be available for offstream uses, it cannot modify that decision in the WUPA process. The Commission cannot by way of a water use permit allow an offstream user to divert an amount inconsistent with the IIFS. As even the Proposed Findings recognize, "[water use p]ermits for noninstream uses can be issued only to the extent that stream flows in excess of the amended IIFS are available." CoL 38 (p. 116). Thus, it is too late for the Commission to defer consideration of the economic burden to offstream users until it acts on WUPAs.

c. The analysis of alternative water sources available to offstream users, which is required under the Water Code, includes costs associated with utilizing such sources

The Water Code expressly requires the Commission to consider whether the impact of preserving, enhancing, or restoring instream values on existing uses could be mitigated with alternative water sources. HRS § 174C-71(1)(E) states:

> In order to avoid or minimize the impact on existing uses of preserving, enhancing, or restoring instream values, the commission shall consider physical solutions, including water exchanges, modifications of project operations, changes in points of diversion, changes in time and rate of diversion, ***uses of water from alternative sources***, or any other solution.

(Emphasis added). Because this provision is contained in the portion of the Water Code governing IIFS, the Commission must consider the practicability of alternative sources in the IIFS-setting process.

Cost is a highly relevant factor in determining the practicability of utilizing an alternative. In the Waiāhole contested case, the Commission applied the following standard in analyzing alternative water sources: "[A]n alternative source is practicable if it is available and capable of being utilized after taking into consideration ***cost***, existing technology, and logistics in light of

the overall water planning process." In re Waiāhole Ditch Combined Contested Case Hearing, 105 Hawai'i 1, 19, 93 P.3d 643, 661 (2004) ("***Waiāhole II***") (emphasis added). Incidentally, the same standard is cited in the Proposed Findings here. See CoL 31 (p. 115) ("An alternative is practicable if it is available and capable of being used after taking into consideration, cost, existing technology, and logistics. **Waiahole II**, 105 Haw. at 19, 93 P.3d at 661.").

Since cost is a factor that must be considered in analyzing the practicability of alternative sources, it is puzzling that CoL 238 in the Proposed Findings regards the cost of implementing alternatives as relevant only to the WUPA process. Indeed, CoL 238 contradicts another CoL 43 (p. 116), which links cost considerations to the Water Code requirement that the Commission weigh the economic impact of restricting noninstream uses in the IIFS-amendment process: "In amending the IIFS, the costs of available alternative water sources for noninstream uses would be included in the economic impact of restricting such uses." CoL 43 (p. 116). Clearly, in excising cost from the analysis of alternative sources, CoL 238 is incompatible with the Water Code and even the internal logic of the Proposed Findings. The Commission must not turn a blind eye to the expense that HC&S must bear to cope with the IIFS.

4. The Proposed Findings simply assume, without explanation, that it is practicable to pump the Kahului Aquifer at rates that could endanger the sustainability of the aquifer

The Proposed Findings assume it is a practicable alternative for HC&S to pump 14 mgd from Well No. 7, the maximum capacity of the well.[15] However, the Proposed Findings

[15] HC&S likely will need to pump in excess of 14 mgd to compensate for reductions in diversion due to the proposed amended IIFS. Because pumped water is brackish, an additional amount of water above that needed to reach 100% soil moisture storage must be applied to flush the salts from the sugarcane plant's root zone. Consistent use of pump without negatively affecting yields would thus require the use of more water. See Nakahata, Transcript of Contested Case Hearing ("***Tr.***"), 2/20/08, at 8:4-9; HC&S Proposed FoF 140. Furthermore, the loss in available water for diversion caused by the proposed amended IIFS is more than 14 mgd.

overlook the fact that, at the same time, the proposed amended IIFS would significantly reduce the amount of recharge to the aquifer. The Proposed Findings fail to consider the combined effect of these two impacts on the Kahului aquifer.

The Commission, in its recently adopted Water Resource Protection Plan, recognized the importance of recharge to the sustainable yield of the Kahului Aquifer, and included the following comment in Table 3-11 of the Plan:

> Sustainable yield ignores significant importation of surface water into Kahului from outside the aquifer system area. This explains the ability to withdraw fresh water from the aquifer at significantly higher rates than the sustainable yield without apparent negative impacts (i.e. rising chloride concentrations or decreasing water levels)

The Commission thus recognized that recharge from irrigation sustains withdrawals from the Kahului aquifer. See HC&S Proposed FoF 142. Elsewhere in the Water Resource Protection Plan, the Commission recognized that "[i]nfiltration is key to sustaining ground water resources. Human activities, especially agricultural and urban activities, alter infiltration and runoff patterns, affecting the components of the hydrologic cycle." Water Resource Protection Plan at 3-8.

The concept that groundwater recharge is linked to agricultural irrigation finds further support in a 2007 USGS study entitled: "Effects of Agricultural Land-Use Changes and Rainfall on Ground-Water Recharge in Central and West Maui, Hawai'i, 1926-2004, which is part of the record as Exhibit E-27. The study was prompted by concerns surrounding declines in groundwater levels and an increase in the chloride concentration of water pumped from wells in the 'Īao aquifer. See id. at 1. The study concluded that reductions in agricultural irrigation,

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In reality, then, the proposed amended IIFS would leave HC&S with little options than to install the upgrades necessary to increase the pumping capacity of Well No. 7 to 28 mgd.

resulting from more efficient irrigation methods and a withdrawal of from agriculture, is largely responsible for the declining recharge. See id.

The Proposed Findings do not refer to this evidence of sustainable yield and recharge, which HC&S presented in the contested case hearing. Accordingly, the Proposed Findings fail to analyze the dual threat to the Kahului aquifer posed by the proposed amended IIFS. The Proposed Findings assume HC&S will pump Well No. 7 continuously in a significant amount; simultaneously recharge to the aquifer would be reduced as the amount of surface water applied to HC&S fields decreases dramatically and seepage from reservoirs is reduced or eliminated.[16] This could lead to a net decline in the level of the aquifer and an increase in the salinity of its water stores.

5. The 120-Day period for determining whether flows from Waikapū Stream reach Kealia Pond is arbitrary

HC&S relies on water from Waikapū stream for the irrigation of its ʻĪao-Waikapū fields, totaling 1,350 acres. There is no alternative source for these lands other than utilizing Waiheʻe ditch water that is allocated for its Waiheʻe-Hopoi fields, thus causing a deficit in those fields. The evidence at the contested case hearing indicated that Waikapū Stream does not have physical connectivity to the sea through Kealia Pond except during prolonged intense flooding events. See Ford, Tr., 12/10/07, at 225:6 to 226:3; Exhibit E-53 at 44 (§ 9.0). When there is flow from Waikapū Stream to Kealia Pond, the water does not travel via a continuous channel through the pond and into the ocean, but instead, fans out into a big delta. See Ford, Tr., 12/10/07, at 241:15 to 242:15; Chumbley, Tr., 1/16/08, at 104:2-14. Perhaps for that reason, USGS did not even

[16] The pumped water apply to the fields is brackish, so its contribution to recharge is inferior to that of surface water.

propose controlled releases for Waikapū Stream. See Oki, written direct testimony of 9/13/07, at ¶ 64, Table 1.

Nevertheless, to test if it is possible to establish mauka-to-makai connectivity in Waikapū Stream, the Decision and Order of the Proposed Findings order 4 mgd to be released below the Reservoir 6 ditch diversion for 120 days from the implementation of the proposed amended IIFS. See Decision and Order at ¶ 4(2) (p. 289). HC&S takes exception to setting the period for monitoring flows at 120 days because it is arbitrary to require that long of a monitoring period. There is no evidence that 120 days is needed to determine if a controlled release would reach the mouth of a stream, or here, Kealia Pond. The evidence indicates that a much shorter period of time is sufficient to conduct a seepage run.

Tom Nance, a respected hydrologist, testified that a controlled release of approximately 48 hours is sufficient to estimate rates of seepage loss at flow rates that will reliably reach the sea. See Nance, written direct testimony, at ¶¶ 4, 5. Even the controlled releases proposed by USGS, which Nance testified were excessive, would have lasted 30 days at each flow rate. Oki, written direct testimony, at ¶ 64, Table 1; Nance, written direct testimony, at ¶ 4. Delwyn Oki of the USGS acknowledged, however, that it is possible to determine the maximum loss rate from seepage for a stretch on the very first measurement, and that over time, the loss rate would decrease to the point where it will stabilize at some lower number. See Oki, Tr., 12/6/07, at 171:25 to 173:1. The 120-day monitoring period for Waikapū Stream exceeds Nance's recommendation of a 48-hour period as well as USGS's controlled release period of 30 days many times over. A period of no longer than 30 days is sufficient to determine if flows from Waikapū below the Reservoir 6 ditch will reach Kealia Pond.

B. The Commission Should Adopt a Holistic Approach to Setting IIFS That Analyzes Impacts and Benefits on a Region or System Instead of on a Stream-by-Stream Basis

Not only do the Proposed Findings elevate continuous mauka-to-makai flow to a position of paramount importance, but they posit that such connectivity must be restored in each stream. The stream-by-stream approach taken in the Proposed Findings, however, results in poor policymaking, as it blinds the Commission to the actual impact of IIFS, both in terms of the ecological response to flow restoration and the burdens on offstream users. The Commission should instead analyze the impacts of IIFS on a regional or system-wide basis. The Water Code certainly authorizes the Commission to adopt such an approach, as it permits the Commission to set IIFS "on a stream-by-stream basis" or to set "a general instream flow standard applicable to all streams within a specified area[.]" HRS § 174C-71(2)(F). A holistic view toward IIFS setting respects the interrelationship among different water sources, aquatic resources, and the surrounding environment.

The regional approach suggested above is similar to the "consolidated process" taken by the Commission in the Waiāhole contested case. The Supreme Court upheld the Commission's approach over the objection of applicant Kamehameha Schools Bernice Pauahi Bishop Estate, who had argued that the Commission "exceeded its statutory authority and the bounds of reason by collectively regulating water drawn from different hydrologic units." Waiāhole I, 94 Hawai'i at 174, 9 P.3d at 486. The Supreme Court rejected the argument, focusing on the unified Waiahole Ditch System rather than the "various 'aquifer systems' and 'sectors,' 'hydrologic units,' and 'water management areas' it traverses." Id. The Supreme Court held that unified treatment of the unified ditch system was consistent with the Commission's function, authorized by several statutory and administrative provisions, and appropriate in light of the interrelationship among the waters collected. See id. at 175, 9 P.3d at 487.

As a general matter, the Supreme Court held that "[t]he consolidated regulation of a single diversion works comports entirely with the Commission's function of comprehensive water planning and management." Id. More specifically, the Supreme Court observed that consolidation was contemplated in several sections of the Water Code and its implementing regulations. Even those provisions that appeared to contemplate more compartmentalized regulation permitted consolidation where a unified system of diversions affected multiple hydrologic units:

> HRS § 174C-53(b) (1993) requires the Commission, in acting on a permit application, to consider only "those objections filed by a person who has some property interest in any land within the *hydrologic unit* from which the water sought by the applicant is to be drawn *or who will be directly and immediately affected by the water use proposed in the application.*" (Emphases added.) Notwithstanding the alleged independence of the hydrologic units involved, allocations from the leeward portion of the ditch system "directly and immediately" affect the windward parties insofar as any allocation of the leeward supply proportionately reduces the amount of water otherwise demanded from windward streams. ***By its terms, therefore, HRS § 174C-53(b) allows the consolidated regulation of a single diversion works such as the Waiahole Ditch System.***

Id. (boldface italics added). Thus, the Court deemed the Commission's consolidation of the cases warranted by the unified nature of the Waiahole Ditch System: "[W]e believe that the Commission's consolidated approach in this case demonstrates due regard for the direct and inevitable interrelationship among the waters collected by the ditch system." Id.

Here, a unified approach is warranted for three reasons. First, similar to the Waiāhole Ditch System, the ditch system operated by Wailuku Water Company and HC&S collects water from multiple Nā Wai 'Ehā streams. Imposing incremental restrictions on a stream-by-stream basis hides the true impact on offstream users like HC&S. It is the total amount of water collected in the system that matters ultimately to HC&S, not the proportion of flow available for diversion ***in each stream***. Seemingly minor restrictions on the amount of flow that could be

diverted from each stream could be considered to have little economic impact on HC&S, but the aggregate impact of these restrictions could be profound.

Second, as a related matter, the economic impact of restricting the water available to HC&S can only be measured in the aggregate. For example, a proper analysis must consider the economies of scale that allow HC&S to remain commercially viable. A proper analysis must also consider the relationships among the streams and diversions during periods of low flows, during which the relative flows of different streams and their contributions to the EMI ditch system and other diversions may vary greatly. See Waiāhole I, 94 Hawai'i at 180, 9 P.3d at 492 (discussing the "'variable and transient nature'" of natural watercourses (quoting Robinson v. Ariyoshi, 65 Haw. 641, 667, 658 P.2d 287, 306 (1982)). It is simply impossible for these factors to be taken into account if the Commission performs the balancing required by HRS § 174C-71(2)(D) on a piecemeal, *i.e.*, stream by stream, basis.

Third, considering the collective contributions of species in multiple streams provides a far more accurate picture of their overall health than would a narrower focus on the contribution of species in a single stream. The record contains undisputed evidence that reproductive activity by amphidromous species in one healthy stream could contribute to the populations of amphidromous species in neighboring streams. See FoF 597 (citing Lindstrom, Tr., 10/18/08, at 45:12-20; Exhibit E-53 at 42 and Table 7 (§ 7.5.2), and 44 (§ 9.0)). The larval drift sampling conducted by John Ford and Daniel Lindstrom (aquatic biologists retained by HC&S) found large numbers of 'o'opu larvae in Waihe'e Stream and none in the three other streams. This suggests that Waihe'e Stream contributes thousands of 'o'opu larvae to the oceanic pool.[17] On a

[17] The IIFS Assessment Reports prepared by Commission staff for East Maui Streams similarly acknowledge that "[n]ewly hatched larvae are carried downstream to the ocean where

regional basis, this tends to compensate for the absence of significant reproducing populations in the other three Nā Wai 'Ehā Streams. See id.

Therefore, restoring continuous mauka-to-makai flow in every stream is not necessary to sustain the overall population of amphidromous species in the Nā Wai 'Ehā region. As Ford explained, there is a difference between physical connectivity and ecological connectivity. Physical connectivity exists if there is uninterrupted flow of surface waters between the headwaters of a stream and its mouth. Ecological connectivity exists if stream flows of sufficient volume and frequency allow the normal distribution of native amphidromous species within a given watershed. Ecological connectivity in a stream, which often exists irrespective of whether there is physical connectivity, is more important than physical connectivity for purposes of sustaining the biological integrity of the stream. See Tr., Ford, Tr., 12/10/07, at 219:24 to 221:7; Exhibit E-53 at 4 n.1 (§ 1.0), and 43 (§ 8.0)); see also FoF 78 (p. 15); FoF 557 (p. 96); FoF 590 (p. 102). This is demonstrated by the fact that there are streams that are naturally interrupted but still have healthy populations of reproducing amphidromous species. See Ford, Tr. 12/10/07, at 214:21 to 215:3.

In short, in setting IIFS, the Commission should reject a piecemeal approach in favor of one that weighs instream values and offstream uses on a regional basis. The importance of instream and offstream uses can only be weighed in light of the "entirety of the circumstances," and the "entirety of the circumstances" can only be determined by examining both the stream at issue and all other streams affected or potentially affected by EMI's integrated ditch system.

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they become part of the planktonic pool in the open ocean." IIFS Assessment Reports § 4.0 (Maintenance of Fish and Wildlife Habitat).

C. An IIFS of 5 mgd for Waihee Stream and 4 mgd for ʻĪao Stream Would Still Provide a More Appropriate Balance Between Instream and Offstream Needs

1. Establishing IIFS of 5 mgd at Waiheʻe Stream and 4 mgd at ʻĪao Stream would establish mauka-to-makai flows

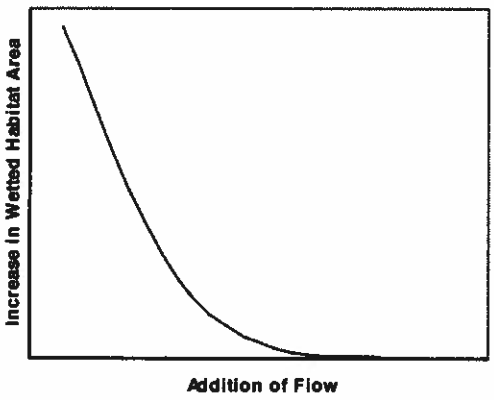
The Proposed Findings require the return of a large amount of flow into Nā Wai ʻEhā streams to the detriment of existing offstream users, despite the lack of evidence of the benefits to amphidromous species that would be gained from such a measure. That is not a prudent water management practice. Offstream demands on Nā Wai ʻEhā water are high. Conversely, there is evidence that restoring even a fraction of the flows stated in the proposed amended IIFS would yield tremendous benefits to amphidromous species, and that the amount of additional benefit declines as flows increase. Therefore, the Commission cannot determine that ordering restoration of flow in the amounts stated in the proposed amended IIFS strikes the balance that "promote[s] the best economic and social interests of the people of this state." Waiāhole I, 94 Hawai'i at 141, 9 P.3d at 453. There simply is no evidence to support such a conclusion.

Thomas Payne, an aquatic biologist with significant experience in instream flow analysis, testified that low flows quickly result in a large benefit in terms of increasing the wetted habitat area of a stream. At higher flows, however, the increase in wetted habitat area becomes much less dramatic. See Payne, Tr., 12/12/07, at 16:13 to 20:25. The amount of benefit to amphidromous species therefore attenuates as flows increase. Given this, and given the heavy demand for water for offstream uses, an IIFS reflecting the balance that best serves the public trust must be set at the flow that achieves maximum benefit to instream values without unduly restricting offstream uses.

The proposed amended IIFS deviate from this principle. The instream flow levels set in the proposed amended IIFS are dramatically higher than current flows. Yet, there is no evidence

that the benefit to amphidromous species is directly proportional to the amount of flow in a stream. The evidence actually suggests the opposite — that as flows increase, the level of benefit diminishes to the point where restoration of more flow would produce no additional benefit. Figure 1 illustrates the approximate relationship between addition of flow to a stream and the increase in benefit to amphidromous species as measured by wetted habitat area. And since the proposed amended IIFS would put back significantly more flow into the streams, the Commission has no basis to determine if the same amount of benefit could be achieved with less flow. Thus, if stream restoration is required in any measure, it should begin at a low level so that incremental contributions of flow and their significance can be studied.[18] See Ford, Tr., 12/10/07, at 228:5 to 230:12; Ford, Tr., 12/11/07, at 137:6 to 139:4.

Figure 1: Relationship of Addition of Flow to Increase in Wetted Habitat Area



The benefits to be derived from the proposed amended IIFS are questionable for the additional reason that a significant amount of flow is required to be put into ʻĪao Stream, which is dubious candidate for restoring amphidromous species.[19] The evidence established that factors unrelated to flow hinder recruitment in ʻĪao Stream. Much of ʻĪao Stream below Wailuku Water

[18] In a sense, the Proposed Findings take this approach in setting the IIFS for Waikapū Stream. Because the evidence raised questions as to whether Waikapū Stream ever carried uninterrupted surface waters to the ocean, the proposed amended IIFS would restore 4 mgd into Waikapū Stream after the Reservoir 6 ditch and monitor whether the flows reach Kealia Pond. If the flows reach Kealia Pond, then the 4 mgd flow is set as the amended IIFS, but if not, there would be no IIFS for Waikapū Stream.

[19] Perhaps, it is because of the assumption that the proposed amended IIFS would leave more much water available for offstream use than is actually the case that the Proposed Findings set the proposed amended IIFS so high in ʻĪao Stream.

Company's diversion was channelized as a result of a flood control project maintained by the County of Maui. The 'Īao Flood Control Project starts about 2.5 miles above the mouth of 'Īao Stream and consists of a debris basin, a concrete channel that runs from the debris basin to just downstream of North Market Street and Kahekili Highway, a 20-foot vertical drop, a broadened but unlined channel running to Waiehu Beach Road, and concrete wing walls running about one-half of the distance from the Waiehu Beach Road to the mouth of the stream. See Exhibit E-53 at 8 (§ 3.3); see also FoF 128 (p. 22). Channelization removes usable habitat for fish or shrimp, replacing the streambed with straightened sides and a flat concrete floor. See Ford, Tr., 12/11/07, at 38:13-21. Thus, the concrete channel negatively affects recruitment irrespective of the flow of water in the channel. See Lindstrom, Tr. 10/14/08, at 39:12 to 41:3; Ford, Tr., 10/14/08, at 151:17 to 153:8. This is reinforced by the absence of any larval fishes or crustaceans in the larval samples collected from 'Īao Stream in the study commissioned by HC&S. See Ford, Tr., 12/10/07, at 227:2-23; Exhibit E-53 at 43, 44 (§§ 8.0, 9.0). An additional impediment to recruitment in 'Īao Stream is a 12-foot drop in elevation just below the Spreckels Ditch diversion on South Waiehu Stream, and below the highway culverts in lower Waiehu Stream is a vertical concrete apron. See Exhibit E-53 at 29, 44.

If insuring continuous mauka-to makai flow in Waihe'e and 'Īao Streams is a high priority for the Commission, this can be accomplished by setting the IIFS for Waihe'e Stream at 5 mgd below the diversions at the Waihe'e and Spreckels intakes, and at 4 mgd below the WWC and HC&S diversions on 'Īao Stream. This alternative IIFS strikes a better balance in that it provides for mauka-to-makai flows with less drastic impacts on Maui's economic and agricultural interests and on its public water supply.

In the case of Waihe'e Stream, USGS hydrologist Delwyn Oki acknowledged that Waihe'e Stream in its current diverted condition has at least some flow year round at its mouth. See Oki, Tr. 12/6/07, at 44:18-25, 112:18-25. The stream survey performed by SWCA, moreover, found reproducing populations of some species below the diversion. See Exhibit E-53 at 44 (§ 9.0). If a minimum flow of even 5 mgd were established below the Spreckels intake, this would significantly boost the wetted area below the diversions and increase the amount of water that flows continuously into the ocean. Since most of the benefit to the amphidromous species accrues with the initial wetting of the stream channel, it does not make sense for the Commission to leapfrog to a higher flow without first studying the benefits achieved with a more modest flow enhancement.

In the case of 'Īao Stream, the Proposed Findings sets the IIFS at 13 mgd at the 'Īao-Maniania and 'Īao-Waikapū Ditch diversion with the goal of achieving a continuous flow at the mouth of 6.7 mgd. Losses between the upper diversion and the HC&S diversion on the Spreckels Ditch are assumed to be 5 mgd (no data presently exists to confirm this), and losses below Spreckels are assumed to be 1.3 mgd.

If a minimum flow of 4 mgd were to be established at the upper diversion, and up to 4 mgd were also required to be passed at the Spreckels diversion, HC&S believes that continuous mauka-to-makai flow will be achieved. The only way to determine this for sure is to start with an IIFS of 4 mgd and find out—similar to the approach taken by the Proposed Findings to setting the IIFS for Waikapū Stream. The Commission should then require the results to be monitored both with regard to the continuity of mauka-to-makai flow and with regard to whether this actually results in any measurable biological benefit to the native amphidromous species. This is

particularly important in Iao Stream given the extent of existing and proposed additional concrete channelization which severely compromises the suitability of Iao Stream as habitat.

2. Establishing IIFS of 5 mgd at Waihe'e Stream and 4 mgd at 'Īao Stream would be less injurious to the interests of HC&S and MDWS

The impacts on HC&S and the MDWS of setting the IIFS for Waihe'e and 'Īao Streams at 5 and 4 mgd, respectively, while still significant, are considerably less than at the 14 and 13 mgd recommended in the Proposed Findings. This is illustrated in Exhibits "6," "7 and "8" which model the impacts on HC&S in terms of Zero days at Waiale Reservoir, Zero days and days at less than irrigation requirements for the 'Īao-Waikapū fields, capital investments and increased operating costs required, and Zero days and days at less than the 3.2 mgd capacity of MDWS 'Īao Water Treatment Plant. Exhibit "9" is a table which compares all three of the modeled scenarios, i.e., status quo, Proposed Findings and HC&S' alternative proposal of setting the IIFS at 4 mgd at Waihe'e Stream and 5 mgd at 'Īao Stream.

Even with the IIFS for Waihe'e and 'Īao Streams set at 5 and 4 mgd, there are significant economic impacts to HC&S in the form of capital investments required and increased operating costs to run Well 7. Whether these capital costs can in fact be made, given the precarious financial condition of HC&S and continued uncertainty regarding the availability of a reliable supply of surface water from both East and West Maui, is a difficult question for A&B that is yet to be decided.

Setting the IIFS at 5 and 4 mgd for Waihe'e and 'Īao Streams will, however, at least give HC&S a better chance—rather than no chance—at survival, because it substantially reduces the all important Zero days at Waiale Reservoir and at the 'Īao-Waikapū fields. It will also lessen the anticipated demand on the Kahului aquifer from the increased operation of Well 7.

IV. CONCLUSION

For the foregoing reasons, HC&S respectfully submits that the Commission should not accept the proposed amended IIFS set forth in the Proposed Findings, and instead, adopt the alternative IIFS proposed herein.

DATED: Honolulu, Hawai'i, May 11, 2009.

CADES SCHUTTE LLP

DAVID SCHULMEISTER
ELIJAH YIP
Attorneys for HAWAIIAN COMMERCIAL AND SUGAR COMPANY

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

Iao Groundwater Management Area High-Level Source Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waihee, Waiehu, Iao & Waikapu Streams Contested Case Hearing	Case No. CCH-MA06-01 DECLARATION OF GARRET HEW

DECLARATION OF GARRET HEW

I, GARRET HEW, hereby declare:

1. I am the President of East Maui Irrigation Co., Ltd. ("EMI"), a subsidiary of Alexander & Baldwin, Inc. ("A&B"). I am also the Water Resources Manager for Hawaiian Commercial and Sugar Company ("HC&S"), which is the division of A&B that operates A&B's sugar cultivation operations on Maui.

2. Attached hereto as Exhibit 1 is printout of a chart that I downloaded from the United States Geological Survey ("USGS") website http://waterdata.usgs.gov/hi/nwis/dv?cb_00060=on&format=html&begin_date=2008-01-01&end_date=2008-12-31&site_no=16604500&referred_module=sw that shows the daily mean discharge in cubic feet per second ("cfs") recorded for each day of calendar year 2008 at the USGS stream gauge (16604500) on Iao Stream above the first diversion operated by Wailuku Water Company.

3. The highlighting on Exhibit 1 was added by me to identify the days in 2008 when the daily mean discharge of Iao Stream at this location was measured at or below the 13 million gallons per day ("mgd") proposed Interim Instream Flow Standard contained in the Hearings Officer's Proposed Findings of Fact, Conclusions of Law, and Decision and Order ("Recommended Decision") herein. This entailed converting the 13 mgd to cfs (1.547 cfs = 1

mgd) resulting in 20.1 cfs, and then highlighting each day in Exhibit 1 where the daily mean discharge was recorded at 20 cfs or less. There were 122 such days in 2008, i.e., one out of every three days. Thus, if the IIFS for Iao Stream in 2008 were to have been 13 mgd, no diversions at all would have been allowed for HC&S or any other offstream user, even for the County of Maui's existing water treatment plant that utilizes water from Iao Stream, for a total of 122 days.

4. Attached hereto as Exhibit 2 is printout of a chart that I downloaded from the USGS website [http://waterdata.usgs.gov/hi/nwis/dv?cb_00060=on&format=html&begin_date=2008-01-01&end_date=2008-12-31&site_no=16614000&referred_module=sw] that shows the daily mean discharge in cubic feet per second ("cfs") recorded for each day of calendar year 2008 at the USGS stream gauge (16614000) on Waihee Stream above the first diversion operated by Wailuku Water Company.

5. The highlighting on Exhibit 2 was added by me to identify the days in 2008 when, if the IIFS in place in 2008 had been the 14 mgd proposed in the Recommended Decision, the amount in the Waihee Ditch at the point where it could be utilized by HC&S would be less than the amount necessary to satisfy the sum of the anticipated uses upstream of HC&S. To arrive at this figure I added the 14 mgd proposed IIFS to 6.84 mgd for Kuleana users, 3 mgd for system losses and 9 mgd for the County's proposed Waiale Water Treatment Plant, for a total of 32.84. This equals 50.80 cfs, rounded to 51 cfs. I then highlighted on Exhibit 2 each day with a recorded flow of 51 cfs or less. There were 294 such days in 2008. Thus, if the IIFS in effect in 2008 had been 14 mgd and the proposed Waiale Water Treatment had been constructed and been in operation, HC&S would have received no Waihee Stream water at all and the Waiale Water

Treatment Plant would have received less than its 9 mgd capacity on 294 days, or more than 4 out of every five days.

I, GARRET HEW, declare, verify, certify, and state under penalty of perjury that the foregoing is true and correct.

DATED: May 11, 2009.

Garret Hew

GARRET HEW

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

'Iao Groundwater Management Area High-Level Source Water Use Permit Applications and Petition to Amend Interim Instream Flow Standards of Waihe'e, Waiehu, 'Iao & Waikapu Streams Contested Case Hearing	Case No. CCH-MA06-01 DECLARATION OF RICK W. VOLNER, JR.

DECLARATION OF RICK W. VOLNER, JR.

I, RICK W. VOLNER, JR., hereby declare:

1. I am the Senior-Vice President of Agricultural Operations at Hawaiian Commercial & Sugar ("HC&S").

2. I have reviewed the Hearings Officer's Proposed Findings of Fact, Conclusions of Law, and Decision and Order ("Recommended Decision") for the purpose of assessing the potential impacts upon HC&S' agricultural operations if the Recommended Decision were to be adopted by the Water Commission (the "Commission").

3. As an initial exercise in visualizing the impact to HC&S of the implementation of IIFS in the amounts proposed in the Recommended Decision, I took the graph of the daily deliveries to Waiale Reservoir submitted by HC&S as Exhibit E-11 in the hearing, which covered September 1, 2006 through August 31, 2007, and compressed it to one page. I then inserted a horizontal line across the graph at the point on the *y* axis corresponding to 32 million gallons per day ("mgd"), to represent the cumulative impact on HC&S, which is the last user on the ditch system, of the sum of 14 mgd left in Waihee Stream, 1 mgd left in South Waiehu Stream, 13 mgd left in Iao Stream and 4 mgd left in Waikapu Stream. The Waikapu Stream water, which would not have been delivered to Waiale Reservoir if

diverted, nonetheless reduces the deliveries because Waihee Stream water must be rerouted past Hopoi chute to replace the Waikapu water because there is no other source with which to replace the Waikapu water. The result, attached hereto as Exhibit 3, while rough, visually conveys the order of magnitude of the impact on HC&S of the cumulative return of an IIFS of 32 mgd to these streams. The second page of Exhibit 3 shows the daily delivery amounts reduced by the 32 mgd. It indicates that for these twelve months there would have been 245 days of no water whatsoever being delivered to Waiale Reservoir.

4. For a more accurate assessment, I prepared an Excel spreadsheet utilizing daily mean discharge data for Waihee and Iao Streams published by the United States Geological Survey ("USGS") on their website for calendar years 2005 through 2008 and modeled what the flows available to HC&S would be each day after subtracting system losses, diversions to Kuleana users and water used by the existing water treatment plant operated by the County of Maui Department of Water Supply. In modeling the flows I did not make any deductions in anticipation of the up to 9 mgd capacity of the County's proposed new Waiale Treatment Plant.

5. Attached as Exhibit 4 is a summary sheet showing the results based on the status quo, i.e., no amendment to the current Interim Instream Flow Standards ("IIFS") for the Na Wai Eha streams. The average daily flow into Waiale Reservoir for the 2005 through 2008 period calculates out to 34.97 million gallons per day ("mgd"). This compares well with the 34.26 mgd actual average daily ditch deliveries to Waiale Reservoir, which validates the flow distribution assumptions built into the spreadsheet. The median daily flow to the Waiale Reservoir is 27.61 mgd under status quo conditions with no days of no ("Zero")

water being delivered to the reservoir, the Iao Waikapu fields or the existing County Water Treatment Plant.

6. Attached hereto as Exhibit 5 is a summary sheet illustrating the impacts on HC&S on an annualized basis utilizing the same stream flow data but assuming that the IIFS are set at the levels in the Recommended Decision. Under this scenario, which assumes no water will be available from Waikapu Stream, Waihee Stream water is kept in the Waihee Ditch past Hopoi chute to the extent needed to satisfy the irrigation requirements of the Iao Waikapu fields, since they have no alternative source. Exhibit 5 illustrates the dramatic impact on HC&S of the proposed IIFS contained in the Recommended Decision in terms of average daily inflows to Waiale Reservoir (drops from 34.97 to 14.86 mgd), median daily flow (drops from 27.61 to 2.37 mgd), days of Zero inflows to Waiale Reservoir (jumps from 0 to 159), days of Zero water available for the Iao Waikapu fields (jumps from 0 to 30), days of less than daily requirement available for Iao Waikapu fields (jumps from 0 to 159). It also shows that the existing County Water Treatment Plant, on an annualized basis, experiences 73 days per year of Zero water available and 129 days of less than 3.2 mgd available.

7. In order to pump enough water from Well 7 to mitigate the loss of water delivered to Waiale Reservoir, Exhibit 5 shows a capital cost of $1,050,000 to upgrade Well 7 to increase its capacity from 14 to 28 mgd and an annual operating cost of $1,296,933 to operate it based on a unit cost of $0.1925 per kilowatt hour of power. The capital cost estimate has been updated based on current pricing information and the unit cost has been updated from the testimony supplied in the hearing in that it represents a three year average from May of 2006 through April 30 of 2009.

8. Attached hereto as Exhibit 6 is a summary sheet illustrating the impacts if HC&S were to additionally incur the estimated capital cost of $2,500,000 to clean and line Waiale Reservoir to mitigate 7 mgd of seepage (average of 6-8 mgd in proposed findings).

9. While the Recommended Decision assumed that HC&S could replace 2 mgd of surface water with treated effluent from the Kahului Waste Water Treatment, this is not a feasible mitigation measure because the capital costs for installation and material to install piping and pump stations would be from $2.5 to $3 million, and there would then be additional operating costs to run the pump stations, as well as additional operating costs to run the pump stations and to purchase the water from the County at its agriculture rate of $0.12 per 1,000 gallons. This is apart from coping with permitting requirements and dealing with the higher level of particulates in the recycled effluent which will have a tendency to clog filter stations and drip tubes.

10. Attached hereto as Exhibits 7 and 8 are summary sheets illustrating what the impacts would be assuming that the IIFS for Waihee Stream is set at 5 mgd, instead of 14 mgd, and that the IIFS for Iao Stream is set at 4 mgd instead of 13 mgd. Under this scenario, as compared to the status quo, the average daily inflows to Waiale Reservoir drop from 34.97 to 25.15 mgd, the median daily inflow from 27.61 to 16.11 mgd, the days of Zero deliveries at Waiale Reservoir increases from 0 to 7, and there are Zero days for the County Water Treatment Plant or the Iao Waikapu fields. The level of operating costs and capital required is still significant but, if HC&S were to persist with its sugarcane plantation, the reduction in Zero days and days below the water requirement of the Iao Waikapu fields makes this a less onerous scenario.

11. For ease of comparison, attached hereto as Exhibit 9 is a table summarizing

salient data regarding water deliveries and the capital costs and operating costs associated with each of the scenarios modeled on Exhibits 4 through 8.

I declare, verify, certify, and state under penalty of perjury that the foregoing is true and correct.

DATED: May 11, 2009.

RICK W. VOLNER, JR.

USGS 16604500 Iao Stream at Kepaniwai Park nr Wailuku, Maui, HI

PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site | Time-series: Daily data GO

Station operated in cooperation with the State of Hawaii Commission on Water Resource Management.

This station managed by the Maui Field Office.

	Available Parameters	Period of Record		Output form	Begin date
☐	All 1 Available Parameters			☐ ph	
☑	00060 Discharge (Mean)	5/1/1983	5/7/2009	☐ ph w/	2008-01
				☐ ph w/	End date
				☑ le	
				☐ separ	2008-12

GO

Summary of all available data for this site

Daily Mean Discharge, cubic feet per second (DD 01)

DATE	Jan 2008	Feb 2008	Mar 2008	Apr 2008	May 2008	Jun 2008	Jul 2008	Aug 2008	Sep 2008	Oct 2008	Nov 2008	Dec 2008
1	148 A	576 A	28 A	30 A	28 A	15 A	18 A	20 A	21 A	20 A	70 P	16 P
2	241 A	452 A	28 A	94 A	29 A	15 A	19 A	18 A	17 A	16 A	34 P	15 P
3	231 A	207 A	27 A	59 A	65 A	16 A	19 A	28 A	16 A	16 A	28 P	13 P
4	206 A	148 A	26 A	45 A	139 A	16 A	36 A	21 A	15 A	19 A	24 P	13 P
5	138 A	547 A	26 A	35 A	90 A	15 A	19 A	18 A	19 A	15 A	21 P	16 P
6	68 A	203 A	25 A	117 A	36 A	13 A	16 A	28 A	18 A	15 P	20 P	13 P
7	54 A	271 A	24 A	56 e A	29 A	13 A	16 A	42 A	28 A	Eqp P	22 P	---
8	45 A	159 A	24 A	35 e A	63 A	14 A	15 A	24 A	18 A	12:00 PM	20 P	---

Exhibit 1

9	40 A	111 A	25 A	30 e A	29 A	29 A	16 A	26 A	15 A	13 P	17 P	---
10	36 A	80 A	25 A	29 e A	25 A	78 A	14 A	57 A	15 A	22 P	33 P	11:00 PM
11	42 A	69 A	25 A	42 e A	61 A	82 A	18 A	74 A	14 A	15 P	17 P	---
12	32 A	60 A	24 A	104 e A	25 A	39 A	37 A	33 A	13 A	14 P	15 P	204 P
13	36 A	53 A	24 A	56 e A	23 A	32 A	16 A	48 A	13 A	71 P	16 P	81 P
14	31 A	46 A	24 A	35 e A	22 A	21 A	15 A	74 A	13 A	26 P	15 P	64 P
15	44 A	45 A	24 A	45 A	20 A	22 A	14 A	27 A	13 A	14 P	14 P	38 P
16	32 A	48 A	52 A	36 A	20 A	20 A	21 A	27 A	20 A	13 P	14 P	30 P
17	27 A	43 A	162 A	34 A	20 A	17 A	18 A	38 A	14 A	24 P	20 P	25 P
18	89 A	42 A	102 A	31 A	18 A	17 A	57 A	23 A	18 A	28 P	313 P	21 P
19	33 A	39 A	70 A	63 A	18 A	18 A	47 A	20 A	14 A	22 P	418 P	19 P
20	65 A	37 A	70 A	69 A	18 A	49 A	36 A	19 A	13 A	20 P	93 P	32 P
21	47 A	36 A	60 A	42 A	18 A	66 A	103 A	28 A	13 A	15 P	43 P	17 P
22	42 A	35 A	58 A	35 A	17 A	73 A	105 A	35 A	13 A	15 P	40 P	16 P
23	188 A	35 A	50 A	34 A	16 A	33 A	210 A	29 A	28 A	13 P	26 P	17 P
24	53 A	39 A	64 A	33 A	15 A	50 A	60 A	19 A	41 A	28 P	21 P	87 P
25	35 A	39 A	44 A	32 A	16 A	25 A	39 A	44 A	24 A	18 P	19 P	28 P
26	155 A	33 A	35 A	31 A	17 A	23 A	32 A	42 A	17 A	15 P	17 P	120 P
27	143 A	30 A	34 A	30 A	18 A	23 A	27 A	25 A	15 A	14 P	16 P	241 P
28	144 A	30 A	47 A	30 A	16 A	18 A	84 A	22 A	14 A	13 P	15 P	236 P
29	482 A	29 A	39 A	30 A	15 A	17 A	107 A	21 A	13 A	13 P	56 P	109 P
30	328 A		31 A	28 A	15 A	15 A	35 A	29 A	28 A	157 P	23 P	247 P
31	533 A		32 A		15 A		25 A	24 A		132 P		107 P
COUNT	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**27**
MAX	**533**	**576**	**162**	**117**	**139**	**82**	**210**	**74**	**41**	**157**	**418**	**247**
MIN	**27**	**29**	**24**	**28**	**15**	**13**	**14**	**18**	**13**	**12**	**14**	**11**

USGS 16614000 Waihee Rv abv Waihee Dtch intk nr Waihee, Maui, HI

PROVISIONAL DATA SUBJECT TO REVISION

Available data for this site

Station operated in cooperation with the State of Hawaii Commission on Water Resource Management.

This station managed by the Maui Field Office.

Available Parameter	Period of Record		Output form	Begin date	
All 1 s Available Parameters			Graph		
00060 Discharge (Mean)	11/1/1983	5/7/2009	Graph w/ stats		
			Graph w/ Table	End date	
			Tab-separated		

Summary of all available data for this site

Daily Mean Discharge, cubic feet per second (DD 01)

DATE	Jan 2008	Feb 2008	Mar 2008	Apr 2008	May 2008	Jun 2008	Jul 2008	Aug 2008	Sep 2008	Oct 2008	Nov 2008	Dec 2008
1	61 A	162 A	43 A	44 A	35 A	34 A	33 A	32 A	36 A	36 A	52 P	29 P
2	120 A	161 A	42 A	77 A	37 A	34 A	36 A	32 A	32 A	34 A	34 P	29 P
3	97 A	102 A	42 A	47 A	50 A	36 A	37 A	52 A	32 A	33 A	32 P	29 P
4	98 A	61 A	42 A	44 A	84 A	33 A	44 A	36 A	31 A	34 A	31 P	29 P

Exhibit 2

5	74 A	249 A	42 A	40 A	58 A	35 A	33 A	32 A	36 A	33 A	30 P	32 P
6	47 A	79 A	41 A	59 A	39 A	33 A	32 A	48 A	33 A	33 P	29 P	30 P
7	44 A	198 A	41 A	55 A	38 A	33 A	32 A	47 A	34 A	30 P	33 P	29 P
8	42 A	62 A	41 A	46 A	65 A	34 A	32 A	35 A	32 A	30 P	30 P	29 P
9	42 A	57 A	41 A	40 A	38 A	36 A	33 A	38 A	31 A	31 P	29 P	28 P
10	41 A	52 A	40 A	40 A	37 A	69 A	32 A	51 A	33 A	39 P	46 P	28 P
11	58 A	50 A	41 A	48 A	53 A	91 A	33 A	58 A	31 A	32 P	30 P	149 P
12	42 A	49 A	40 A	67 A	37 A	46 A	41 A	40 A	31 A	35 P	33 P	59 P
13	44 A	49 A	40 A	55 A	36 A	46 A	32 A	80 A	34 A	57 P	30 P	52 P
14	43 A	48 A	42 A	42 A	36 A	35 A	31 A	92 A	30 A	35 P	29 P	43 P
15	48 A	48 A	40 A	45 A	35 A	36 A	31 A	37 A	30 A	32 P	29 P	32 P
16	44 A	47 A	48 A	40 A	35 A	35 A	35 A	36 A	31 A	30 P	29 P	30 P
17	42 A	47 A	92 A	39 A	35 A	33 A	34 A	42 A	30 A	39 P	32 P	30 P
18	105 A	46 A	51 A	39 A	35 A	33 A	53 A	34 A	36 A	43 P	169 P	29 P
19	45 A	46 A	43 A	43 A	35 A	35 A	52 A	34 A	33 A	35 P	89 P	29 P
20	64 A	46 A	76 A	48 A	35 A	45 A	34 A	34 A	31 A	36 P	34 P	56 P
21	53 A	46 A	61 A	40 A	34 A	55 A	62 A	39 A	31 A	31 P	31 P	31 P
22	49 A	45 A	47 A	40 A	34 A	52 A	53 A	38 A	31 A	35 P	40 P	30 P
23	90 A	45 A	51 A	39 A	34 A	37 A	99 A	38 A	43 A	30 P	31 P	31 P
24	50 A	45 A	71 A	37 A	34 A	47 A	40 A	33 A	63 A	38 P	30 P	54 P
25	49 A	46 A	44 A	37 A	34 A	34 A	35 A	50 A	42 A	35 P	30 P	38 P
26	96 A	45 A	41 A	37 A	34 A	34 A	36 A	50 A	33 A	31 P	30 P	90 P
27	70 A	44 A	43 A	36 A	34 A	35 A	36 A	39 A	31 A	29 P	29 P	133 P
28	64 A	43 A	52 A	36 A	34 A	33 A	66 A	36 A	30 A	29 P	29 P	88 P
29	129 A	43 A	44 A	39 A	33 A	32 A	87 A	35 A	30 A	29 P	55 P	48 P
30	103 A		40 A	36 A	33 A	32 A	37 A	42 A	57 A	210 P	32 P	157 P
31	140 A		42 A		33 A		34 A	37 A		78 P		49 P
COUNT	**31**	**29**	**31**	**30**	**31**	**30**	**31**	**31**	**30**	**31**	**30**	**31**
MAX	**140**	**249**	**92**	**77**	**84**	**91**	**99**	**92**	**63**	**210**	**169**	**157**
MIN	**41**	**43**	**40**	**36**	**33**	**32**	**31**	**32**	**30**	**29**	**29**	**28**

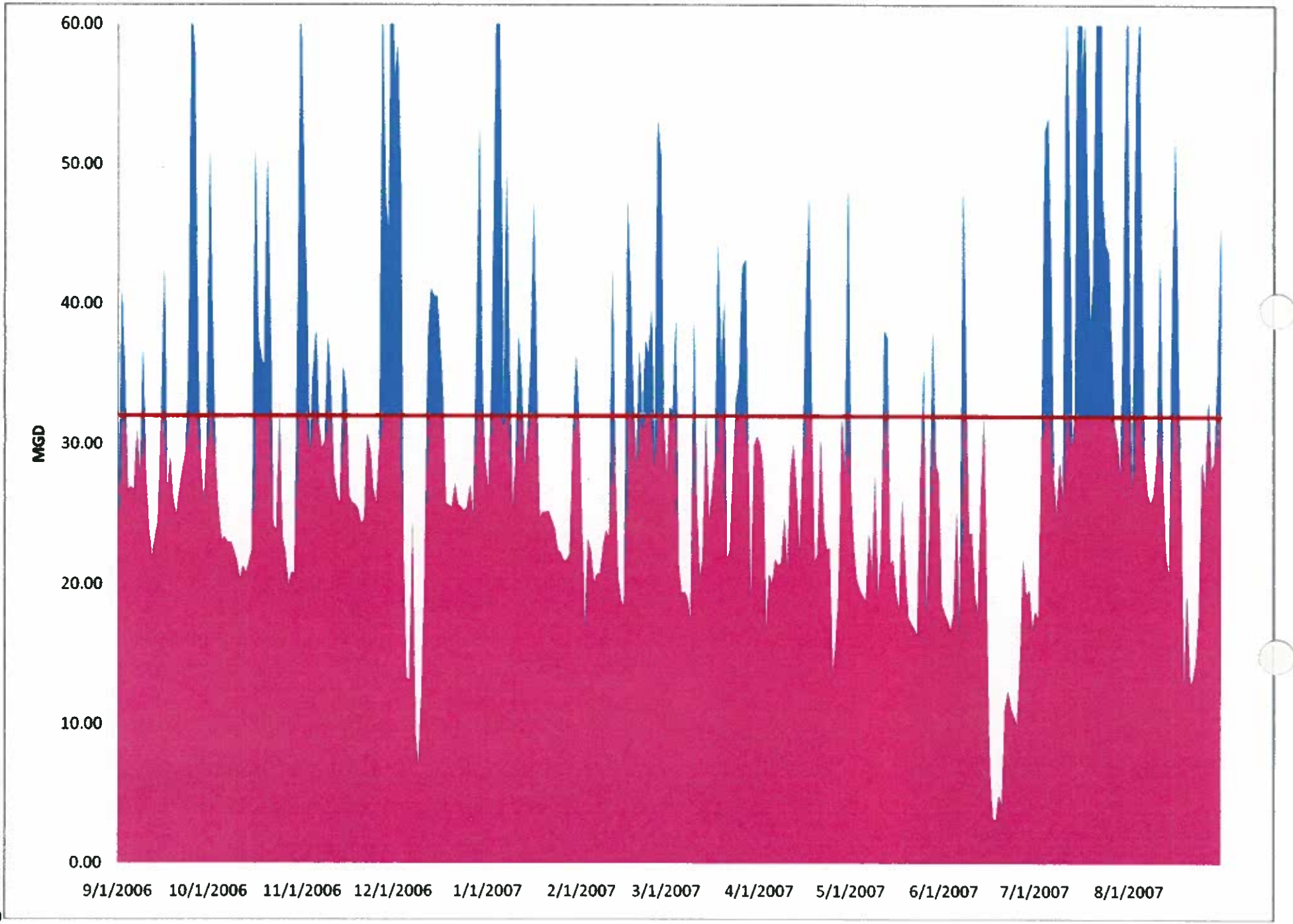
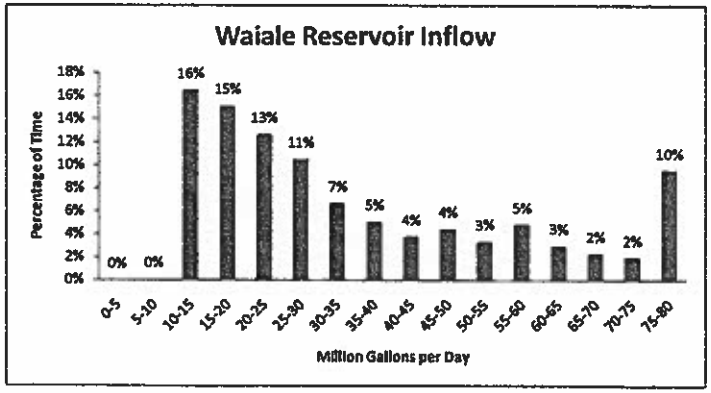

60.00
50.00
40.00
30.00
20.00
10.00
0.00
MGD
9/1/2006
10/1/2006
11/1/2006
12/1/2006
1/1/2007
2/1/2007
3/1/2007
4/1/2007
5/1/2007
6/1/2007
7/1/2007
8/1/2007

Exhibit 3

	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
1	0.00	19.04	17.38	24.23	0	0	0	0	0	0	0	2.56
2	9.07	5.33	8.34	26.53	1.96	0	0.68	0	0	0	0	0
3	2.74	0	0.00	16.69	18.49	0	0.37	0	0	0	0	22.53
4	0.00	0	2.85	0	36.42	0	7	0	0	0	20.37	29.63
5	0.00	0	6.20	0	21.91	0	0	0	0	0	21.4	9.34
6	0.00	0	0.00	0	0	0	0	0	0	0	9.82	0
7	0.00	0	0.00	0	17.6	0	0	0	0	16.42	0	0
8	0.00	0	0.00	0	3.19	0	0	0	0	2.619	0	0
9	4.87	0	5.73	0	0	0	0	0	0	0	0	0
10	0.00	0	1.53	0	0	0	7.03	0	0	0	0	0
11	0.00	0	0.00	0	5.72	10.56	0	0	0	0	28.9	11.18
12	0.00	0	0.00	5.35	2.1	0	0	0	6.23	0	19.21	0
13	0.00	0	0.00	9.14	0	0	0	0	5.6	0	0	0
14	0.00	0	3.59	8.57	0	0	0.15	0	0	0.28	0.06	0
15	0.00	0	1.69	8.61	4.24	0	0	0	0	0	47.41	7.81
16	10.69	19.32	0.00	5.05	15.4	15.56	0	7.48	0	0	23.98	19.93
17	0.00	5.55	0.00	1.19	2.22	9.01	0	15.82	0	0	28.04	4.36
18	0.00	4.14	0.00	0	0	0.55	12.46	0.59	0	0	15.59	0
19	0.00	3.5	0.00	0	0	0	2.92	0	0	0	6.14	0
20	0.00	18.5	0.00	0	0	4.8	8.22	0	0	0	9.82	0
21	0.00	6.68	0.00	0	0	0	0	0	0	0	33.66	0
22	0.00	0	0.00	0	0	5.42	0	0	0	0	35.26	0
23	0.00	0	0.00	0	0	4.25	0	0	0	0	15.6	0
24	3.33	0.62	0.00	0	0	7.6	1.22	0	0	0	12.33	0
25	28.99	0	0.00	0	0	0	2.5	0	3.54	0	11.72	0
26	26.39	0	0.00	0	0	21.19	10.65	0	0	0	4.75	0
27	5.33	0	29.63	0	0	18.69	11.26	0	0	0	0	1.22
28	0.00	0	15.40	4.71	0	0	0	0.1	6.19	0	0	0
29	0.00	0	13.23	20.9	0		0	0	0	0	0	0
30	0.00	7.73	33.52	1.59	4.41		0	16.97	0	0	8.63	2.96
31		30.91		0	0		0		0		33.53	13.88

Inputs/Assumptions			Proposed IIFS
Waihee IIFS @ Waihee Ditch	0	MGD	14
Walhee IIFS @ Spreckels Ditch	0	MGD	14
Iao IIFS @ Iao Walkapu Ditch	0	MGD	13
Iao IIFS @ Spreckels Ditch	0	MGD	8
Iao Waikapu Fields Daily Requirement	8.7	MGD	
County Water Treatment Plant	3.2	MGD	
Contribution from Walkapu Stream	4	MGD	4
HC&S System Seepage Mitigated	0	MGD	



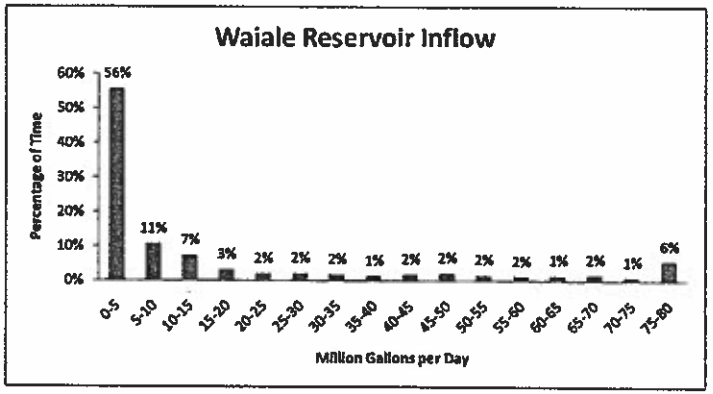
Summary

Average Daily Flow				
Waihee Ditch @ Hopoi Chute	22.76	MGD		
Spreckels Ditch @ Mill Street	12.21	MGD		
Total Inflows to Waiale Reservoirs	34.97	MGD	*34.26* (actual ditch deliveries, 2005-2008)	
Median Daily Flow				
Waihee Ditch @ Hopoi Chute	20.02	MGD		
Spreckels Ditch @ Mill Street	7.79	MGD		
Total inflows to Waiale Reservoirs	27.61	MGD	*31.39* (actual ditch deliveries, 2005-2008)	
Well 7 Water Pumped (MGD)	0.00			
Annual Well 7 Operating Costs	$ -			
Capital Required	$ -			

Zero Days (Annualized)			
Waihee Ditch @ Hopoi Chute	0	Days	0%
Spreckels Ditch @ Mill Street	62	Days	17%
Total Inflows to Waiale Reservoirs	0	Days	0%
County Water Treatment Plant			
Zero Days (Annualized)	0	Days	0%
Less than 3.2 MGD Available	0	Days	0%
Iao Waikapu Fields			
Zero Days (Annualized)	0	Days	0%
Less than Daily Requirement Available	0	Days	0%

Exhibit 4

Inputs/Assumptions			Proposed IIFS
Waihee IIFS @ Waihee Ditch	14	MGD	14
Waihee IIFS @ Spreckels Ditch	14	MGD	14
Iao IIFS @ Iao Waikapu Ditch	13	MGD	13
Iao IIFS @ Spreckels Ditch	8	MGD	8
Iao Waikapu Fields Daily Requirement	8.7	MGD	
County Water Treatment Plant	3.2	MGD	
Contribution from Waikapu Stream	0	MGD	4
HC&S System Seepage Mitigated	0	MGD	



Summary

Average Daily Flow

Waihee Ditch @ Hopoi Chute	9.33	MGD
Spreckels Ditch @ Mill Street	5.53	MGD
Total Inflows to Waiale Reservoirs	14.86	MGD

34.26 (actual ditch deliveries, 2005-2008)

Median Daily Flow

Waihee Ditch @ Hopoi Chute	2.30	MGD
Spreckels Ditch @ Mill Street	0.00	MGD
Total Inflows to Waiale Reservoirs	2.37	MGD

31.39 (actual ditch deliveries, 2005-2008)

Well 7 Water Pumped (MGD)	19.40	
Annual Well 7 Operating Costs	$ 1,296,933	
Capital Required	$ 1,050,000	

Zero Days (Annualized)

Waihee Ditch @ Hopoi Chute	159	Days	43%
Spreckels Ditch @ Mill Street	271	Days	74%
Total Inflows to Waiale Reservoirs	159	Days	43%

County Water Treatment Plant

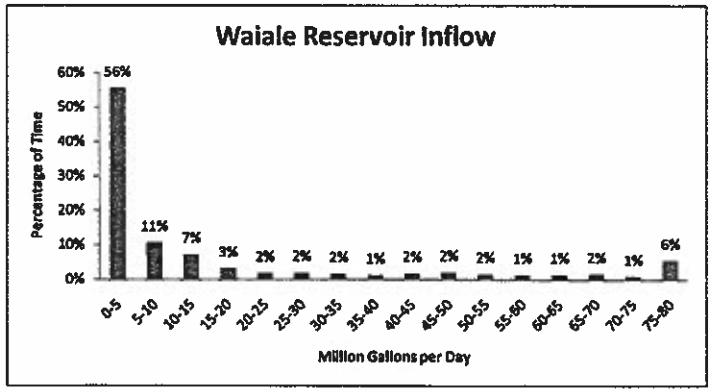
Zero Days (Annualized)	73	Days	20%
Less than 3.2 MGD Available	129	Days	35%

Iao Waikapu Fields

Zero Days (Annualized)	30	Days	8%
Less than Daily Requirement Available	159	Days	43%

Exhibit 5

Inputs/Assumptions			Proposed IIFS
Waihee IIFS @ Waihee Ditch	14	MGD	14
Waihee IIFS @ Spreckels Ditch	14	MGD	14
Iao IIFS @ Iao Waikapu Ditch	13	MGD	13
Iao IIFS @ Spreckels Ditch	8	MGD	8
Iao Waikapu Fields Daily Requirement	8.7	MGD	
County Water Treatment Plant	3.2	MGD	
Contribution from Waikapu Stream	0	MGD	4
HC&S System Seepage Mitigated	7	MGD	



Summary

Average Daily Flow

Waihee Ditch @ Hopoi Chute	9.33	MGD
Spreckels Ditch @ Mill Street	5.53	MGD
Total inflows to Waiale Reservoirs	14.86	MGD

34.26 (actual ditch deliveries, 2005-2008)

Median Daily Flow

Waihee Ditch @ Hopoi Chute	2.30	MGD
Spreckels Ditch @ Mill Street	0.00	MGD
Total inflows to Waiale Reservoirs	2.37	MGD

31.39 (actual ditch deliveries, 2005-2008)

Well 7 Water Pumped (MGD)	16.59	
Annual Well 7 Operating Costs	$ 1,109,516	
Capital Required	$ 3,550,000	

Zero Days (Annualized)

Waihee Ditch @ Hopoi Chute	159	Days	43%
Spreckels Ditch @ Mill Street	271	Days	74%
Total inflows to Waiale Reservoirs	159	Days	43%

County Water Treatment Plant

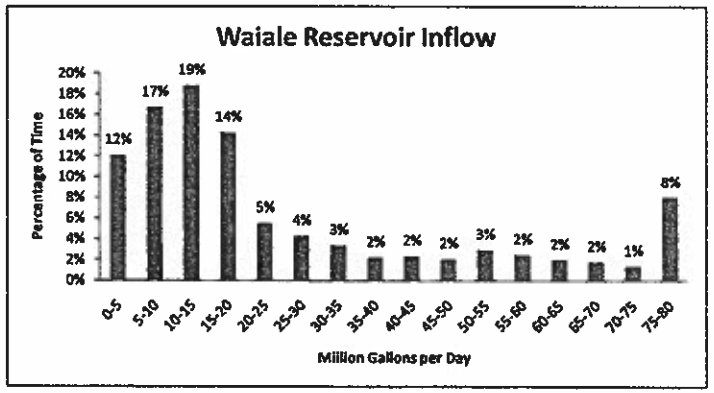
Zero Days (Annualized)	73	Days	20%
Less than 3.2 MGD Available	129	Days	35%

Iao Waikapu Fields

Zero Days (Annualized)	30	Days	8%
Less than Daily Requirement Available	159	Days	43%

Exhibit 6

Inputs/Assumptions			Proposed IIFS
Waihee IIFS @ Waihee Ditch	5	MGD	14
Waihee IIFS @ Spreckels Ditch	5	MGD	14
Iao IIFS @ Iao Waikapu Ditch	4	MGD	13
Iao IIFS @ Spreckels Ditch	4	MGD	8
Iao Waikapu Fields Daily Requirement	8.7	MGD	
County Water Treatment Plant	3.2	MGD	
Contribution from Waikapu Stream	0	MGD	4
HC&S System Seepage Mitigated	0	MGD	



Summary

Average Daily Flow

Waihee Ditch @ Hopoi Chute	17.53	MGD	
Spreckels Ditch @ Mill Street	7.62	MGD	
Total inflows to Waiale Reservoirs	25.15	MGD	*34.26* (actual ditch deliveries, 2005-2008)

Median Daily Flow

Waihee Ditch @ Hopoi Chute	14.94	MGD	
Spreckels Ditch @ Mill Street	0.00	MGD	
Total inflows to Waiale Reservoirs	16.11	MGD	*31.39* (actual ditch deliveries, 2005-2008)

Well 7 Water Pumped (MGD)	9.11	
Annual Well 7 Operating Costs	$ 608,863	
Capital Required	$ 1,050,000	

Zero Days (Annualized)

Waihee Ditch @ Hopoi Chute	7	Days	2%
Spreckels Ditch @ Mill Street	219	Days	60%
Total inflows to Waiale Reservoirs	7	Days	2%

County Water Treatment Plant

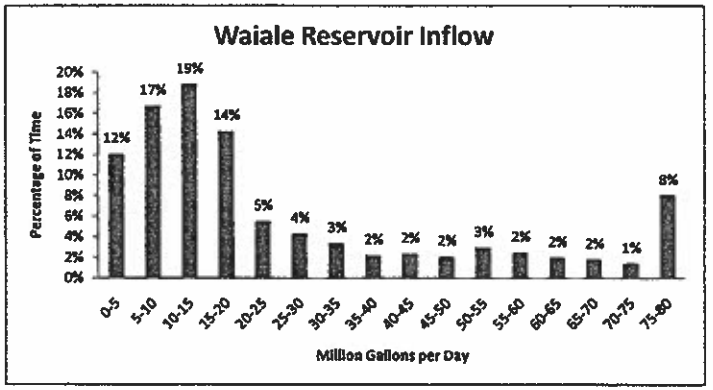
Zero Days (Annualized)	0	Days	0%
Less than 3.2 MGD Available	1	Days	0%

Iao Waikapu Fields

Zero Days (Annualized)	0	Days	0%
Less than Daily Requirement Available	7	Days	2%

Exhibit 7

Inputs/Assumptions			Proposed IIFS
Waihee IIFS @ Waihee Ditch	5	MGD	14
Waihee IIFS @ Spreckels Ditch	5	MGD	14
Iao IIFS @ Iao Waikapu Ditch	4	MGD	13
Iao IIFS @ Spreckels Ditch	4	MGD	8
Iao Waikapu Fields Daily Requirement	8.7	MGD	
County Water Treatment Plant	3.2	MGD	
Contribution from Waikapu Stream	0	MGD	4
HC&S System Seepage Mitigated	7	MGD	



Summary

Average Daily Flow				
Waihee Ditch @ Hopoi Chute	17.53	MGD		
Spreckels Ditch @ Mill Street	7.62	MGD		
Total inflows to Waiale Reservoirs	25.15	MGD	34.26	(actual ditch deliveries, 2005-2008)
Median Daily Flow				
Waihee Ditch @ Hopoi Chute	14.94	MGD		
Spreckels Ditch @ Mill Street	0.00	MGD		
Total inflows to Waiale Reservoirs	16.11	MGD	31.99	(actual ditch deliveries, 2005-2008)
Well 7 Water Pumped (MGD)	3.31			
Annual Well 7 Operating Costs	$ 221,534			
Capital Required	$ 2,500,000			

Zero Days (Annualized)

Waihee Ditch @ Hopoi Chute	7	Days	2%
Spreckels Ditch @ Mill Street	219	Days	60%
Total inflows to Waiale Reservoirs	7	Days	2%

County Water Treatment Plant

Zero Days (Annualized)	0	Days	0%
Less than 3.2 MGD Available	1	Days	0%

Iao Waikapu Fields

Zero Days (Annualized)	0	Days	0%
Less than Daily Requirement Available	7	Days	2%

Exhibit 8

	Status Quo Base on 2005-2008 Deliveries to Walale Reservoir	Hearing's Officer Recommended IIFS		5/4 Alternative IIFS	
Waihee IIFS	0	14	14	5	5
Iao IIFS	0	13	13	4	4
Average Water Available at Walale (MGD)	34.97	14.86	14.86	25.15	25.15
"Zero" Days @ Walale	0	159	159	7	7
"Zero" Days @ Iao Waikapu Fields	0	30	30	0	0
Total HC&S Seepage Mitigated (MGD) (7 MGD Estimated Currently)	0	0	7	0	7
Average Well 7 Water Pumped (MGD)	0	19.4	16.59	9.11	3.31
Annual Well 7 Operating Costs *@ $0.1925/kw value/cost of power*	$ -	$ 1,296,933	$ 1,109,516	$ 608,863	$ 221,534
Capital Costs *Well 7 upgrade - $1,050,000* *Waiale Reservoir Lining - $2,500,000*	$ -	$ 1,050,000	$ 3,550,000	$ 1,050,000	$ 2,500,000

Exhibit 9

BEFORE THE COMMISSION ON WATER RESOURCE MANAGEMENT

OF THE STATE OF HAWAII

In the Matter of: IAO GROUND WATER MANAGEMENT AREA HIGH-LEVEL SOURCE WATER USE WUPAS AND PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS OF WAIHEE, WAIEHU, IAO, & WAIKAPU STREAMS CONTESTED CASE HEARING & COMPLAINT C04-31 REGARDING WASTE OF SURFACE WATER, WAILUKU MAUI CONTESTED CASE HEARING	Case No. CCH-MA-06-01 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on this date, a true and correct copy of the foregoing document was duly served on the following parties by electronic mail, hand delivery and/or U.S. Mail:

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DATED: Honolulu, Hawaii, May 11, 2009..

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