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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIOKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, AND MAKAPIPI STREAMS

Case No. CCH-MA13-01

HAWAIIAN COMMERCIAL & SUGAR COMPANY'S OPENING BRIEF; CERTIFICATE OF SERVICE

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HAWAIIAN COMMERCIAL & SUGAR COMPANY'S OPENING BRIEF

I. INTRODUCTION

Hawaiian Commercial & Sugar Company ("***HC&S***") submits its Opening Brief pursuant to Minute Order No. 12. The Commission on Water Resource Management ("***CWRM***") should confirm the appropriateness of the interim instream flow standards ("***IIFS***") that it set in 2008 and 2010 with respect to the streams that are the subject of the 27 petitions for the amendment of IIFS for East Maui streams (the "***East Maui IIFS Petitions***") submitted by Nā Moku Aupuni O Koolau Hui ("***Nā Moku***") on May 24, 2001. The IIFS presently in place were adopted after CWRM received and considered an impressive volume of public input and engaged in extensive deliberations. The current IIFS represent the appropriate balance between instream values and noninstream uses of East Maui stream water mandated under the Water Code. *See* HRS §§ 174C-71(2)(A), (D).

With respect to eight of the East Maui IIFS petitions that Nā Moku had selected for prioritization (which cover nine streams), CWRM set amended IIFS for seven streams based on its determination that restoration of flow in those streams would provide users downstream of diversions of those streams, including taro farmers, with adequate flow. Moreover, these amended IIFS would support an increase in habitat for stream biota in those streams. CWRM did not amend the IIFS for two streams that already supported instream values robustly, or for which the benefits of adding flow were questionable due to natural features in the stream or limited availability of hydrologic and biologic data for the stream. No one, including Nā Moku, appealed CWRM's 2008 decision on the first 8 East Maui IIFS petitions.

With respect to the remaining 19 East Maui IIFS Petitions, CWRM adopted the recommendation of the Department of Land and Natural Resources, Division of Aquatic

Resources ("***DAR***") and CWRM staff to restore flows in priority streams on a seasonally adjusted, regional basis. The IIFS set by CWRM with respect to the 19 East Maui IIFS Petitions yield the "biggest bang for the buck," i.e., they place priority on streams with the greatest potential to increase suitable habitat for native species and provide greater restoration of flow to those streams during the wet season and lesser restoration when offstream needs are higher. The viability of such an approach is supported by scientific literature showing that native amphidromous species are resilient in adapting to changing stream conditions.

CWRM's overarching aim in setting IIFS should be to promote the public interest. CWRM's rules state that "[e]xpressions of the public interest should be sought in the implementation of this chapter." Hawai'i Administrative Rules ("***HAR***") § 13-169-20(6). To that end, CWRM must give consideration to the "maintenance of existing non-instream uses of economic importance." *Id.* at § 13-169-20(4).

HC&S' use of East Maui stream water for sugarcane cultivation is an agricultural use of economic importance, and it provides public benefits to the County of Maui and the State of Hawai'i. HC&S is a major employer in the State. In addition to the 750 people on Maui that HC&S presently employs, approximately over 1,400 jobs on Maui are dependent on HC&S in some fashion if a conservative jobs multiplier of 1.87 is applied. HC&S also expends $115 million annually in goods and services, most of it in Maui. It is estimated that the regional multiplier effect of HC&S' injections into the local economy is spending is 1.5, meaning that HC&S' annual expenditures of $115 million adds over $172 million to the economy each year. In addition to making economic contributions to the County of Maui and State, the diversion and use of East Maui water by HC&S and EMI provides infrastructure for delivering water to the

Maui County Department of Water supply, provides a source of alternative energy, and keeps 35,000 acres of prime agricultural lands in agricultural use.

CWRM must consider the economic impact of HC&S' existing non-instream use in reevaluating its 2008 and 2010 IIFS decisions. Continued reliable access to surface water from East Maui streams for irrigation is critical to maintaining the economic viability of HC&S. In light of the slim profit margins that HC&S can achieve producing commodity sugar under current operating conditions, further reductions in surface water deliveries from East Maui Irrigation Company ("***EMI***") to HC&S will result in lower sugar yields, and thus, measurably diminish HC&S' ability to achieve the profitability of its operations. HC&S has calculated the incremental financial impact it will suffer as a result of reduced deliveries to each of the four ditches that HC&S receives from EMI at Maliko Gulch: Wailoa Ditch, Kauhikoa Ditch, Lowrie Ditch, and Haiku Ditch. The estimated average annual financial impact to HC&S per million gallons of reduced deliveries to the upper two ditches (Wailoa Ditch and Kauhikoa Ditch) is $507,858.00. The estimated average annual financial impact to HC&S per million gallons of reduced deliveries to the lower two ditches is $160,250.00 with respect to the Lowrie Ditch and $74,825.00 with respect to the Haiku Ditch. Accordingly, HC&S' operations would be sensitive to even slight upward amendments to the current IIFS for East Maui streams.

II. FACTUAL BACKGROUND

A. History of HC&S and EMI

HC&S celebrated its 125th anniversary of cultivating sugarcane on Maui in 2007. *See* Declaration of Rick Volner ("***Volner Decl.***") at ¶ 3. On May 4, 2007, the Maui County Council adopted Resolution No. 07-65 congratulating HC&S, applauding its legacy of support to the local community, and noting that "HC&S has been a highly successful enterprise and today is the largest producer of raw sugar in Hawaii farming 37,000 acres and producing about 80 percent of

Hawaii's sugar." *See* Ex. C-55. At that time, the only other operating sugar plantation in Hawaii was Gay & Robinson on Kauai. Gay & Robinson announced its closure in 2008 and completed its last harvest in 2010, leaving HC&S as Hawaii's sole surviving sugar plantation. *See* Volner Decl. at ¶ 3.

B. The EMI Ditch System and the Four License Areas

The EMI system is an integrated system of diversions, ditches, intakes and tunnels that collects water from streams located on the rainy windward slopes of East Maui and transports it to HC&S' sugarcane fields in Central Maui as well as to the Maui County Department of Water Supply for the domestic water needs of upcountry Maui and the irrigation needs of small farms in Kula. The watersheds from which it collects water total approximately 50,000 acres, of which EMI owns approximately 17,000 acres. Approximately 33,000 acres in the Huelo, Honomanu, Keanae and Nahiku watersheds are owned by the State of Hawaii and have historically been leased to EMI. Exhibit C-1 is an EMI map of the ditch system which shows the four license areas as well as the EMI owned portions of the watersheds. *See* Declaration of Garret Hew ("***Hew Decl.***") at ¶ 4.

The Ditch System was constructed in phases beginning in the 1870's and extending to the completion of the current system in 1923. Exhibit C-2 is a copy from EMI's archives of a September 13, 1876 Agreement between Hamakua Ditch Company and Hawaiian Government that recites circumstances and terms under which some of the early development of the system was undertaken. Major milestone completion dates of the current system include the Koolau Ditch in 1904, the Haiku Ditch in 1914, the Kauhikoa Ditch in 1915 and the Wailoa Ditch in 1923. *See id.* at ¶ 5.

Since 1938, the relationship between the government of Hawaii and EMI with regard to the coordinated operation of the Ditch System on government and EMI owned lands has been

based on an agreement (the "***1938 Agreement***") dated March 18, 1938 between the Territory of Hawaii and EMI. Exhibit C-3 is a copy of the 1938 Agreement. *See id.* at ¶ 6. The 1938 Agreement provided a framework for a transition from a patchwork of previously issued water leases with differing lease and rental terms, to the subsequent issuance by the Territory, following public auction, of long term water licenses for each of the four watersheds that comprise the current license areas shown on Exhibit C-1 under a uniform set of terms and conditions. *See id.* at ¶ 7.

The Huelo license area is 8,752.690 acres. Exhibit C-4 is a copy of the last long term license issued to EMI for the Huelo license area. Following its expiration, annual revocable permits were issued by the Board of Land and Natural Resources of the State of Hawaii ("***BLNR***"). Exhibit C-5 is a copy of Revocable Permit No. S-7264 to A&B, which is the last such permit issued before the license went into holdover status due to the contested case hearing that is currently pending before the BLNR. *See id.* at ¶ 8.

The Honomanu license area is 3,381 acres. Exhibit C-6 is a copy of the last long term license issued to EMI for the Honomanu license area. Following its expiration, annual revocable permits were issued by the BLNR. Exhibit C-7 is a copy of Revocable Permit No. S-7263 to A&B, which is the last such permit issued before the license went into holdover status due to the contested case hearing that is currently pending before the BLNR. *See id.* at ¶ 9.

The Keanae license area is 10,768 acres. Exhibit C-8 is a copy of the last long term license issued to EMI for the Keanae license area. Following its expiration, annual revocable permits were issued by the BLNR. Exhibit C-9 is a copy of Revocable Permit No. S-7265 to A&B, which is the last such permit issued before the license went into holdover status due to the contested case hearing that is currently pending before the BLNR. *See id.* at ¶ 10.

The Nahiku license area is 10,111.220 acres. Exhibit C-10 is a copy of the last long term license issued to EMI for the Nahiku license area. Following its expiration, annual revocable permits were issued by the BLNR. Exhibit C-11 is a copy of Revocable Permit No. S-7266 to EMI, which is the last such permit issued before the license went into holdover status due to the contested case hearing that is currently pending before the BLNR. *See id.* at ¶ 11.

C. HC&S' Irrigation Infrastructure

Exhibit C-33 is a schematic diagram which depicts the EMI ditch system and the HC&S ditch and reservoir systems. The EMI side of the system is the "supply" side and is east of Maliko Gulch. The HC&S side is the "use" side of the system and is west of Maliko Gulch. The schematic also depicts the locations and capacities of HC&S' reservoirs and the locations of its pumps. The delivery capacity of the EMI system is 450 million gallons per day ("***mgd***"). *See id.* at ¶ 23.

HC&S uses 36 reservoirs on the plantation in conjunction with East Maui water. *See* Volner Decl. at ¶ 45. A map of the locations of the reservoirs and field maps showing which fields they service is attached Appendix "C" to Exhibit C-71. The reservoirs range in size from 1 million gallons ("***mg***") to 80 mg, and have a total maximum capacity of approximately 860 mg. In practice, however, HC&S does not normally operate the reservoirs at maximum capacity for safety reasons as well as lack of available water. Total normal operating capacity of the reservoirs ranges approximately from 145 mg to 610 mg. *See* Ex. C-71, Appendix C at C-1.

HC&S' reservoir system is a carry-over from the days of furrow irrigation, when reservoirs would be filled at night, and, in the morning, gates would be manually opened to allow water from the reservoirs to flow into the furrows until the end of the day, when the gates would be closed. Thus, reservoirs were sized to essentially provide storage for one night, and were

located close to the fields. They are relatively small, sited just slightly above field elevation, serving limited nearby areas. *See id.*

When HC&S switched to a drip irrigation system, thereby realizing substantial water savings that enabled it to increase its cultivated acreage and create additional economies of scale, the existing reservoir system did not ideally support the new drip-irrigation system, which requires sufficient pressure in the tubing to properly distribute the water. The cost of reconfiguring and relocating reservoirs throughout the plantation would have been (and continues to be) cost-prohibitive. Instead, HC&S makes the best use it can of the existing reservoirs, utilizing them as collection points for irrigation water and surge ponds during times of fluctuating ditch flows. The reservoirs serve as water storage facilities only during periods of heavy rainfall and high stream flow, and only for short periods of time. This occurs mainly in the winter or occasional large storm events in the summer, when available water exceeds the immediate needs of the sugarcane plants. *See id.* at C-1 to C-2.

Five of the 36 reservoirs are lined. One is a concrete cistern and four are lined—two with concrete, one with shotcrete, and one with rubber and polypropylene. *See id.* at C-2.

EMI records the amount of water that is delivered to HC&S based on ditch gages located where each of the four main ditches crosses Maliko Gulch. Exhibit C-34 is a summary of Total Monthly and Annual East Maui Ditch Deliveries from 1925 through August of 2014. Most of the water that is measured at this point was collected in the portions of the EMI Ditch System that is covered by the 1938 Agreement, but some additional water is collected from diversions of streams to the west of Honopou Stream, which represents the westernmost boundary of the Water License Areas. *See* Hew Decl. at ¶ 24.

In addition to the surface water imported from the EMI Ditch System and the West Maui Ditch System, the HC&S irrigation infrastructure includes fifteen brackish water wells and associated pumps that can add ground water to the irrigation ditches operated within certain areas of the plantation. The location of the wells and pumps are shown schematically on Exhibit C-33. For a better visual understanding of spatial relationships, Exhibit C-35 is a copy of an HC&S field map color coded to show the water sources available to each field. The blue and green areas represent the approximately 30,000 acres of the plantation that can be serviced by surface water from the EMI Ditch System but not from West Maui. The blue area is irrigated only with EMI ditch water. The green area is serviced by a combination of EMI water and well water, depending upon ditch deliveries. The brown area is serviced by a combination of Nā Wai 'Ehā water imported from the West Maui Ditch System and pumped from Well 7. The red area is serviced solely by Nā Wai 'Ehā water from the West Maui Ditch System. *See id.* at ¶ 25.

Of the fifteen brackish water wells used by HC&S for irrigation, fourteen can be used to irrigate 17,200 of the approximately 30,000 acres that are serviced by water from the EMI Ditch System. *See id.* at ¶ 26. Field maps that are color coded to show the service areas of the fifteen wells are attached hereto as Exhibits C-36 to C-50. Attached as Appendix "E" to Exhibit C-71 is a map of the location of each well; a table showing the capacity, power, use, power requirements and cost per million gallons of operating each of the wells and its associated pumps; and a chart of wellwater salinity trends showing a general increase in salts in parts per million (ppm) with the increase pumping that has taken place since the drought years of 2007 and 2008.

During periods of heavy rainfall, water overflows EMI's stream diversions and remains in the streams. In addition, EMI operates gates that control the maximum amount of flow that is

diverted in order to meet interim instream flow standards set by CWRM and to prevent the system from exceeding its capacity or delivering water in excess of what the HC&S system of ditches and reservoirs needs and can handle. Substantially all of the water that is taken into its system and transported by EMI is delivered to Maui County or HC&S. All the water delivered to HC&S is used by HC&S for irrigation and factory operations. No water, once delivered to HC&S, i.e., where the EMI ditches cross Maliko Gulch, is discharged into the ocean by either EMI or HC&S. *See* Hew Decl. at ¶ 27.

D. HC&S' Water Deliveries and Needs

1. Water license yields

For an extended number of years prior to 1985, the State of Hawaii contracted with the United States Geological Survey ("***USGS***") to operate gaging stations at various locations in the Ditch System to measure the volume of water collected from each license area from State owned lands. USGS would then provide an annual report to the State for each fiscal year (July 1 through June 30) utilizing the information from its gages and information provided by EMI regarding amounts of water (i) carried in the Ditch System that were delivered to the County of Maui from EMI's Haiku Uka watershed, (ii) added to the system at Nahiku by Maui Pineapple Co. Ltd., and (iii) discharged into gulches and reservoirs to recharge the basal aquifer in lieu of being used for irrigation pursuant to the provisions of the long-term license. *See* Hew Decl. at ¶ 12. From 1986 forward, HC&S operates seven of the gages that were formerly part of the USGS system; EMI installed an additional five gauges to better manage its ditch system. *See* Volner Decl. at ¶ 43. A description of the EMI telemetry system with an enclosed map showing the locations of each ditch gaging station and a table of additional information about each gage is contained in Appendix "A" to Exhibit C-71.

HC&S' understanding of the reason for the breakdown of water deliveries as reported by USGS when it operated the gaging stations is as follows. Water sold to the County of Maui from EMI's Haiku Uka watershed was removed from the Ditch System east of Honopou Stream, the western boundary of the license areas, and was therefore not captured in the readings of the ditch gages at Honopou Stream. This water therefore needed to be added back to the totals measured at the ditch gages on the Honopou boundary. *See* Hew Decl. at ¶ 12A. Water added to the system by Maui Pineapple Co. Ltd. ("***MPC***") from its Kuhiwa well and Nahiku pump and transported by EMI via the Ditch System for withdrawal by MPC was not collected from State lands (the Nahiku pump pumped surface water from MPC land back into the Koolau Ditch; the Kuhiwa well, situated on EMI land formerly leased to MPC, pumped groundwater into the Koolau Ditch), and thus needed to be excluded from the license yield calculations.[1] *See id.* at ¶ 12B. The long term licenses provided that EMI, during January, February and December, could take water "for the purposes of replenishing the ground water resources of the Central Maui area (and not for the irrigation of sugar cane or other plant crops) . . . and discharge the same into gulches, reservoirs and other places approved by the Territorial Hydrographer . . . without the payment of rental therefor." *See, e.g.*, Ex. C-8 at 8. Because rentals were not charged on such water, the amount of such water needed to be excluded from the yields before calculating the rents due to the State. *See* Hew Decl. at ¶ 12C.

2. <u>Ditch deliveries</u>

The HC&S irrigation system is designed to operate to the maximum extent possible on the gravity flow of water from higher to lower elevations. This minimizes pumping, which

[1] MPC no longer uses the Ditch System to transport water to Central Maui. The last month in which such usage was reported was September of 2008. *See* Exhibit C-18 (East Maui Water License Yield report for FY 2007-2008).

consumes precious electric power. To accomplish this, it is critical that the maximum possible amount of water is taken into the HC&S system at the Wailoa Ditch, the ditch at the highest elevation, which has a capacity of 195 mgd. Taking in the maximum amount of water at this point maximizes HC&S' flexibility to distribute water by gravity flow to the fields with the highest irrigation priority at any given time, as well as to maximize the use of HC&S' hydro power generation capacity. *See id.* at ¶ 28.

Wailoa Ditch flows are an important benchmark of the system. During extreme drought conditions, the Wailoa Ditch flow rate can drop as low as the 10 mgd measured at Honopou Stream in October of 1984. Under these conditions, essentially no water can be supplied by EMI to HC&S since the County would draw all or most of the available flow from the Wailoa Ditch at its Kamole Water Treatment Plant. When the Wailoa Ditch flow is extremely low, the lower ditches have little or no water. While October of 1984 was a rare event, surface water flows from East Maui can fluctuate tremendously from day to day and cannot be relied upon at times to meet the irrigation requirements of HC&S. *See id.* at ¶ 29.

Over its history, the long-term average delivery by EMI to HC&S has been approximately 165 mgd. Since 1999, however, deliveries have declined significantly. In the ten year period from 2004 through 2013, the average delivery was 126 mgd. This water is distributed within the ditches and reservoirs of the plantation on a day to day basis and supplemented with well water at the direction of the HC&S farm managers in consultation with HC&S' agronomist, Mae Nakahata, and HC&S' manager, Richard Volner. *See id.* at ¶ 30.

HC&S submits monthly surface water use reports covering surface water collected by EMI and also surface water received by HC&S from the separate ditch systems operated by HC&S and Wailuku Water Company in West Maui. *See id.* at ¶ 22. Exhibit C-32 is a set of

copies of these reports for the months of December, 2007 through August, 2014. In addition, HC&S submits monthly ground water use reports to CWRM. Copies of HC&S' monthly ground water use reports from 1986 through August of 2014, organized by well and pump numbers, is attached as Exhibit C-51.

3. Deliveries to County of Maui, Department of Water Supply

There is a long history of written agreements between EMI and the County of Maui Department of Water Supply ("***DWS***") pertaining to the delivery by EMI to DWS of water from the EMI Ditch System, which includes the following:

- An agreement entered into on December 22, 1961 (the "***1961 Agreement***") which cancelled all previous agreements and was for a term extending from January 1, 1962 through June 30, 1986 (Ex. C-19).
- A Memorandum of Understanding (the "***1973 MOU***") entered into as of December 31, 1973 with an initial term extending from January 1, 1974 through December 31, 1993 (Ex. C-20).
- A July 27, 1982 letter setting forth additional understandings related to the 1961 Agreement and the 1973 MOU (Ex. C-21).
- An Amendment to the 1973 MOU entered into on May 18, 1992 which extended its term through December 31, 1995 (Ex. C-22).
- A Second Amendment to the 1973 MOU which modified the amount of water to be delivered to DWS in Nahiku (Ex. C-23).
- A Third Amendment to the 1973 MOU which, among other things, extended its term through December 31, 1996 (Ex. C-24).
- An Agreement regarding the 1973 MOU dated March 21, 1996 conditioned upon the development by DWS of a reservoir at Kamole Weir (Ex. C-25). The reservoir was never developed, so the conditions of this agreement never went into effect.
- A Fourth Amendment to the 1973 MOU which, among other things, extended its term through December 31, 1997 (Ex. C-26).
- A Fifth Amendment to the 1973 MOU which, among other things, extended its term through December 31, 1998 (Ex. C-27).
- A Sixth Amendment to the 1973 MOU which, among other things, extended its term through December 31, 1999 (Ex. C-28).

- A Seventh Amendment to the 1973 MOU which, among other things, extended its term through February 29, 2000 (Ex. C-29).
- An Eighth Amendment to the 1973 MOU which, among other things, extended its term through April 30, 2000 (Ex. C-30).

Since April 30, 2000, the delivery of water by EMI from its Ditch System to DWS has been pursuant to the terms and conditions of an unwritten informal agreement that essentially has continued the practices and performance that developed under the prior written agreements. Maui County's access points to the EMI system for water that it takes, treats and delivers as potable water to its customers on its Makawao, Kula and Nahiku systems are at the Waikamoi upper pipeline (near the Olinda water treatment plant), the Waikamoi lower pipeline (near the Piholo water treatment plant), the western end of the Wailoa Ditch (near the Kamole water treatment plant) and in a development tunnel in the Koolau Ditch (Nahiku). In addition, non-potable water is taken by Maui County from HCS' Hamakua Ditch at Reservoir 40 for delivery to the Kula Agricultural Park. *See* Hew Decl. at ¶ 20.

Payment by DWS to EMI is calculated monthly by DWS based on meters that it operates at the rate of $.06 per thousand gallons ($60.00 per million gallons) as reflected on invoices prepared by DWS and sent to EMI for approval. Exhibit C-31 consists of copies of the monthly invoices for calendar year 2013, showing the meter readings and the calculated payment amounts approved by and paid to EMI in 2013. *See id.* at ¶ 21.

4. HC&S' water needs

HC&S defines its "minimum needs" as the amount of water needed to sustain a viable sugar plantation at HC&S. With sugarcane, there is a high correlation between water application and sugar yields—the greater the amount of water applied, the higher the yield. While there is a certain amount of water required just to keep the cane plant alive, water application at that rate would provide such low yields that HC&S could not remain economically viable. That amount,

therefore, could not reasonably be adopted as the standard for calculating "minimum need." *See* Volner Decl. at ¶ 55.

Exhibit C-74 is a table entitled "Monthly Water Needs and Availability" which is an analysis of HC&S' wet season vs. dry season water needs. It utilizes long-term data sets to develop historical averages, by month, for both demand and supply. The longest period for which data were available was used in all cases because this helps minimize the impact of any 'atypical' weather event, such as the recent drought. All data are based on at least a 27 year period ending in 2013 with the exception of 15 months in 1989 and 1990 where the original data could not be recovered and was replaced with default values from HC&S' water balance model. *See* Volner Decl. at ¶ 56.

The table in Exhibit C-74 identifies water needs by month, then compares this to available water supply by month (from surface and well sources) to determine whether there is a deficit or surplus of water on average in any given month. This approach identifies important patterns, but is limited by its reliance on averages. This analysis is extremely helpful for demonstrating the relative seasonal needs for HC&S. It shows that water deficits during the summer months are significant, and that they occur when evapotranspiration—and therefore growth potential—are greatest. These findings support the concept of seasonal IIFS that would not affect summertime flow. *See* Volner Decl. at ¶ 57.

HC&S' water needs were calculated for each month of the year starting with the average daily evapotranspiration needs of the plant during that month (as determined by measurements from 12 meteorological stations throughout the 30,000 acres irrigated with EMI ditch water, which provide real time data). Included in the calculation of needs is water needed to account for effective application of water through the drip system and other irrigation practices, such as

the flushing of salts and other minerals from the soil, system losses that occur in the transportation and storage of the East Maui water delivered into HC&S' irrigation ditches and 36 HC&S reservoirs, and water needed for milling and power plant operations. HC&S currently needs 2 mgd for power plant operations (year round) and 6 mgd for milling operations (typically 9-10 months each year). *See id.* at ¶ 58.

Average water availability was calculated for each month of the year using actual EMI ditch deliveries plus actual pumping records. Actual pumping is a good indicator of the long-term sustainable pumping levels based on HC&S' observations of salinity levels, power availability for pumping pursuant to HC&S' current firm power obligations to Maui Electric Company ("***MECO***") and financial considerations. Summertime need for pumping is higher and increased summertime pumping is facilitated by a force majeure clause in the MECO contract that permits reduced power sales to enable HC&S to increase pumping. The last column in Exhibit C-74 indicates the deficit or surplus when comparing water needs to water availability (both surface and well water). *See id.* at ¶ 59.

Rainfall data is not separately included in the calculation of water availability because of the complexity in translating rainfall data into the amount of water that becomes physically available for plant use. Most of the rains in the central valley of Maui fall in small daily amounts. Light rainfall does not penetrate the canopy of the cane fields and get to the roots of the plant where it can be effective. However, even these light rainfall amounts do lower evapotranspiration ("***ET***") by raising humidity and lowering solar insolation. Thus, because rainfall is already factored into ET rates, to then add rainfall as an additional water source would be, to some extent, double counting the effect of rainfall on water availability. On the other end of the spectrum, during heavy rainfall events some of the water sheetflows as surface runoff and

is not taken up by the plants. The amount of runoff depends on the intensity of the rainfall and the moisture content of the soil preceding the rainfall event. Sometimes rain does fall in sufficient amounts over a period of time to be effective for plant and soil absorption but, for all of the foregoing reasons, dividing total annual rainfall by 365 days and assuming that this amount was applied on a daily basis is erroneous. Notwithstanding the complexities of utilizing rainfall data, what can be determined with confidence is that even factoring in average effective rainfall amounts will not erase summer water deficits. *See id.* at ¶ 60.

In sum, the following conclusions can be drawn:

- The water needs of HC&S' sugarcane crop differ significantly between the wet and dry months of the year.

- At all times of the year, there is insufficient stream water to meet the full needs of the 30,000 acres of East Maui fields. Every month of the year, HC&S pumps its brackish wells to supplement available surface water supplies.

- Even taking into account both surface and ground water, HC&S regularly operates at a total water deficit for these East Maui fields. Based on monthly averages, the only months HC&S has had adequate water over the long term have been November and December.

- Incremental water loss in any month other than November or December will, on average, put HC&S further below its water requirements. As discussed previously, the impact of such reductions will be far less, on average, in the winter months than in the summer months due to the lower deficit and the lower rate of evapotranspiration, which reduces growth potential during that period.

- Nonetheless, even winter months can be dry. As an example this chart indicates February average surface water deliveries to be 123 mgd – yet in February 2010, actual deliveries were only 65 mgd.

See Volner Decl. at ¶ 61; Appendix "G" to Ex. C-71. As shown in Exhibit C-75, which is a table compiled with data from 2008 to 2013, average surface water deliveries from EMI have declined in the recent near term, resulting in greater deficits in water availability versus total water needed. This is likely the result of the combined effects of reduced rainfall due to climate

change and reductions in EMI's diversions of the streams for which amended IIFS were set in 2008 and 2010. *See id.* at ¶ 62.

As shown below, when HC&S has had adequate water availability, it has realized optimal yields—nearly 15 tons sugar per acre in 1987. When water availability falls, as it did for the 2009 crop, yields plummet. As the data show, HC&S' calculated need has generally not been met over the past 24 years. In fact, available water has been only 85% of needed water. Table 1 below is a summary of water deliveries to HC&S compared to HC&S' water needs and sugar yields from 1987-2009.

Table 1: HC&S Water Deliveries vs. Water Needs and Sugar Yields 1987-2009

Crop Year	Water Need (GPAD)	Available Water (GPAD)	Available as % of Need	Yield (Tons Sugar per Acre)
1987	7,491	8,732	117%	14.8
1986-2013	8,352	7,453	89%	11.9
2009	8,921	5,867	66%	8.1

These results demonstrate that the sugarcane plant can survive, but not thrive, with less than optimal water. As a result, the question of need becomes an economic one – not the amount of water to keep cane alive, but the amount of water needed to keep the HC&S operation viable. *See* Volner Decl. at ¶ 64.

E. HC&S' Recent Operating Results

The agribusiness segment of A&B is comprised of HC&S, Kahului Trucking & Storage, Inc., Kauai Commercial Company, McBryde Resources, and Kauai Coffee Company until it was sold in 2011. In its public filings, A&B reports financial results of its agribusiness segment in the aggregate, and does not report financial data for HC&S separately. *See* Volner Decl. at ¶ 9.

The following summarizes the financial results and production data of the agribusiness segment in the last eight years:

Table 2: HC&S Operations and Agribusiness Segment Financial Performance 2006-2012[2]

	2006	2007	2008	2009	2010	2011	2012	2013	2014 (to Q3)
Operating Profit (millions)	$6.9	$0.2	-$12.9	-$27.8	$6.1	$22.2	$20.8	$10.7	-$3.8
Total Sugar Produced (tons)	173,600	164,500	145,200	126,800	171,800	182,800	178,300	191,500	115,200
Tons of Sugar Per Acre (tons)	10.2	9.7	8.6	8.4	11.1	12.1	11.3	12.4	-
Specialty Sugar Produced (tons)	15,500	12,200	27,500	34,300	16,300	18,700	15,600	16,100	-
Market Price of Raw Sugar (cents/lb)	22.14	20.99	21.30	24.93	35.97	38.12	28.90	20.46	23.82
Power Sales (MWH sold)	98,000	94,000	91,300	72,800	68,300	64,900	58,200	58,900	-
Revenue Per Ton of Sugar Produced	$350	$342	$355	$352	$575	$605	$619	-	-
Profit Margin	5.4%	0.2%	Neg. Margin	Neg. Margin	3.7%	14.1%	11.4		Neg. Margin

- In 2006, the agribusiness segment of A&B earned an operating profit of $6.9 million. HC&S produced 173,600 tons of sugar, with average yields of 10.2 tons per sugar acre ("***TSA***"). *See id.* at ¶ 10.
- In 2007, the agribusiness segment earned an operating profit of $0.2 million. HC&S produced 164,500 tons of sugar, with yields of 9.7 TSA. *See id.* at ¶ 11; Ex. C-56.
- In 2008, the agribusiness segment lost $12.9 million. HC&S produced 145,200 tons of sugar, with average yields of 8.6 TSA. Compared to 2007, both production and average yields decreased by approximately 12%. *See* Volner Decl. at ¶ 12; Ex. C-57.

[2] All data reported in Table 1 except for the price of raw sugar were published in A&B's Form 10-K filings for the years 2006-2012, portions of which are attached hereto as Exhibits E-R1 to E-R7. Raw sugar prices are reported in the chart of historical prices of U.S. raw sugar (Contract No. 14/16, duty fee paid New York) published by the Economic Research Service of the USDA, which is attached hereto as Exhibit C-64.

- In 2009, the agribusiness segment lost $27.8 million. Compared to 2008, production decreased by 12.8% (126,800 tons of sugar) and average yields decreased by 2.3% (8.4 TSA). *See* Volner Decl. at ¶ 13; Ex.C-58.
- In 2010, the agribusiness segment earned an operating profit of $6.1 million, including $4.9 million in disaster relief funds. Compared to 2009, production increased by 35.5% (171,800 tons of sugar) and average yields increased by 20.3% (11.1 TSA). *See* Volner Decl. at ¶ 14; Ex. C-59.
- In 2011, the agribusiness segment earned an operating profit of $22.2 million. Compared to 2010, production increased by 6.4% (182,800 tons of sugar) and average yields increased by 9% (12.1 TSA). *See* Volner Decl. at ¶ 15; Ex. C-60.
- In 2012, the agribusiness segment earned an operating profit of $20.8 million. Compared to 2011, production decreased by 2.5% (178,300 tons of sugar) and average yields decreased by 7% (11.3 TSA). *See* Volner Decl. at ¶ 16; Ex. C-61.
- In 2013, the agribusiness segment earned an operating profit of $10.7 million. Compared to 2012, production increased by 7.4% (191,500 tons of sugar) and average yields increased by 9.7% (12.4 TSA). *See* Volner Decl. at ¶ 17; Ex. C-62.
- In the first three quarters of 2014, the agribusiness segment experienced an operating loss of $3.8 million representing a decrease in operating profit of $18.1 million compared to the first nine months of 2013, primarily due to lower sugar prices and increased cost per ton. Inclement weather and difficult harvesting conditions also impacted production, which is expected to result in lower production for 2014 as compared to 2013. *See* Volner Decl. at ¶ 18; Ex. C-63.

Beginning in 2007, Maui experienced a drought that extended into and became extremely severe in 2008. In 2008, HC&S experienced the lowest East Maui water deliveries on record since A&B first began recording deliveries in 1925, and 2007-2008 marked two consecutive years of the lowest rainfall recorded. *See* Volner Decl. at ¶ 19.

HC&S has implemented various measures to improve its agronomic practices in an effort to reverse the declining sugar yields experienced from 2006 through 2009 and to cope with the reduced water deliveries resulting from the amended IIFS determinations previously issued by CWRM in this proceeding and in the separate Nā Wai 'Ehā proceeding. The measures include a one-time harvesting delay in 2009 to increase the average crop age, increased deep tilling of fields before planting, improved fertilization and improved ripening practices. HC&S has also shifted some of its available power generation capacity from power sales to increased well pumping for irrigation. *See id.* at ¶ 20.

With these improved agronomic practices and increased water availability as compared with the severe drought years of 2007 and 2008, HC&S was able to realize increases in total production of 18.3% from the 2008 to 2010 crop cycle (sugar in Hawai'i is produced on a two-year crop cycle) and 44.2% from the 2009 to 2011 crop cycle, and 3.8% from the 2010 to 2012 crop cycle. Production of 182,100 tons in 2011 was a 19.8% increase over average production between 2006 and 2009. Yields also improved in 2010 and 2011. As compared to the average of the four years preceding 2010, HC&S experienced 20.3% higher yields in 2010, *i.e.*, 11.1 TSA. Production continued to increase in 2011 (12.1 TSA), declined in 2012 (11.3 TSA), and increased again in 2013 (12.4 TSA). *See id.* at ¶ 21.

Production improvements accounted for about half of the increase in revenues during this period, with dramatically improved sugar prices accounting for the other half. HC&S benefited

from a highly providential spike in raw sugar prices extending from the last quarter of 2009 through the first quarter of 2012. *See id.* at ¶ 22. In 2009, the annual average price of sugar rose to 35.97 cents per pound, and in 2011, it further increased to 38.12 cents per pound. These were the highest prices the sugar industry had seen in over 50 years. *See id.* at ¶ 24. HC&S responded to the increase in sugar prices by shifting some of its production away from specialty sugars to raw sugar. HC&S also increased deliveries of pumped well water to its fields at the expense of higher power costs and reductions in power sales. *See id.* at ¶ 25.

Due primarily to the increase in sugar revenues from higher total production and unit pricing, coupled with the lowering of unit costs attributable to higher production, the agribusiness segment of A&B experienced a return to profitability from 2010 to 2012. The profits earned in this period enabled HC&S to invest in long deferred infrastructure upgrades, including a major improvement to Well No. 7 to enhance its ability to cope with reductions in Nā Wai 'Ehā surface water resulting from the amended IIFS. *See id.* at ¶ 26.

Sugar prices have been trending downward since 2012. The average annual price of sugar in 2012 was 28.90 cents per pound—a 24.2% reduction from 2011. However, sustained high production enabled the operation to maintain its profitability, albeit at lower levels than 2011. The price of sugar continued to fall in 2013, when the average price of sugar for the year was 20.46 cents per pound. Through the third quarter of 2014, the price has risen to 23.82 cents per pound—which is still 40.7% below 2011's peak price of 40.16 cents per pound. *See id.* at ¶ 27. Due to the steady decrease in raw sugar pricing in the last two years, profitability has declined significantly. HC&S is currently expecting to operate at a loss of approximately $9 million in 2014. *See* Volner Decl. at ¶ 28; Ex. C-104 at 5, 6

HC&S continues to face the considerable challenge of transitioning away from its heavy reliance upon the commodity sugar business in which it remains subject to fluctuations in global sugar prices over which it has no control. As in the past, the inflated sugar prices have proven to be a spike and not a trend. Even at the current elevated production levels, current sugar prices are below the level necessary for HC&S to break even. Benefits from improvements in agronomic practices have already been substantially realized, which means that HC&S' profitability will remain especially sensitive to sugar prices and the availability of irrigation water. *See* Volner Decl. at ¶ 29.

For the above reasons, A&B reported to its shareholders in its Form 10-Q for the third quarter of 2014:

> The water loss that may result from the Water Commission's future decisions will impose challenges to the Company's sugar growing operations. The water loss will result in a combination of future suppression of sugar yields and negative financial impacts on the Company that will only be quantifiable over time.

Ex. C-63.

F. Procedural History

1. The relationship between the 27 East Maui IIFS Petitions and A&B/EMI's May 14, 2001 application for a long-term lease from the BLNR.

On May 14, 2001, A&B/EMI filed an application to the BLNR for a long-term lease of watershed lands in the four license areas described above (the "***Application***"). On May 24, 2001, Nā Moku filed with CWRM the East Maui IIFS Petitions that are the subject of this proceeding. Ever since then, although pending before different State agencies, the Application and the East Maui IIFS have proceeded on parallel albeit substantively different paths.

The day after Nā Moku filed the East Maui IIFS Petitions, at the May 25, 2001 meeting of the BLNR, Nā Moku and Maui Tomorrow Foundation ("***MT***") orally requested a contested

case to challenge the Application. Nā Moku and MT followed up with written contested case petitions submitted on June 1, 2001. The BLNR ordered a contested case on the Application (the "***Water License CCH***") and appointed retired Circuit Judge John McConnell as the Hearings Officer. Shortly thereafter, the Native Hawaiian Legal Corporation ("***NHLC***"), as counsel for Nā Moku, reached an agreement with CWRM staff that CWRM would focus initially on restoring stream flow to streams encompassed by the IIFS petitions filed for the streams within 5 hydrologic units covered by the following 8 IIFS Petitions: Honopou, Hanehoi and Puolua, Waiokamilo, Kualani, Pi'ina'au, East and West Wailuanui, Waikani, and Palauhulu streams (collectively, the "***8 Prioritized IIFS Petitions***"). See Ex. C-79.

2. <u>Nā Moku appeals BLNR's summary disposition rulings.</u>

In September 2002, the parties in the contested case on the Application filed motions for summary disposition of various issues. The Hearings Officer in the Water License CCH issued Proposed Findings of Fact, Conclusions of Law, and Recommended Order, which the BLNR ultimately adopted on January 24, 2003 (the "***2003 BLNR Order***"). Among other things, the BLNR determined that (1) the proposed long-term disposition of water rights is exempt from the EA requirement pursuant to HAR § 11-200-8(a)(1), and (2) as long as the proposed disposition of water is made subject to the IIFS set by the CWRM, the BLNR has no duty to perform its own parallel investigation with regard to the minimum IIFS necessary to protect traditional and customary practices of native Hawaiians. Nā Moku and MT filed an administrative appeal of the 2003 BLNR Order.

On October 10, 2003, Circuit Judge Eden Elizabeth Hifo issued an order affirming in part and reversing in part the 2003 BLNR Order (the "***Hifo Order***"). Ex. C-80. On the issue of the EA requirement, Judge Hifo reversed the 2003 BLNR Order and held that an EA was required in connection with the long-term lease, but affirmed the BLNR's conclusion that it "is not required

to conduct a parallel investigation" and "is entitled to rely on and use any determination of the CWRM to establish instream flow standards" pursuant to the East Maui IIFS Petitions or any other action in discharge of CWRM's obligations. *Id.* at 4. If CWRM does not make a determination on the need to amend instream flow standards, Judge Hifo held, the BLNR could conduct its own investigation into those issues. *Id.* If the BLNR believes it lacks the requisite expertise to investigate, "then it should wait until the CWRM has acted or make its own application to establish instream flows reflecting the diversion it proposes to make, before authorizing the diversion." *Id.* "In any case," Judge Hifo cautioned, "neither the BLNR nor this Court can rubber-stamp any determination of the CWRM. Rather, the BLNR is obligated to make a truly independent investigation as to whether it's in the state's best interest to authorize the diversion of water from East Maui streams." *Id.*

3. Nā Moku challenges the BLNR's decision to hold the revocable permits in holdover status.

The Application had requested that the BLNR continue to issue revocable permits to preserve the *status quo* pending issuance of the long-term lease. To preserve the *status quo* pending the contested case hearing, the BLNR, at its May 24, 2002 meeting, granted "a holdover of the existing revocable permits on a month-to-month basis pending the results of the contest[ed] case hearing" (the "***Holdover Decision***"). Ex. C-81. The administrative appeal did not address the Holdover Decision because the Hifo Order dealt only with issues regarding the long-term disposition of water and expressly disclaimed making rulings with respect to the revocable permits. *See* Ex. C-80 at 6. On remand, Nā Moku and MT filed motions for summary relief challenging the legality of the Holdover Decision.

The Hearings Officer in the Water License CCH disposed of the motions in the Prehearing Order Regarding Petitioners' Motions For Summary Relief on March 18, 2005 (the

"***2005 Summary Relief Order***"). Ex. C-82. The 2005 Summary Relief Order held that the BLNR, as trustee of the public trust, has authority to preserve *status quo* conditions as well as to make an interim disposition of public trust resources pending a long-term disposition of such resources if doing so is in the interest of the public. The Hearings Officer thus denied Nā Moku's request for a declaration that the Holdover Decision is illegal as a matter of law, but ordered an evidentiary hearing to be held "to determine whether and to what extent the current diversions should be reduced in order to satisfy the constitutionally or legally protected practices of the Na Moku Parties." *Id.* at 3-4, ¶¶ A.2., A.4.

4. Nā Moku obtains interim relief in the Water License CCH.

Pursuant to the 2005 Summary Relief Order, the Hearings Officer in the Water License CCH held an evidentiary hearing to determine if interim releases of water were necessary to protect Nā Moku's and MT's "constitutionally or legally protected rights" pending completion of an EA. The hearing was held from October 10-12 and November 14-15, 2005. Ex. C-83 at 3-4. The parties agreed that the streams at issue in the hearing were: Honopou, Puolua, Hanehoi Streams in the Huelo license area, and Wailuanui, Waiokamilo, and Palauhulu Streams in Ke'anae. *Id.* at 5, ¶ A.1.

On March 23, 2007, the BLNR issued its Findings of Fact, Conclusions of Law and Decision and Order addressing the necessity of interim releases of water (the "***2007 Interim Relief Order***"). Regarding Nā Moku/MT's challenge to the continuation of the diversions, the BLNR stated:

> [Nā Moku/MT] argue that their rights are superior, that they have no burden to prove anything and that the remaining parties have no legally protected interest. The Board disagrees. ***This argument's only logical conclusion would be the complete elimination of the diversions in question. That would unquestionably violate the public trust.*** Apparently recognizing this, the Nā Moku and MT parties have not asked that the natural flow of the streams be returned. Rather,

they ask for "releases sufficient to meet the taro cultivation and gathering requirements of these parties[.]"

Id. at 37-38 (emphasis added). The BLNR therefore declined to order the immediate cessation of EMI's diversions, holding that such a drastic measure would be contrary to the public interest for the following reasons:

> a. It would greatly diminish or cut off Maui County DWS's water service to the Upcountry Maui and Nahiku communities, thereby resulting in public health and economic crises.
>
> b. It would render MLP'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.

Id. at 42-43, ¶ C.8.

Based on the evidence received at the interim relief evidentiary hearing, the BLNR granted interim relief requiring A&B/EMI to allow 6 mgd to flow in Waiokamilo Stream past its diversions to satisfy the needs of the Wailuanui taro growers. *See id.* at 46. BLNR also ordered the DLNR to establish a stream monitoring program and appoint a stream monitor to inform the BLNR if the interim release was not providing adequate water for a particular party or if it was working an undue hardship on a particular party. *Id.* at 47-48. Shortly after the issuance of the 2007 Interim Relief Order, EMI ceased all diversions from Waiokamilo Stream. *See* Ex. C-84 at 6.

Nā Moku/MT did not appeal the 2007 Interim Relief Order. *Id.*

5. CWRM solicits public comment and acts on the 8 Prioritized IIFS Petitions

Not long after the BLNR took up the issue of interim relief, CWRM began to make progress on the East Maui IIFS Petitions. In December 2006, CWRM authorized staff to initiate and conduct public fact gathering related to the East Maui IIFS Petitions. *See* Ex. C-84 at 3. In March 2008, CWRM staff published public review drafts of their instream flow assessment reports ("***IFSARS***") for the five hydrologic units corresponding to the 8 Prioritized IIFS petitions that Nā Moku and CWRM had agreed to prioritize: Honopou (6034), Hanehoi (6037), Pi'ina'au (6053), Waiokamilo (6055), and Wailuanui (6056).[3] *See* Ex. C-85; Ex. C-87 at 5. In response to the draft IFSARs, CWRM received written comments and additional information from 41 individuals and organizations, including people living within the hydrologic units, state and county agencies, nonprofit organizations, and businesses. *See* Ex. 87 at Table of Contents. A three-hour public fact gathering meeting was held on April 10, 2008 at the Haiku Community Center. CWRM staff received oral testimony from 46 individuals at the meeting. *See id.* at 1.0-1. HC&S submitted its comments to the IFSARs, along with information, in a letter dated June 10, 2008. *See* Ex. C-52. In September 3008, HC&S also submitted a consultant paper by Leroy O. Laney, Ph.D., entitled, "The Importance of the Hawaiian Commercial & Sugar Company to the Hawaii Economy and Conditions for its Survival." *See* Ex. C-65.

Upon realizing that CWRM planned to act on the 27 East Maui IIFS Petitions in piecemeal fashion, HC&S filed a motion with the CWRM requesting consolidation of all 27 East

[3] The streams covered by the 8 Prioritized IIFS Petitions include all of the streams that were the subject of the interim relief proceeding conducted by the BLNR in 2005. *Compare* Ex. C-83 at 5, ¶ A.1 *with* Ex. C-85 at 1-2.

Maui IIFS Petitions for decision making. *See* Ex. C-88. The CWRM denied the motion at its September 24, 2008 meeting. *See* Ex. C-89 at 9.

Immediately after taking action on HC&S' motion to consolidate, CWRM heard public testimony regarding the 8 Prioritized IIFS Petitions from nearly 60 people and then took up its staff's recommended action on the petitions. *See* Ex. C-85 at 16-22, 60-62; Ex. C-89 at 30-31. After extensive deliberations, CWRM voted unanimously to amend the IIFS for 8 of the 10 streams covered by the 8 Prioritized IIFS Petitions. Ex. C-89 at 31. No one, including Nā Moku, requested a contested case or appealed the CWRM's action on the 8 Prioritized IIFS Petitions.

6. CWRM acts on the remaining 19 East Maui IIFS Petitions.

CWRM staff then engaged in the public fact gathering process for the 19 remaining IIFS petitions and prepared IFSARs for the pertinent hydrologic units. HC&S provided CWRM with the following submissions to comment on the 19 remaining IIFS petitions:

- A September 24, 2009 letter from HC&S to CWRM that, among other things, updated its prior submissions on the economic impacts of restricting HC&S' uses of water and provided further information on the EMI Ditch System, *see* Ex. C-68;
- An October 30, 2009 letter from HC&S to CWRM commenting on Draft IFSARs dated September, 2009 for the remaining nineteen streams and recapping some of HC&S' earlier supplied comments and information, *see* Ex. C-69; and
- An October 30, 2009 letter from EMI to CWRM dated October 30, 2009 providing comments and observations with regard to the losing reaches of Makapipi Stream below the EMI diversions, *see* Ex. C-53.

On December 16 and 17, 2009, CWRM met to consider its staff's IIFS recommendations regarding the remaining 19 streams and, after hearing extensive testimony and engaging in a lengthy discussion, voted to defer action pending the receipt of additional information, including information from HC&S regarding "minimum offstream needs during a wet season versus the dry season," "the ability to accomplish seasonal restoration based on the stream infrastructure in

the streams with diversions," and "to identify which of the stream the diversions are that are capable of being altered to increase upstream recruitment and reduce downstream entrainment." Ex. C-106 at 24. Following the December 2009 meeting, HC&S submitted information to CWRM over the course of a series of exchanges as follows.

- In a letter to HC&S dated February 18, 2010, CWRM presented a list of requests for more specific data and information from HC&S. *See* Ex. C-70.

- HC&S responded with a letter dated March 19, 2010 and enclosed Appendices "A" through "I" providing detailed responses.

    - Appendix "A" is a description of the EMI telemetry system with an enclosed map showing the locations of each ditch gaging station and a table of additional information about each gauge.

    - Appendix "B" addresses water lost from the EMI System.

    - Appendix "C" addresses the 36 reservoirs on the plantation that are used in conjunction with East Maui water.

    - Appendix "D" provides a field map and a list of field numbers and block numbers showing the locations and acreages of the 12,800 acres fields and blocks of fields that are served exclusively by the EMI Ditch System.

    - Appendix "E" provides information on the HC&S' brackish water wells used to irrigate its fields.

    - Appendix "F" is a discussion of potential alternative water sources including wastewater reclamation, catchment, stormwater reclamation, desalination, new wells and weather modification (cloud seeding).

    - Appendix "G" addresses the request in the CWRM meeting minutes to identify "minimum offstream needs during a wet season versus the dry season."

    - Appendix "H" addresses the request in the CWRM meeting minutes to identify streams with diversion infrastructure that would accommodate modifications that would allow for seasonal adjustments.

    - Appendix "I" addresses the request in the CWRM meeting minutes to identify streams with diversion infrastructure that are capable of being altered to increase upstream recruitment and reduce downstream entrainment.

Ex. C-71.

- In a letter dated March 23, 2010, CWRM requested that HC&S provide more information and sample data regarding the daily water balance of drip irrigation fields from the HC&S water balance model. Ex. C-72.

- HC&S responded to the supplemental information request with a letter dated April 16, 2010, and enclosures including daily water balance information for four sample fields each of which represents one of the four HC&S internal irrigation ditches supplied from EMI (Hamakua, Kauhikoa, Lowrie and Haiku) including two fields (Hamakua and Kauhikoa) that have no access to pump water. Also enclosed was the modified Penman Equation used by HC&S to determine daily evaporation values. Ex. C-73.

CWRM, at its May 25, 2010 meeting, acted on the remaining 19 East Maui IIFS petitions, amending the IIFS (some on a seasonal basis) for six of the streams covered in those petitions. *See* Ex. C-91 at 49-50. Nā Moku orally requested a contested case to challenge the decision at the meeting. *See id.* at 50. Nā Moku subsequently submitted to the CWRM a written petition for contested case. Ex. C-92. The written petition requested a contested case for only 13 of the 19 IIFS Petitions that were the subject of the CWRM's May 25, 2010 decision.[4] *Id.* at 2-3. CWRM denied the petition at its October 18, 2010 meeting. *See* Ex. C-93 at 4. Nā Moku appealed the denial (the "***IIFS Appeal***") to the Intermediate Court of Appeals ("***ICA***").

7. Nā Moku moves to reconvene the Water License CCH.

While the IIFS Appeal was pending, on July 5, 2012, Nā Moku submitted to the BLNR a motion to reconvene the Water License CCH ("***Motion to Reconvene***"). *See* Ex. C-94. The Motion to Reconvene represented to the BLNR that the CWRM "set the last IIFS [for the East Maui streams] on May 25, 2010." *Id.* at 10. Nā Moku initially did not argue for immediate

[4] The petition requested a CCH on the 13 IIFS petitions corresponding to the following hydrologic units and streams: Waikamoi (6047): Waikamoi Stream, Alo Stream, Wahinepee Stream; Puohokamoa (6048): Puohokamoa Stream; Haipuaena (6049): Haipuaena Stream; Punalau (6050): Punalau Stream and Kolea Stream; Honomanu (6051): Honomanu Stream; West Wailuaiki (6057): West Wailuaiki Stream; East Wailuaiki (6058): East Wailuaiki Stream; Kopiliula (6059): Kopiliula Stream and Puakaa Stream; Waiohue (6060): Waiohue Stream; Paakea (6061): Paakea Stream; Kapaula (6063): Kapaula Stream; Hanawi (6064): Hanawi Stream.

cessation of all diversions in the Motion to Reconvene, but later amended the motion to include such relief. As amended, the Motion to Reconvene requested that the BLNR (1) "reconvene the contested case proceedings . . . relating to the issuance of a license or permit to [A&B and EMI] to utilize any of the 4 water license areas in East Maui managed by the BLNR," and (2) to issue "an order halting any and all diversions with the exception of those reasonably used for domestic purposes as there is no legal authority to issue the contested revocable permits before an environmental assessment is conducted and because there is no legal basis to continue the 'holdover' permit," *see* Ex. C-95 at 1.

8. The ICA reverses in the IIFS Appeal and orders CWRM to hold a contested case on the East Maui IIFS Petitions.

In the IIFS Appeal, the ICA vacated the denial of Nā Moku's contested case petition and "remanded to the Commission with instructions to grant Nā Moku's Petition for Hearing and to conduct a contested case hearing pursuant to HRS chapter 91 and in accordance with state law." *In re Interim Instream Flow Standards for Waikamoi, Puohokamoa, Haipuaena, Punalau/Kolea, Honomanu, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Kapaula & Hanawi Streams*, 2012 WL 5990241, at *4 (Haw. Ct. App. Nov. 30, 2012). On remand, the CWRM authorized its chairperson to appoint a Hearings Officer for the contested case hearing on the East Maui IIFS Petitions (the "***East Maui IIFS CCH***"). *See* Ex. C-96 at 15. Chairperson William Aila appointed Dr. Lawrence Miike as the Hearings Officer.

9. Nā Moku appeals the denial by BLNR of the Motion to Reconvene in the Water License CCH.

On April 14, 2014, NHLC filed a Notice of Appeal with the Circuit Court of the First Circuit, State of Hawai'i, to appeal what NHLC construed as the BLNR's effective denial of the Motion to Reconvene (the "***2014 Water License CCH Appeal***"). Ex. C-97. On April 25, 2014, the BLNR sent a letter to NHLC stating that "the Board does not plan to *reconvene* the contested

case hearing on the water licenses until after [CWRM] has had the opportunity to address its own contested case on the Interim Instream Flow Standards for East Maui Streams." Ex. C-98.

10. The scope of the East Maui IIFS CCH is expanded to cover all 27 East Maui IIFS Petitions.

On April 24, 2014, the Hearings Officer in the East Maui IIFS CCH indicated that he was considering expanding the scope of the CCH to address the IIFS for all 27 streams which were the subject of Nā Moku's initial IIFS petitions. After holding a prehearing conference on May 21, 2014 to discuss the Hearings Officer's suggested approach, the Hearings Officer issued a Minute Order setting a briefing schedule and a hearing date to address the issue. *See* Minute Order 7. Over HC&S' objections, CWRM expanded the scope of the East Maui IIFS CCH to include all 27 East Maui IIFS Petitions at its August 20, 2014 meeting.

11. The Circuit Court's ruling that the 2014 Water License CCH should proceed as to issues that are not duplicative of those in the East Maui IIFS CCH.

On November 14, 2014, the Circuit Court, after hearing oral argument on the 2014 Water License CCH Appeal, issued an oral ruling reversing and vacating the BLNR"s decision to deny Nā Moku's Motion and ordering the BLNR to reconvene the Water License CCH subject to certain conditions. *See* Ex. C-99. The scope of the reconvened proceedings extends to issues for which the BLNR has sole statutory and constitutional responsibility and that are not duplicative of the issues to be determined by the CWRM with respect to the 27 East Maui IIFS Petitions. If members of Nā Moku are suffering from immediate injury with respect to particular streams, it is up to Nā Moku to request adjustments to existing diversions from any particular stream. *See id.* at 44.

III. LEGAL FRAMEWORK

A. Interim Instream Flow Standards

The Code defines an "instream flow standard" as "a quantity of water or depth of water which is required to be present at a specific location in a stream system at certain specified times of the year to protect fishery, wildlife, recreational, aesthetic, scenic, and other beneficial instream uses." HRS § 174C-3. "Each instream flow standard shall describe the flows necessary to protect the public interest in the particular stream. Flows shall be expressed in terms of variable flows of water necessary to protect adequately fishery, wildlife, recreational, aesthetic, scenic, or other beneficial instream uses in the stream, in light of existing and potential water developments including the economic impact of restriction of such use." *Id.* § 174C-71(1)(C).

Correlatively, an "interim instream flow standard" is defined as "a temporary instream flow standard of immediate applicability, adopted by the commission without the necessity of a public hearing, and terminating upon the establishment of an instream flow standard." *Id.* at § 174C-3. IIFS have been described as the surface water corollary to the groundwater "sustainable yield" in that both perform the function of guiding water planning and regulation by prescribing responsible limits to the development and use of public water resources. *See In re Water Use Permit Applications*, 94 Hawai'i 97, 148, 9 P.3d 409, 460 (2000) ("**Waiāhole I**").

B. The IIFS-Setting Process

"Any person with the proper standing may petition the commission to adopt an interim instream flow standard for streams in order to protect the public interest pending the establishment of a permanent instream flow standard[.]" HRS § 174C-71(2)(A). "A petition to adopt an interim instream flow standard under this section shall set forth data and information concerning the need to protect and conserve beneficial instream uses of water and any other relevant and reasonable information required by the commission." *Id.* § 174C-71(2)(C).

The Water Code states that "[i]n considering a petition to adopt an [IIFS], 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." *Id.* § 174C-71(2)(D). The overarching goal of the CWRM in performing its weighing analysis of instream and noninstream uses is to promote the public interest. As noted above, the CWRM is to adopt an "in order to protect the public interest pending the establishment of a permanent instream flow standard[.]" *Id.* § 174C-71(2)(A). CWRM's rules similarly provide that "[e]xpressions of the public interest should be sought in the implementation of this chapter." HAR § 13-169-20(6).

CWRM's task in setting IIFS, then, is to identify relevant instream values and noninstream uses, and to determine the proper balance between them that best furthers the public interest. No particular category of water use, including resource protection, should be elevated to the level of a "categorical imperative." *Waiāhole I.* 94 Hawai'i at 142, 9 P.3d at 454. Instead, CWRM must "weigh competing public and private water uses on a case-by-case basis, according to any appropriate standards provided by law." *Id.* The Court also "indicated a preference for accommodating both instream and offstream uses where feasible." *Id.*

1. Instream Use

The Water Code defines "instream use" as follows:

> [B]eneficial uses of stream water for significant purposes which are located in the stream and which are achieved by leaving the water in the stream. Instream uses include, but are not limited:
>
> (1) Maintenance of aquatic life and wildlife habitats;
> (2) Outdoor recreational activities;
> (3) Maintenance of ecosystems such as estuaries, wetlands, and stream vegetation;
> (4) Aesthetic values such as waterfalls and scenic waterways;
> (5) Navigation;
> (6) Instream hydropower generation;

(7) Maintenance of water quality;
(8) The conveyance of irrigation and domestic water supplies to downstream points of diversion; and
(9) The protection of traditional and customary Hawaiian rights

HRS § 174C-3. The public trust doctrine recognizes that resource protection constitutes a "use." *Waiāhole I*, 94 Hawai'i at 140, 9 P.3d at 452.

Among other things, the East Maui IIFS Petitions assert that amendment of the IIFS for the 27 East Maui Streams is necessary to advance the instream value of protection of traditional and customary Hawaiian rights. The Supreme Court of Hawai'i has taught that an administrative agency rendering a decision that might affect native Hawaiian rights must articulate:

> (1) the identity and scope of "valued cultural, historical, or natural resources" in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area; (2) the extent to which those resources-including traditional and customary native Hawaiian rights-will be affected or impaired by the proposed action; and (3) the feasible action, if any, to be taken by the LUC to reasonably protect native Hawaiian rights if they are found to exist.

In re 'Īao Water Management Area High-Level Source Water Use Permit Applications, 128 Hawai'i 228, 247, 287 P.3d 129, 148 (2012) ("**Nā Wai 'Ehā"**) (quoting *Ka Pa'akai O Ka'aina v. Land Use Comm'n*, 94 Hawai'i 31, 46-47, 7 P.3d 1068, 1083-84 (2000)). A party seeking protection for native Hawaiian traditional and customary practices must make a factual showing of the practices for which the party seeks protection. *See Kalipi v. Hawaiian Trust Co. Ltd.*, 66 Haw. 1, 656 P.2d 745 (1982); *Public Access Shoreline of Hawai'i v. Hawaii County Planning Comm'n*, 79 Hawai'i 425, 903 P.2d 1246 (1995); *State v. Hanapi*, 89 Hawai'i 177, 970 P.2d 485 (1998); *Ka Pa'akai O Ka'ina v. Land Use Commission*, 94 Hawai'i 31, 7 P.3d 1068 (2000).

2. Noninstream Use

The Water Code defines "Noninstream use" as "use of stream water that is diverted or removed from its stream channel and includes the use of stream water outside of the channel for domestic, agricultural, and industrial purposes." HRS § 174C-3.

Consideration of impacts on offstream uses is essential to the Commission's fulfillment of the purpose of the public trust, which is to ensure that "all uses [of water], offstream or instream, public or private, promote the best economic and social interests of the people of the state." *Waiāhole I*, 94 Hawai'i at 141, 9 P.3d at 453. The achievement of this purpose does not necessarily require displacement of existing offstream uses in favor of instream uses or conservation. Indeed, the Supreme Court has taught that the State has a public trust duty to "duly consider the significant public interest in continuing reasonable and beneficial existing offstream uses." *Id.* at 150, 9 P.3d at 462. The Supreme Court recognized that "[t]he 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*** . . . ." *Id.* (emphasis added). The Court thus noted that "reason 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.* The Commission's goal in setting instream flow standards should be to balance public and private water uses, whether instream or offstream, in order to effectuate the dual mandates of the public trust doctrine, which are protection and maximum and beneficial use. *See id.* at 138-39, 9 P.3d at 450-51. The Commission's administrative rules pertaining to the setting of instream flow standards likewise provide that the economic value of present offstream uses of water must be considered. HAR § 13-169-20(4) provides:

(4) In determining flow requirements to protect instream uses or in assessing stream channel alterations, ***consideration should be given to the maintenance of existing non-instream uses of economic importance*** and the preservation of stream waters for potential non-instream uses of public benefit.

(Emphasis added). Section 13-169-40(c) of the HAR similarly provides:

(c) 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 non-instream purposes, including the economic impact of restricting such uses.***

(Emphasis added).

3. Burden of proof

The Supreme Court of Hawai'i has made clear that the burden of proof in an IIFS-setting proceeding does not lie with any particular party. "In the context of IIFS petitions, the water code does not place a burden of proof on any particular party; instead, the water code and our case law interpreting the code have affirmed the Commission's duty to establish IIFS that 'protect instream values to the extent practicable' and 'protect the public interest.'" *Nā Wai 'Ehā*, 128 Hawai'i at 254, 287 P.3d at 154 (quoting *In re Water Use Permit Applications*, 105 Hawai'i 1, 11, 93 P.3d 643, 653 (2004), and Haw. Rev. Stat. § 174C-71(2)(A)).

IV. DISCUSSION

A. HC&S' Use of East Maui Stream Water For Agricultural Purposes Provides a Public Benefit and Is An "Existing Noninstream Use of Economic Importance" to the County of Maui and the State.

CWRM's overarching aim in setting IIFS should be to promote the public interest. CWRM's rules state that "[e]xpressions of the public interest should be sought in the implementation of this chapter." HAR § 13-169-20(6). To that end, in balancing instream values against non-instream uses, CWRM is to give consideration to the "maintenance of existing non-instream uses of economic importance." HC&S' use of water from East Maui

streams clearly constitutes an existing non-instream use of economic importance to the County of Maui and the State.

The Commission is charged by the Code to interpret the Code liberally "to obtain maximum beneficial use of the waters of the State for purposes such as domestic uses, aquaculture uses, ***irrigation and other agricultural uses***, power development, and commercial and industrial uses." HRS § 174C-2(c) (emphasis added). HC&S' cultivation of sugarcane, which depends on the availability of irrigation water from Nā Wai 'Ehā streams, produces the bagasse needed to generate the electricity that HC&S is under contract with MECO to provide. The use of water for power development is also a beneficial use. *Id.*

HC&S is a major contributor to the economies of the County of Maui and the State both as an employer and a consumer of local goods and services. HC&S currently employs 750 people on Maui and expends $115 million annually, a majority of which is spent on Maui. *See* Volner Decl. ¶ 34. HC&S' benefit to the local economy extends beyond its direct contributions. It is estimated that the regional multiplier effect of HC&S' injections into the local economy is 1.5, meaning that its annual expenditures of $115 million actually adds over $172 million to the economy. *See* C-65 at 5. Even higher is the jobs multiplier, estimated at 1.87, meaning if HC&S employs 750 people, there are over 1,400 jobs on Maui that are dependent on HC&S in some fashion. *See id.*

The diversion and use of East Maui water by HC&S and EMI provides a number of other public benefits in addition to making valuable economic contributions to the County of Maui and State. The EMI ditch system provides infrastructure for delivering water to the Maui County Department of Water Supply in order to service the Upcountry Maui and Nahiku communities. Sales of power to MECO generated by the burning of bagasse provide the people of Maui with

an alternative, renewable energy source. HC&S supports the agricultural and livestock industries in Maui by providing agricultural inputs to smaller farmers at a discount due to its ability to buy in bulk, and by providing cane waste as feedstock to Maui cattlemen. By keeping 35,000 acres of land in agricultural use, HC&S preserves the green vistas of Maui and protects such lands from urbanization or turning into an arid, windswept landscape. *See* Ex. C-82 at 42-43, ¶ C.8(a); Ex. C-65 at 16.

Continued reliable access to surface water from East Maui streams for irrigation is critical to maintaining the economic viability of HC&S and thus its continued existence. There are a number of reasons why HC&S has been able to sustain its sugar operations whereas all of the other sugar plantations in the State of Hawai'i have been forced to cease operations for lack of profitability. The most important factor favoring HC&S, as compared with most of the plantations that have failed, is the economy of scale that results from HC&S being able to farm 35,000 contiguous acres, more or less. This has enabled HC&S to spread the fixed costs of operating its mill and related facilities over the revenues generated from farming a relatively large number of acres. Additionally, there are cost efficiencies arising out of the fact that the majority of the lands cultivated by HC&S are in Central Maui on lands that do not receive much rainfall and thus, when unirrigated, can be dried and relatively easily accessed by harvesting equipment traveling HC&S' internal road system. By comparison, Wailuku Sugar Company had to spread its fixed costs over revenues generated from the approximately 5,250 acres it had in sugar cultivation before closing its plantation in 1988. *See* Volner Decl. at ¶ 4; *see also* Ex. C-65 (Leroy O. Laney, Ph.D. consultant paper).

It has taken more than just maintaining its size and production levels to enable HC&S to remain economically viable as costs have risen and global competition has placed downward

pressure on sugar prices. HC&S has generated significant revenues, for example, from selling electrical power to utilities under long term contracts with fixed delivery requirements. Revenue from energy sales, including energy generated by hydroelectric plants on Kaua'i and Maui, have accounted for a significant percentage of the revenues generated by A&B's agribusiness segment in recent years. *See* Volner Decl. at ¶ 5.

It nonetheless remains extremely challenging, due to the slim profit margins that can be made producing commodity sugar, for HC&S to continue in the future as it has in the past. One of the strategies HC&S has employed has been to diversify by producing specialty food-grade raw sugars, which yield higher margins than commodity sugar. In addition to specialty sugars, HC&S is exploring further expansion of its energy related operations. *See* Volner Decl. at ¶ 6

It is absolutely critical to the continued economic viability of HC&S until a new business model can be found, however, that HC&S continue to have reliable access to surface water from East Maui to irrigate its sugar fields.[5] The reason that HC&S cannot afford the loss of any significant amount of irrigation water is that reduced irrigation will result in lower sugar yields. The key agronomic driver in determining sugar production is per acre yields, which is measured in Tons of Sugar per Acre. HC&S has determined that, on a long term basis, sustainable yields should be between 12 and 14 TSA per crop cycle which would translate into over 200,000 tons of sugar per year given the acreage that HC&S has in cultivation. HC&S needs to achieve yields in this range to remain viable, i.e., to generate sufficient revenues to carry its fixed and variable costs and return a reasonable profit to its shareholders. *See* Volner Decl. at ¶ 7.

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[5] HC&S has experimented with alternatives to sugarcane since 1907 without much success. *See* Appendix IV to Ex. C-65. Nevertheless, HC&S continues to explore alternatives, such as further expansion of its energy related operations. *See* Volner Decl. at ¶ 6.

B. Further Reductions in EMI Surface Water Deliveries to HC&S Will Measurably Diminish HC&S' Ability to Remain Economically Viable.

In setting IIFS, CWRM must weigh the importance of "present or potential uses of water for non-instream purposes, including the economic impact of restricting such uses." HAR §§ 13-169-40(c), -204(4).

The flow measurement that serves as the point of departure for HC&S' estimates of the incremental financial impact it will suffer as a result of reduced deliveries from EMI is average daily deliveries for each of the four ditches at Maliko Gulch. *See* Volner Decl. at ¶ 66. Exhibit C-76 is a spreadsheet that estimates the average annual financial impact on HC&S for every million gallons of water per day of reduced deliveries to each of the four HC&S ditches that receive EMI water at Maliko Gulch using average annual flow data from 2008 through 2013. *See* Volner Decl. at ¶ 67.

Reduced deliveries to the upper two ditches, the Wailoa Ditch and the Kauhikoa Ditch, result in reduced water availability to irrigate the 12,800 acres of sugar cane that cannot be irrigated with ground water. The financial impact is therefore calculated in terms of HC&S' anticipated loss in sugar yields due the average decrease in available water. Exhibit C-77 is a copy of a spreadsheet detailing the estimated value to HC&S of the average yield per million gallons of available water to be $1,390. As indicated in Exhibit C-76, the estimated average annual financial impact to HC&S per million gallons of reduced deliveries to either the Wailoa Ditch or the Kauhikoa Ditch is $507,858.00. *See* Volner Decl. at ¶ 68.

Reduced deliveries to the lower two ditches, the Lowrie Ditch and the Haiku Ditch, are assumed to be compensated for by increased pumping of brackish ground water. The financial impact is therefore calculated in terms of the cost of this increased pumping. Exhibit C-78 is a spreadsheet detailing the estimated average cost of this pumping to be $439 per million gallons.

As indicated in Exhibit C-76, the estimated average annual financial impact to HC&S per million gallons of reduced deliveries to either the Lowrie Ditch or the Haiku Ditch is $160,250.00 and $74,825.00, respectively. *See* Volner Decl. at ¶ 69.

C. CWRM's 2008 and 2010 Decisions on the 27 East Maui IIFS Petitions Reasonably Balanced Instream Values Against Competing Non-Instream Uses.

1. CWRM's 2008 Decision focused on the 8 IIFS Petitions prioritized by Nā Moku where there were numerous downstream users, including taro farmers.

With respect to the first 8 Prioritized IIFS Petitions, CWRM staff recommended restoration of flow in the following streams: Honopou, Hanehoi, Piinau, Palauhulu, Waiokamilo, East and West Wailuanui. *See* Ex. C-85 at 60-62. CWRM adopted the recommendations at its meeting held on September 24-25, 2008 as follows:

Honopou (6034)	Adopted recommendation to restore flow
Hanehoi (6037)	
- Hanehoi	Adopted recommendation to restore flow
- Puolua (Huelo)	Adopted recommendation to restore flow
Piinau (6053)	
- Piinau:	Adopted recommendation to maintain status quo IIFS
- Palauhulu:	Adopted recommendation to restore flow
Waiokamilo (6055)	
- Waiokamilo:	Adopted recommendation to restore flow
- Kualani:	Adopted recommendation to maintain status quo IIFS
Wailuanui (6056) – East and West Wailuanui:	Adopted recommendation to restore flow

See Ex. C-89 at 30-31; Ex. C-101. DAR did not provide recommendations for the first 8 Prioritized IIFS Petitions.

CWRM's 2008 Decision regarding the 8 Prioritized IIFS Petitions restored flow to Honopou, Hanehoi, Puolua, Palauhulu, Waiokamilo, and East and West Wailuanui Streams. *See* Ex. C-89 at 30-31; Ex. C-100. Based on data collected regarding the hydrologic units, stream biota, and uses of the streams for, among other things, agricultural cultivation and native

Hawaiian traditional and customary practices, CWRM determined that an amended IIFS in those streams would provide users downstream of diversions of those streams, including taro farmers, with adequate flow. Moreover, the amended IIFS would support an increase in habitat for stream biota in those streams. CWRM did not amend the IIFS for Piinau Stream, which already had a rich diversity of native species, offered a variety of recreational and aesthetic opportunities with current flow, and the presence of a water fall made uncertain the benefits of flow increase to native species. CWRM also did not amend the IIFS for Kualani Stream, for which very limited hydrologic and biological data were available, and the geographical location of which was questionable. The 2008 Decision represented a reasonable balancing of instream values and noninstream uses based on ample data, as exemplified by the fact that no one, including Nā Moku, appealed the decision. Accordingly, the 2008 Decision should not be disturbed herein.

2. CWRM's 2010 Decision on the remaining 19 East Maui IIFS Petitions focused principally on enhancing habitat for native amphidromous species.

Given the relative absence of downstream users, CWRM's flow restoration analysis with respect to the remaining 19 East Maui IIFS Petitions focused principally on the instream value of maintenance of aquatic life and wildlife habitats, and in particular, enhancing available habitat for nine native species selected by CWRM staff, including five native fishes, two snails, one shrimp, and one prawn:

Scientific Name	Hawaiian Name	Type
Awaous guamensis	ʻOʻopu nākea	Goby
Lentipes concolor	ʻOʻopu hiʻukole (alamoʻo)	Goby
Sicyopterus stimpsoni	ʻOʻopu nopili	Goby
Stenogobius hawaiiensis	ʻOʻopu naniha	Goby
Eleotris sandwicensis	ʻOʻopu akupa (okuhe)	Eleotrid
Atyoida bisulcata	ʻOpae kalaʻole	Shrimp
Macrobrachium grandimanus	ʻOpae ʻoehaʻa	Prawn
Neritina granosa	Hihiwai	Snail
Neritina vespertina	Hapawai	Snail

See, e.g., C-100 at § 4.0, Table 4-1. These species were selected for assessment because of their importance in traditional and customary Hawaiian gathering and subsistence fishing. *See* Ex. C-66 at 2. Hawai'i's native stream animals have amphidromous life cycles, meaning that their larvae are swept into nearshore marine waters where they develop for periods up to 150 days as zooplankton before re-entering freshwater as post-larvae and migrating upstream, where they grow and reproduce as adults. *See id.* at 11.

DAR developed recommendations for restoration of flow in the 27 East Maui Streams, which CWRM staff used to prepare its recommendations. CWRM considered and largely adopted the recommendations of DAR and CWRM staff in 2008 and 2010. The recommendations of CWRM staff and DAR are conceptually similar.

Using the Hawaiian Stream Habitat Evaluation Procedure ("***HSHEP***") as an analytical tool, DAR developed its recommendations with the aim of achieving the "biggest bang for the buck," i.e., placing priority on streams with the greatest potential to increase suitable habitat for native species. *See* Ex. C-102 at 3. DAR also took a "share the pain" approach to crafting its recommendations, recognizing that under drought conditions, instream flow requirements might need to be suspended. *See id.* at 4. DAR noted that native aquatic animals in Hawai'i streams have evolved such that they can survive in a system where droughts and the resultant low flows periodically occur, and can repopulate a stream when more favorable conditions return. *See id.* In view of competing demands for water, DAR preferred to restore several streams to healthy levels rather than to restore many streams to suboptimal levels. *See* Ex. C-90 at 43.

Accordingly, DAR recommended seasonally adjusted restoration of flows to eight streams: Waikamoi, Puohokamoa, Haipuaena, West Wailuaiki, East Wailuaiki, Kopiliula, Waiohue, Hanawi. DAR recommended distinguishing between restoration during the "wet" and

"dry" seasons. During the wet season, the goal is to achieve the minimum flow that, in DAR's view, was needed for the maintenance of suitable instream habitat (H_{min}), which DAR defined as 64% of Median Base Flow (BFQ_{50}). These flows are anticipated to provide suitable conditions for growth, reproduction, and recruitment of native stream animals. *See* Ex. C-102 at 4. The objective during the dry season is to achieve the minimum flow that, in DAR's view, was necessary to maintain a wetted pathway between the ocean and stream habitats of the selected streams (C_{min}), which DAR defined as 20% of BFQ_{50}. C_{min} flows are anticipated to allow adult animals to move among habitats and allow recruiting animals to move upstream to suitable habitats. DAR considered these flows to be too low to enable suitable long-term growth and reproduction of stream animals. *See id.*

CWRM staff applied the same principles as DAR in developing recommendations with respect to the 19 East Maui IIFS Petitions, including the seasonal adjustments. *See* Ex. C-103 at 18, Table 4. Because CWRM monitored locations in the upper reaches of the streams whereas DAR monitored in the middle and lower reaches, CWRM staff used flow numbers from long-term streamflow gages instead of the regression estimates that DAR used for middle and lower stream reaches. *See* Ex. C-1 at 13. CWRM staff also considered gaining and losing reaches, unlike DAR. *See id.* CWRM staff ultimately recommended year-round restoration of flows to six streams: Waikamoi, West Wailuaiki, East Wailuaiki, Waiohue, Hanawi, Makapipi. *See* Ex. C-103 at 19-24. DAR agreed with the calculations in the CWRM staff recommendations. *See* Ex. C-91 at 13.

CWRM, at its May 25, 2010 meeting, acted on the 19 East Maui IIFS Petitions as follows:

Waikamoi (6047)
- Waikamoi and Alo: Adopted DAR wet and dry season recommendations

- Wahinepee:	No change
Puohokamoa (6048):	No change
Haipuena (6049):	No change
Punalau (6050):	No change
Honomanu (6051):	No change
Nuaailua (6052):	No change
Ohia (6054):	No change
West Wailuaiki (6057):	Adopted CWRM staff recommendation for wet season and DAR recommendation for dry season
East Wailuaiki (6058):	Adopted CWRM staff recommendation for wet season and DAR recommendation for dry season
Kopiliula (6059)	
- Kopiliula:	No change
- Puakaa:	No change
Waiohue (6060):	Adopted CWRM staff recommendation for wet season and DAR recommendation for dry season
Waiaaka (6062):	No change
Kapaula (6063):	No change
Hanawi (6064):	Adopted CWRM staff recommendation (year-round)
Makapipi (6065):	Adopted CWRM staff recommendation (year-round)

Ex. C-91 at 47-50.

The approach of restoring stream flow on a regional, rather than a stream-by-stream, basis is reasonable and supported by a report prepared by SWCA Environmental Consultants entitled, "Status of Hawaiian Macrofauna in East Maui Streams and Biological Considerations for the Amendment of Interim Instream Flow Standards in Selected Streams (IIFS)" (the "***SWCA Report***"). Ex. C-66.

The SWCA Report found "no data available to suggest that any of the nine native Hawaiian amphidromous species is at risk of either endangerment and/or extinction in East Maui streams or elsewhere within the State." *Id.* at 27. Despite 1,600 years of human modifications to the landscape and over a century of modern water development, the native amphidromous species persist in East Maui streams and other streams throughout the State. *See id.*; *see also id.* at 18 (noting that the species "may still be found in many streams on all five major islands, and often in abundance."). The SWCA Report noted that East Maui streams continue to be

recognized among the most important habitats for native Hawaiian stream animals in the State. *See id.* at 18 (citing Hawai'i Cooperative National Park Studies Unit, *Hawai'i Stream Assessment: A Preliminary Appraisal of Hawai'i Stream Resources*, Report R84 (1990), and Gingerich & Wolff, *Effects of Surface-Water Diversion on Habitat Availability for Native Macrofauna, Northeast Maui, Hawaii* (USGS Scientific Investigations Report 2005-5213) ("***Gingerich & Wolff (2005)***"). Indeed, of the 21 East Maui streams that were the subject of study, SWCA found data existing for 18 streams, and amphidromous species were reported in the upper reaches of 17 of those streams. *See id.* at 27.

After surveying the literature observing the resilience of native amphidromous species, SWCA concluded:

> Our observations and review of scientific literature published over the past decade helped us realize that the native Hawaiian amphidromous species appear to be far more resilient than once imagined. Natural patterns of frequent drought, flood, and landslides can have devastating impacts on stream biota in individual streams; however, those impacts tend to be temporary. Following natural disturbance, recolonization by algal, invertebrate, and amphidromous species has proven to be relatively rapid (Ford and Yuen 1986; Fitzsimons and Nishimoto 1995; Kido 1996a, 1996b; Sherwood 2002, 2004a).

Id. Amphidromous gobies "have evolved reproductive patterns adapted to the extremely variable and unpredictable habitat conditions characteristic of Hawaiian streams." *Id.* at 13 (citing Way et al. 1998). SWCA's field studies of East Maui and Nā Wai 'Ehā revealed that native Hawaiian amphidromous species are able to surmount many low dams and weirs, and under existing diverted conditions, flow volume and frequency is sufficient to allow upstream migration by 'o'opu nakea, 'o'opu alamo'o, 'opae kala'ole and by the non-native amphidromous Tahitian prawn to inhabit elevations where they could normally be found. *See id.* at 18. Notably, native amphidromous species "continue to persist within the Hawaiian Islands in apparently stable metapopulations." *See id.*

The data reviewed by SWCA also confirm that there is a substantial amount of suitable habitat in East Maui streams for all nine native amphidromous species under existing diverted conditions. *See id.* at 23. Based on Gingerich & Wolff (2005), SWCA calculated that there are roughly 106 linear kilometers (66 linear miles) of stream channels within the study area below an elevation of 2,000 ft (which is presumed to be the uppermost elevation inhabited by amphidromous species under natural, undiverted conditions), and that of the 106 linear kilometers, 57 percent of the total stream length retained 75-100 percent of aquatic habitat at base flow relative to the estimated undiverted conditions. *See id.* An additional 27 percent of total stream length retains between 25-75 percent of aquatic habitat at base flow relative to the estimated undiverted conditions. *See id.* Thus, while the system of water diversions in East Maui extends the dry end of the wet-dry daily cycle of stream ecology, it has not been demonstrated to preclude suitable habitat conditions for sustaining populations of the amphidromous species. *See id.* at 27.

The above findings underscore the relative importance of ecological connectivity as compared to physical connectivity in every stream. Again, the significance of the fact that amphidromous species have been observed in 17 of the 18 streams for which data are available must not be overlooked. The animals observed in the upper reaches had to have migrated upstream past diversion structures to inhabit these reaches, confirming that ecological connectivity occurs under existing conditions. *See id.* at 22. In Hawaiian streams, dry reaches in both diverted and naturally intermittent and interrupted perennial streams are ephemeral and are periodically wetted by freshets. The presence of amphidromous species above dry reaches throughout the State demonstrates that ecological connectivity is restored during these events,

allowing migration to occur. *See id.* at 27. It is also possible that the EMI ditch system may be a means of access to stream reaches above diversions. *See id.* at 23.

Moreover, amphidromous species are part of statewide metapopulations. Unlike diadromous salmon, amphidromous species in Hawai'i show no definitive evidence of returning to their natal stream, and there is movement of individuals from stream to stream and exchange from a common inter-island oceanic larval pool. *See id.* at 11, 12. Hence, an assessment of whether each individual stream has suitable habitat that would sustain the entire life cycle of an amphidromous species misses the point. Of greater importance is the existence of a select number of streams that could support maintenance of the metapopulation of amphidromous species.

It must also be remembered that certain streams even in their natural undiverted state might have features that impede propagation of amphidromous species. For example, large waterfalls may prevent upstream migration of all amphidromous species except 'o'opu alamo'o and 'opae kala'ole. *See id.* at 18. Seven of the 21 East Maui study streams have terminal waterfalls or cascades. The East Maui streams with high terminal falls are: Kolea, Waikamoi, Wahinepe'e, Haipua'ena, Waiokamilo, and Pa'akea. Pa'akea has a freshwater plunge pool just above the mouth of the stream; however, the falls above it restricts other amphidromous fishes from inhabiting the stream above the terminal pool. *See id.* at 20. As Robert Nishimoto of DAR explained to CWRM at its May 25, 2010 meeting, the East Maui streams are all related, so if there are several streams that are good sources of eggs, the larvae will migrate to whatever stream is available in order to reproduce—not necessarily the stream in which they hatched. *See* Ex. C-90 at 43.

V. CONCLUSION

The actions that CWRM took on the 27 East Maui IIFS Petitions at its September 24-25, 2008 and May 25, 2010 meetings were based on sound data collection and analysis and achieved a balance between instream values and non-instream uses consistent with the public interest. By taking a regional approach to flow restoration and making seasonal adjustments to the IIFS, CWRM afforded adequate protection for native amphidromous species and other instream values while allowing for sufficient diversions to support non-instream uses, including that of HC&S. While the rendering of additional findings and conclusions to support the CWRM's previous decisions on the East Maui IIFS Petitions might be necessary to comport with legal requirements articulated by the courts, the approach and substance of the decisions should in large part be left intact. HC&S reserves the right to make further comments and arguments in these contested case proceedings as to the appropriate IIFS for the 27 East Maui Streams.

DATED: Honolulu, Hawaii, December 30, 2014.

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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIOKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, AND MAKAPIPI STREAMS	Case No. CCH-MA13-01 **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 as stated below:

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