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July 10, 2015

VIA ELECTRONIC MAIL AND U.S. MAIL
The Honorable Chair and Commissioners
State of Hawaii Commission on Water Resource Management
Kalanimoku Building
1151 Punchbowl Street, Room 227
Honolulu, HI 96813

Re: Po'ai Wai Ola Petition and Complaint filed July 24, 2013
Response to Commission's May 11, 2015 Letter

Dear Chair and Commissioners:

On behalf of the Kekaha Agriculture Association ("KAA"), enclosed for submission to the Commission are the responses to the Information Requests set forth in the Commission's May 11, 2015 letter to the KAA and the Agribusiness Development Corporation ("ADC").[1] It is KAA's understanding that ADC will submit its responses directly to the Commission.

The KAA appreciates the opportunity to provide these responses to the Commission's requests for information. Should there be any questions please do not hesitate to contact the undersigned.

Very truly yours,

SCHLACK ITO
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Douglas A. Codiga

DAC:mpm

[1] This response is timely submitted. The May 11, 2015 letter requests KAA to respond to these items within sixty days of the date of the letter, or by July 10, 2015.

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Copy via U.S. Mail and Electronic Mail:

Myra Kaichi, Esq., Department of the Attorney General
William Aila and Kaleo Manuel, Department of Hawaiian Home Lands
David Henkin, Esq. and Isaac Moriwake, Esq., Earthjustice for Petitioners Po'ai Wai Ola
David Bissell, Kauai Island Utility Cooperative
Yvonne Izu, Esq., Attorney for Kauai Island Utility Cooperative
Jason Hines and Dawn Huff, Joule Group, for Kauai Island Utility Cooperative
Mayor Bernard Carvalho, County of Kauai
Mauna Kea Trask, Esq., County of Kauai
Steve Spengler, Element Environmental, LLC

CWRM-IR-1

1. List of all users that receive water from the Kokee Ditch System and/or the Kekaha Ditch System. For each user, provide the amount of water used, types and acreages of crops cultivated (excluding or breaking out fallow acreage), and details of any other uses, for the last five years (calendar years 2010 to 2014). Indicate how the amount of use was measured or estimated. If this information is not available or cannot be readily determined, please explain why and when that information will be available.

RESPONSE:

I. PRELIMINARY STATEMENT

This Information Request seeks measured or estimated amounts of irrigation water used by members of the Kekaha Agriculture Association[1] ("KAA") and other licensees.[2] As explained below in section II.B, the Kekaha[3] and Kokee[4] systems are comprised of highly integrated and interdependent irrigation, drainage and electrical power infrastructure systems (collectively, "agricultural infrastructure"). Irrigation water is only one component of the agricultural infrastructure. The demand for water is created not only by irrigation needs, but also by critically important drainage and electrical power needs. The combined irrigation, drainage and hydropower uses of the resource provide major economic benefits and protect vital public health and safety interests.

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[1] The KAA is an agricultural cooperative established pursuant to Chapter 421, Hawaii Revised Statutes. KAA's Articles of Incorporation establish its purpose to include the use of natural resources and infrastructure. KAA's current members are BASF Plant Science, LP ("BASF"), Pioneer Hi-Bred International, Inc. ("Pioneer"), Sunrise Capital, Inc. ("Sunrise"), Syngenta Hawaii, LLC ("Syngenta"), and Wines of Kauai, L.L.C. ("Wines of Kauai"). KAA's members are engaged in commercial agriculture and aquaculture on the land under the control of the State of Hawaii Agribusiness Development Corporation ("ADC"). KAA is authorized to manage and operate the agricultural infrastructure on the ADC land.

[2] As used in this response, "other licensees" refers to the following KAA member sub-licensees and or entities licensing directly from ADC: Taiwan Gu; LBD Coffee, LLC; and Steve Pionowski dba Phoenix Farms.

[3] The Kekaha system (also known as the Waimea or Waimea-Kekaha Ditch) has been in use since 1907 and is now utilized by KAA members for irrigation and electricity generation in support of agriculture in the Kekaha region. The Kekaha system is currently comprised of two primary diversions (Waiahulu and Koaie) and one intermittent diversion (Waimea), as well as 27 miles of ditches, tunnels, flumes and syphons. *See* "Waimea River Watershed," attached as Exhibit D; "Kokee and Kekaha Ditch System Schematic," attached as Exhibit E.

[4] The Kokee system has been in use since the 1920s and, like the Kekaha system is now utilized by KAA members for irrigation in support of agriculture in the Kekaha region. The Kokee system is currently comprised of four diversions (Kauaikinana, Kawaikoi, Waiakoali, Kokee) and 21 miles of ditches, tunnels, flumes and syphons.

Accordingly, KAA and its members respectfully submit that relevance and weight given by the Commission to the specific amounts of water used for irrigation alone must be properly balanced with the highly integrated and interdependent nature of the agricultural infrastructure – especially the drainage and electrical power uses which make farming on the Mana Plain possible and prevent flooding of U.S. federal defense facilities and the local community.

II. KEKAHA SYSTEM

A. BASF, Pioneer and Syngenta.

1. Water use – measured.

This Information Request requests the amount of water use as "measured." The KAA does not meter Kekaha system water received by BASF, Pioneer and Syngenta, and they do not meter Kekaha system water they receive. It is noted that under the April 1, 2008 Revised Memorandum of Agreement by and between KAA and ADC ("RMOA") KAA is not required to account for the delivery of irrigation water on a metered or other measured basis.[5] Accordingly, KAA, BASF, Pioneer and Syngenta are unable to provide the amount of water received as measured by a metering device.

2. Water use – estimated.

This Information Request also requests the amount of water use as "estimated." KAA members BASF, Pioneer and Syngenta respectfully object to this request to the extent that it does not properly take into account and consider the fact that such estimates may have limited predictive value because agricultural activities vary greatly as to acreage, crops, land ownership and other parameters. Agricultural operations fluctuate dramatically from season to season and year to year based on the weather patterns, expansions and contractions in the proportion of

[5] Under RMOA § 4(e)(v), "Coop is Cooperative Association," the KAA "shall not be required to charge and account for the delivery or distribution of any irrigation, drainage, roadway, and electrical power services provided by the Coop on a metered or other measured basis." *Id.* (emphasis added).

licensed acreage actually cultivated, business needs, market demand, the interests of other licensees, and a multitude of other factors.

In addition, no KAA member can predict whether ADC might at some point license additional acreage to other agricultural entities that would have their own needs with respect to water use and acreage. The requested water use estimates have little bearing on water use by other farmers of other crops. Although corn may use far less water than other crops that could be cultivated on the ADC lands in Kekaha, diversified agriculture is a core value protected by Hawaii's constitution and a fundamental goal of the ADC. *See* Haw. Const. art. XI, § 3 ("[t]he State shall conserve and protect agricultural lands, promote diversified agriculture" and "assure the availability of agriculturally suitable lands."). This casts doubt on the ultimate relevance of such water estimates to Commission evaluation of the issues in this proceeding.

As explained in the Preliminary Statement above, BASF, Pioneer and Syngenta further respectfully object to this Information Request on the basis that irrigation uses must properly consider the highly integrated and interdependent nature of all aspects of the agricultural infrastructure.

Notwithstanding the foregoing objections, KAA members BASF, Pioneer and Syngenta each respond to this Information Request as set forth in Exhibits A, B and C, respectively.

3. Water use – estimate based on County of Kauai WUDP Plan Update.

The County of Kauai Water Use and Development Plan Update incorporates a figure of 3,400 gallons per day per acre for diversified crops.[6] A water use estimate based on this figure of the 3,400 gallons per day per acre may be made for total current licensed acres. For BASF, the product of the total current licensed acres of 977.25 and the demand of 3,400 gallons per day

[6] *See* "Agricultural Water Use Development Plan December 2003" (Revised: December 2004), State of Hawaii Department of Agriculture at 256; Staff Submittal D1 (Exhibit 1, Table 9) for the June 24, 2015 meeting of the Commission on Water Resource Management.

per acre for diversified crops is 3,322,650 gallons per day per acre, or 3.32 million gallons per day ("MGD"); for Pioneer, with 1,337.07 acres, the estimate is 4,546,038 gallons per day, or 4.55 MGD; and for Syngenta, with 1,785.07 acres, the estimate is 6,069,238 gallons per day, or 6.07 MGD. The total estimated use for these lands is 13.94 MGD.

B. KAA.

Related to the foregoing, KAA manages and operates the agricultural infrastructure – which is integral to the Kekaha system – in a reasonable and beneficial manner that does not involve dumping or waste.[7] Under the RMOA, the irrigation infrastructure includes the Kekaha system, the Kokee system, reservoirs, siltation ponds, wells and shafts, and associated irrigation equipment ("irrigation infrastructure"); the drainage infrastructure includes forty miles of canals and drainage channels, the Kawaiele, Nohili, and Kekaha pumping stations, and electric and mechanical equipment ("drainage infrastructure"); and the electrical power infrastructure includes two power plants, dams, diesel generators, and associated infrastructure ("electrical power infrastructure").[8]

1. KAA agricultural infrastructure delivers irrigation water.

Use of the Kekaha and Kokee systems to supply water to the irrigation infrastructure for agricultural and other uses is a reasonable and beneficial use. This water provides irrigation water for agricultural activities by KAA members BASF, Pioneer, Syngenta, and Wines of Kauai and the other licensees; irrigation water for agricultural activities by kuleana and taro farmers using the Menehune ditch system; irrigation water for use by the State of Hawaii Department of

[7] With regard to allegations of dumping or waste in the Petition and Complain filed July 24, 2013 in this matter ("Petition"), see KAA's responses to CWRM-IR-4 and CWRM-IR-6, and with regard to reasonable and beneficial use see KAA's response to CWRM-IR-15.

[8] The electrical power infrastructure includes the Mauka hydropower facility, which is located on the east side of the Waimea River in Waimea Canyon at an elevation of 520 feet, has a capacity of 1.2 megawatts ("MW") and generates electricity by utilizing Kekaha system water diverted at an elevation of 800 feet. It also includes the Waiawa hydropower facility, originally installed in 1908 and with.5 MW capacity, which is located near the lowland coastal plain on the Kekaha system area at an elevation of 100 feet.

Hawaiian Home Lands ("DHHL") and its beneficiaries; water for use by the State of Hawaii Department of Land and Natural Resources ("DLNR") for recreational fishing and for public sanitation benefiting tourism; and water for use by the County of Kauai to operate its Kekaha landfill, all for the public benefit.

2. KAA agricultural infrastructure lowers the water table to allow farming.

The drainage and electrical power infrastructure make agricultural activities by KAA members and other licensees possible on the Mana Plain by maintaining the groundwater table below the plant root zone. This is a reasonable and beneficial use.

The elevation of the Mana Plain is at or near the local sea level and in its unaltered condition it is poorly drained. As a result, the Mana Plain water table regularly rises above the ground surface due to fresh and saltwater influxes caused by rainstorms, storm tides, and high astronomical tides. The KAA utilizes large capacity pumps, in combination with the canals and drainage channels, to maintain the Mana Plain groundwater level at approximately 1.0 to 2.0 feet below the ground surface in the vicinity of the Kawaiele and Nohili pumping stations. In the absence of this service provided by the drainage and electrical power infrastructure, the unregulated groundwater level would severely limit or render impossible agricultural activities by KAA members, other licensees, and others seeking to farm and conduct agricultural activities on the ADC Land on the Mana Plain.

3. KAA agricultural infrastructure provides flood protection to PMRF and the local community.

The drainage and electrical power infrastructure provide flood protection services to government, residential and commercial interests in the Kekaha area. This is also a reasonable and beneficial use.

The Mana Plain area is home to the U.S. Navy's Pacific Missile Range Facility, Barking

Sands ("PMRF"), which is one of the Kauai's largest employers, with nearly 1,000 active duty Navy, government, civil service and contract civilians, and Hawaii Air National Guard members.[9] It is also home to local residents and businesses, the County of Kauai Kekaha landfill, and KAA members BASF, Pioneer, Sunrise and Syngenta.[10]

Due in part to the topography and weather conditions in the area there is a perennial risk of flooding. The electrical power infrastructure provides electrical power to the pumping stations. The pumping stations pump water through the drainage infrastructure in a manner that reduces the risk of flooding. In the absence of this service, the risk of flooding and harm to PMRF and local residents would be greater.

4. KAA agricultural infrastructure supports ADC agriculture.

The electrical power infrastructure also supports agriculture and aquaculture on the ADC Land – also a reasonable and beneficial use. The electrical power infrastructure supplies electricity to Sunrise to sustain its aquaculture operations. It also provides power to irrigation pumps, which pump water through the irrigation infrastructure to supply fields farmed by KAA members BASF, Syngenta and Pioneer and other licensees.

5. KAA agricultural infrastructure requires approximately 21 MGD for irrigation and hydroelectric power production.

KAA has maintained these important reasonable and beneficial uses with far less water than historically used by the Kekaha Sugar Company. KAA regularly measures the amount of water in the Kekaha system at the Hukipo flume. KAA reports the average of these measurements to the Commission on a monthly basis. Since 2003 KAA has diverted an average

[9] Kauai Chamber of Commerce, "Kauai Industries," *available at* http://kauaichamber.org/pages/KauaiIndustries1/

[10] As noted in ADC's 2002 Annual Report, an "immediate goal" of ADC was to "keep the land in productive in agriculture and prevent flooding of the area since a good portion of the Mana Plain, including the U.S. Navy's Pacific Missile Range Facility (PMRF), is at or below sea level." *See* Legislative Reference Bureau, "Agribusiness Development Corporation: Revisited" at 14.

of 22.7 MGD from headwater streams to supply the Kekaha system. During the period of 1980 through 1999, the Kekaha Sugar Company diverted an average of 31.1 MGD. KAA has therefore achieved a 27 percent reduction in the amount of water used by the Kekaha system as compared to the Kekaha Sugar Company. *See* Kekaha and Kokee Water Use Graphs, attached as Exhibit F.

The KAA agricultural infrastructure requires approximately 21 MGD for irrigation purposes and to maintain these reasonable and beneficial uses. (As explained above, as measured at the Hukipo flume KAA diverts 22.7 MGD from the Waimea River; a portion of this amount is received by Menehune ditch system and kuleana users, the Kikiaiola lands, and the County of Kauai landfill.) Using the County of Kauai WUDP Update figure of 3,400 MGD provides the above-referenced water estimates of 3.32, 4.55 and 6.07 MGD for BASF, Pioneer and Syngenta, respectively, for a total of 13.94 MGD. KAA estimates that additional ADC lands not licensed to ADC members increase this total to 17.64 MGD. The Commission's Investigator, Element Environmental, LLC estimates Kekaha system transmission losses occurring down-ditch from the Waiawa hydropower plant to be in the range of 1.05 to 3.41 MGD. KAA estimates evaporation from the field reservoirs on the Mana Plain to be approximately 3.8 ±0.8 gallons per minute per acre of reservoir surface area.[11] Additionally, the amount of leakage from the field reservoirs is presently unknown. The combination of the foregoing amounts indicates that the KAA agriculture infrastructure requires approximately 21 MGD for irrigation purposes.

The drainage and electric power infrastructure also require approximately 21 MGD. KAA operates the Kekaha system to provide water to the Mauka and Waiawa hydropower facilities, which generate electricity used to power drainage and irrigation pumps on the Mana

[11] Shade, P.J., 1995, Water budget for the island of Kauai, Hawaii, U.S. Geological Survey WRIR 95-4128, 29 p.

Plain. As explained above, these pumps and the associated infrastructure deliver irrigation water to farmers, keep the water table lowered to allow agriculture, protect PMRF and the local community from flooding, and support ADC agriculture.

For the sake of clarity, it is noted that the same 21 MGD amount of water is used for both irrigation and hydroelectric power generation at the Waiawa hydropower facility. Hydroelectric power generation is a non-consumptive use of Kekaha system water. After generating hydroelectric power at the Waiawa facility, which is the further down-ditch and the closest to the farmers on the Mana Plain, the water flows to down-ditch users of irrigation water on the Mana Plain, including KAA members and other licensees.

C. Others Receiving Kekaha System Water.

1. Menehune ditch system and kuleana users.

KAA does not meter Kekaha system water received by users of the Menehune ditch system and kuleana users. It is KAA's understanding that Menehune ditch system and kuleana users do not meter Kekaha system water received. KAA estimates Menehune ditch system and kuleana users receive approximately 0.65 MGD from the Kekaha system. KAA has no information concerning specific crops and acreages for these users. These users are not KAA members.

2. Kikiaiola lands.

KAA does not meter Kekaha system water received by the adjacent Kikiaiola lands. It is KAA's understanding that the Kikiaiola land managers do not meter Kekaha system water received. KAA estimates the Kikiaiola lands receive approximately 0.72 MGD from the Kekaha system. KAA has no information concerning specific acreages. This user is not a KAA member.

3. County of Kauai.

KAA does not meter Kekaha system water received by the County of Kauai for the Kekaha landfill. It is KAA's understanding that the Kekaha landfill does not meter Kekaha system water received. KAA has no estimate of the amount of water received by the County of Kauai. KAA has no information concerning acreages. This user is not a KAA member.

III. KOKEE SYSTEM

A. Wines of Kauai

1. Water use – measured.

This Information Request requests the amount of water use as "measured." KAA does not meter Kokee system water received by Wines of Kauai and Wines of Kauai also does not meter the Kokee system water it receives. As mentioned above, under the RMOA KAA is not required to account for the delivery of irrigation water on a metered or other measured basis. Accordingly, KAA and Wines of Kauai are unable to provide the amount of water received as measured by a metering device.

2. Water use – estimated.

Wines of Kauai currently licenses 126.96 acres on the Mauka ADC lands and approximately 23.34 are cropped. KAA estimates that it provides Wines of Kauai with 12,340 gallons per acre per day. The product of Wines of Kauai's cropped acreage (23.34) and the water estimate (12,340 gallons per acre per day) provides a total daily estimated amount of water received by Wines of Kauai from the Kokee system of 288,016 gallons per day, or 0.29 MGD. During this period, Wines of Kauai has grown grapes, fruit trees and protea.

B. KAA.

As explained above, KAA manages and operates the agricultural infrastructure in a

reasonable and beneficial manner that does not involve dumping or waste.[12] Water from the Kokee system flows into the Kekaha system. Accordingly, the relevant facts and statements set forth above concerning reasonable and beneficial use of Kekaha system waters apply with equal force to the Kokee system.

KAA regularly measures the amount of water in the Kokee system at the Puu Lua reservoir. KAA reports the average of these measurements to the Commission on a monthly basis. Since 2003 KAA has diverted an average of 8.3 MGD from headwater streams to supply the Kokee system. During the period of 1979 through 1999, the Kekaha Sugar Company diverted an average of 15.2 MGD. KAA has therefore achieved a 45 percent reduction in the amount of water used by the Kokee system as compared to the Kekaha Sugar Company. *See* Kokee and Kokee Water Use Graphs, attached as Exhibit F.

C. Others Receiving Kokee System Water.

1. DHHL.

KAA does not meter Kokee system water received by DHHL. It is KAA's understanding that DHHL does not meter Kekaha system water received.

On December 11, 2014, the Commission's appointed Investigator, Element Environmental, LLC, gave a presentation to Commission staff and stakeholders to Commission staff and stakeholders and provided a copy of a table titled, "Flow Measurements within Waimea River Watershed (Ditches and Streams" which includes the item, "Ditch below Puu Moe Divide heading towards DHHL Land" and the associated figure of 0.23 MGD. The KAA's Land Manager, Landis Ignacio, estimates the daily average amount of water diverted toward Puu Opae Reservoir at the Puu Moe Ditch Divide is 200 gallons per minute or 0.29 MGD. KAA has

[12] With regard to allegations of dumping or waste in the Petition, see also KAA's responses to CWRM-IR-4 and CWRM-IR-6, and with regard to reasonable and beneficial use see KAA's response to CWRM-IR-15.

no information concerning specific crops and acreages. DHHL is not a KAA member.

2. DLNR.

KAA does not meter Kokee system water received by DLNR. It is KAA's understanding that DLNR does not meter Kekaha system water received. KAA has no information concerning acreages. DLNR is not a KAA member.

IV. GENERAL OBJECTIONS

KAA hereby incorporates into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-2

2. Estimates of water diverted from each stream that supplies the Kokee Ditch System (Waiakoali, Kawaikoi, Kauaikinana, and Kokee Streams) and the Kekaha Ditch System (Waimea River, Koaie and Kukui Streams), and estimates of water released at each of the Kauaikinana and Kokee Stream diversions. Indicate how and when the estimate was obtained, and how and whether diversion flows are routinely monitored.

RESPONSE:

The KAA does not possess or maintain estimates of water diverted from each stream that supplies the Kokee system (Waiakoali, Kawaikoi, Kauaikinana, and Kokee Streams) and the Kekaha system (Waimea River, Koaie and Kukui Streams).

The KAA does not possess or maintain estimates of water released at each of the Kauaikinana and Kokee Stream diversions.

The KAA does not routinely monitor these diversion flows.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-3

3. Status, condition, and flow of other registered stream diversions on the Kokee Ditch System (Mohihi #1, Mohihi #2, Mohihi #3, Kumuwela #1, Kumuwela #2, Kumuwela #3, Kumuwela #4, Kumuwela #5, Nawaimaka, Halemanu, and Kapue Valley Dam), Kekaha Ditch System (Kukui Trail #1), and the Kikiaola Ditch System. Indicate how and when the information was obtained, and how and whether these diversion flows are routinely monitored.

RESPONSE:

The Mohihi #1, Mohihi #2, Mohihi #3 diversions on the Kokee system are abandoned.

With regard to the Kumuwela #1, Kumuwela #2, Kumuwela #3, Kumuwela #4, Kumuwela #5, Nawaimaka, Halemanu, and Kapue Valley Dam diversions on the Kokee system, the status is "active," the condition is "maintained," and the flows are not monitored by the KAA or its members because they are ephemeral.

With regard to the Kukui Trail #1 diversion on the Kekaha system, the status is "active," the condition is "maintained," and the flow is not monitored by KAA or its members because it is ephemeral.

The Kikiaiola ditch system diversions are abandoned.

All of the foregoing diversions that are active are shown the "Kokee and Kekaha Ditch System Schematic" attached as Exhibit E.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-4

4. Estimate of average daily water released at the Kokee Ditch sluice gate to Kauhao Gulch. Indicate how this information was obtained.

RESPONSE:

On December 11, 2014, the Commission's appointed Investigator, Element Environmental, LLC, gave a presentation to Commission staff and stakeholders and provided a copy of a table titled, "Flow Measurements within Waimea River Watershed Ditches and Streams" which includes the item, "Diversion to Kauhao Gulch Thru Sluice Gate" and the associated figure of 0.43 MGD. The KAA's Land Manager, Landis Ignacio, estimates the average daily amount of water released at the Kokee system sluice gate to Kauhao Gulch ("Kauhao sluice gate") is approximately 300 gallons per minute or 0.43 MGD.

With regard the allegations concerning waste set forth in the Petition, KAA's current position is that they are not supported by the relevant facts.

The KAA respectfully submits that the release of approximately 300 gallons per minute or 0.4 MGD is necessary and appropriate to protect public health and safety and safeguard the operational viability of the Kokee system before and after the Kauhao sluice.

KAA must release water at the Kauhao sluice gate to maintain the level of the Puu Lua reservoir at or below sixty feet in order to maintain compliance with dam safety practices, safeguard against potential liability exposure to the KAA or the State of Hawaii, and to protect public health and safety. This fact has been recognized by the Commission's appointed Investigator, Element Environmental, LLC.

KAA must also release water at the Kauhao sluice gate to maintain conditions suitable for the recreational fishing program operated by the State of Hawaii Department of Land and Natural Resources.

KAA must also release water at the Kauhao sluice gate to properly maintain the ditch system. Specifically, maintaining flow throughout the Kokee system is necessary to keep the Kokee system tunnels from drying out, cracking, and possibly collapsing, and to reduce and suppress the growth of aquatic vegetation and accumulation of debris in the ditch that may cause or contribute to clogging and other harm to the Kokee system.

Notwithstanding the foregoing, in response to the Commission's May 11, 2015 letter to KAA and the ADC, KAA indicated that is amenable to entering into mediation. KAA remains open to discussing this matter further with the Commission, petitioners and other interested parties in the mediation process.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-5

5. Estimate of average daily water diverted towards Puu Opae Reservoir at the Puu Moe Ditch Divide. Indicate how this information was obtained.

RESPONSE:

On December 11, 2014, the Commission's appointed Investigator, Element Environmental, LLC, gave a presentation to Commission staff and stakeholders to Commission staff and stakeholders and provided a copy of a table titled, "Flow Measurements within Waimea River Watershed Ditches and Streams" which includes the item, "Ditch below Puu Moe Divide heading towards DHHL Land" and the associated figure of 0.23 MGD.

The KAA estimates the daily average amount of water diverted toward Puu Opae Reservoir at the Puu Moe Ditch Divide is 200 gallons per minute or 0.29 MGD. This estimate has been prepared by the KAA's Land Manager, Landis Ignacio.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-6

6. Estimate of average daily water released via the white PVC pipe at the end of the Kokee Ditch System (along Hwy 550). Indicate how this information was obtained.

RESPONSE:

On December 11, 2014, the Commission's appointed Investigator, Element Environmental, LLC, gave a presentation to Commission staff and stakeholders and provided a copy of a table titled, "Flow Measurements within Waimea River Watershed (Ditches and Streams" which includes the item, "12" PVC Discharge Pipe at the end of Kokee Ditch System at 1,000 foot elevation" and the associated figure of 0.39 MGD. The KAA's Land Manager, Landis Ignacio, estimates the daily average amount of water released into the Kekaha system at the end of the Kokee system is approximately 300 gallons per minute or 0.43 MGD.

With regard the allegations concerning waste set forth in the Petition, KAA's current position is that they are not supported by the relevant facts.

The KAA respectfully submits that the diversion of approximately 300 gallons per minute or 0.4 MGD into the Kekaha system at the end of the Kokee system is necessary and appropriate for the reasons explained in response to CWRM-IR-4 concerning ditch system maintenance. Specifically, this diversion is necessary to prevent the unlined ditch between the Puu Lua reservoir and the Field 635 settling basin from drying out, cracking, and possibly collapsing. If this occurred, it would eliminate the only source of water available to users of the Menehune ditch system and kuleana users when the Kekaha system is shut down for repairs.

Notwithstanding the foregoing, in response to the Commission's May 11, 2015 letter to KAA and the ADC, KAA indicated that is amenable to entering into mediation. KAA remains open to discussing this matter further with the Commission, petitioners and other interested parties in the mediation process.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-7

7. A brief history of the construction and maintenance of the Kokee Ditch downstream of the Kitano Reservoir.

RESPONSE:

Beginning in the late 1970s, the ADC Mauka lands were converted from furrow irrigation to drip irrigation. During that same time period, most of the Kokee system's open ditches were replaced with PVC pipe.

In 2006, immediately following the Kaloko dam failure, vandals severely damaged the Kitano reservoir outlet controls, requiring the Kitano reservoir to be completely drained. The reservoir is a State of Hawaii registered dam. Due to the high cost of repairs to meet registered dam requirements, KAA has continued to bypass Kokee system flows around the reservoir.

An open ditch leads out of the Kitano reservoir for approximately two miles downslope and carries this bypass water into several settling basins ending at the Field 635 basin. In the past, Kokee system water at that location was filtered and sent to individual fields via PVC pipelines. This filter system has not been used since 2006.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-8

8. Daily amount of water flowing through and electric energy generated from both the Waimea and Waiawa Hydropower Plants, along with the daily amount of water flowing past the Waihulu Dam, Koaie Dam, and Mauka Powerhouse Dam on the Waimea River, for the last five years. Indicate how and when the data were obtained.

RESPONSE:

Please see "Kekaha Agriculture Association Hydropower Production, 2010-2014," attached as Exhibit G.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-9

9. Summary of water quantity and quality data for the Kawaiele and Nohili Pump Stations for the last five years, daily electric energy consumption along with information on the current status of National Pollutant Discharge Elimination System (NPDES) Permit No. 000086.

RESPONSE:

The KAA views this Information Request as properly directed to the ADC and defers to ADC's response.

CWRM-IR-10

10. Estimated storage capacities, average daily actual water storage, locations of the irrigation pumps at the various storage reservoirs in the Mana Plain that receive water from the Kekaha Ditch. Data should either be provided in latitude and longitude coordinates, GPS, or identified of a hardcopy map.

RESPONSE:

Please see "Kekaha Ditch: Kekaha – Mana Infrastructure," attached as Exhibit H.

With regard to the request for estimated storage capacities of the reservoirs, the KAA has provided original storage capacities. Estimates are difficult to establish due to the condition of the reservoirs, many of which are impacted by heavy siltation.

With regard to the request for average daily water storage, KAA does not possess or maintain such information.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-11

11. Summary of electricity use for last five years and pump capacity (in gallons per minute), and average daily flow, of each individual irrigation pump that draws water from the storage reservoirs on the Mana Plain that receives water from the Kekaha Ditch. Indicate the ownership of the pumps and the users who use the water from each pump.

RESPONSE:

With regard to electricity use, the KAA and its members do not monitor electricity use for irrigation pumps that draw water from reservoirs supplied by the Kekaha system.

With regard to pump capacity, ownership and users, please see "Kekaha Agriculture Association Irrigation Pump Specifications," attached as Exhibit 1.

With regard to average daily flow, KAA and KAA members do not monitor average daily flow.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-12

12. Explanation of the association and role of KAA, if any, in the operations of the County of Kauai's Waimea Wastewater Treatment Plant facility.

RESPONSE:

The KAA has no formal association with or role in the operation of the County of Kauai's Waimea Wastewater Treatment Plant ("plant").

It is KAA's understanding that the plant produces R-1 recycled water, and that the Kikiaola Land Company subsequently blends this R-1 recycled water with water it draws from the Kekaha system.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-13

13. Potential modifications or solutions that may help to address waste concerns and dry streams sections raised by the Complainants.

RESPONSE:

At this time, the KAA has not identified any potential modifications or solutions that may help address alleged waste concerns or dry streams sections raised by petitioners.

With regard the allegations concerning waste set forth in the Petition, KAA's current position is that they are not supported by the relevant facts. *See* KAA's Response to CWRM-IR-4 (water released at Kauhao sluice gate) and CWRM-IR-6 (water released at end of Kokee system).

With regard the Petition's allegations concerning KAA's reasonable and beneficial use of water from the Kekaha and Kokee system water, KAA's current position is that they are not supported by the relevant facts. *See* KAA's Response to CWRM-IR-1, CWRM-IR-15 (KAA use of water to operated irrigation, drainage and electrical power infrastructure are reasonable and beneficial).

Notwithstanding the foregoing, in response to the Commission's May 11, 2015 letter to KAA and the ADC, KAA indicated that is amenable to entering into mediation. KAA remains open to discussing these matters with the Commission, petitioners and other interested parties in the mediation process.

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

CWRM-IR-14

14. Any information regarding the past, current, or future potential for use of groundwater resources and pumping in the Mana Plain for uses currently served by water from the Kokee and Kekaha Ditch Irrigation Systems.

RESPONSE:

The KAA is aware of the following information regarding the past, current, or future potential for use of groundwater resources and pumping in the Mana Plain for uses currently served by water from the Kokee and Kekaha systems:

According to the "Kekaha Sugar Infrastructure Study" (2000) prepared by the State of Hawaii Department of Land and Natural Resources, between about 1890 and 1906, 44 groundwater wells were drilled into the Basal aquifer beneath the Mana Plain. Nine more wells were drilled in 1929 and 1930. As the quality of water from these 53 deep wells deteriorated, six (6) shaft-type wells were constructed on the inland edge of the plain between 1930 and 1957. Most of these 59 wells and shafts are now either lost or sealed.

The remaining five wells (including one that is currently inactive) and four shafts are listed below:

- Mana wells [2-0145-010, -012, -013] and Mana well [2-0145-016] developed 1901 (as part of a battery of 15 wells)
- Kaunalewa 12 [2-0144-010 inactive] developed 1890?
- Saki Mana shaft [2-0345-004] developed 1957
- Kaunalewa shaft [2-0044-015] developed 1957
- Waiawa [2-5943-001] developed 1935
- Huluhulunui shaft [2-5842-003] developed 1948

KAA reports monthly groundwater use to the Commission for the eight active wells and

shafts.

The locations of these features are depicted on "Kekaha Ditch: Kekaha – Mana Infrastructure," attached as Exhibit H.

Finally, with regard to potential future uses, it is noted that the Commission estimates the sustainable yield of the Kekaha Aquifer (20301) to be 10 MGD.[13] The current pumpage of 1.48 MGD is 14.97 percent of the sustainable yield.[14]

KAA and its members hereby incorporate into this response the objections set forth in the "General Objections" accompanying this response.

[13] Source: http://files.hawaii.gov/dlnr/cwrm/maps/gwhu_kauai.pdf.
[14] Staff submittal D1 (Exhibit 1, Table 6) for the June 24, 2015 meeting of the Commission on Water Resource Management.

CWRM-IR-15

15. Any other information that would be helpful to determine whether or not the water in the Kokee and Kekaha Ditch Irrigation Systems is being put to reasonable-beneficial use.

RESPONSE:

As explained in response to CWRM-IR-1, the available facts and information strongly support the conclusion that use of the Kekaha and Kokee systems for purpose of the irrigation, drainage and electrical power infrastructure on the ADC Land is a reasonable and beneficial use.

Use of the Kekaha and Kokee systems to supply water to the irrigation infrastructure for agricultural and other uses is a reasonable and beneficial use. This water provides irrigation water for agricultural activities by KAA members BASF, Pioneer, Syngenta, and Wines of Kauai, and the other licensees; irrigation water for agricultural activities by kuleana and Menehune ditch system users farming taro; irrigation water for use by DHHL and its beneficiaries; water for use by DLNR for recreational fishing and for public sanitation benefiting tourism; and water for use by the County of Kauai to operate its Kekaha landfill, all for the public benefit.

The drainage and electrical power infrastructure make agricultural activities by KAA members and others possible on the Mana Plain by maintaining the groundwater table below the plant root zone. This is a reasonable and beneficial use.

The drainage and electrical power infrastructure also provide flood protection services to government, residential and commercial interests in the Kekaha area. This is also a reasonable and beneficial use.

The electrical power infrastructure also supports agriculture and aquaculture on the ADC Land by supplying electricity to Sunrise to sustain its aquaculture operations and to power to irrigation pumps which pump water through the irrigation infrastructure to supply fields farmed

by KAA members BASF, Syngenta and Pioneer and the other licensees – all of which are reasonable and beneficial uses.

KAA has maintained these important reasonable and beneficial uses with far less water than historically used by the Kekaha Sugar Company. The KAA agricultural infrastructure requires approximately 21 MGD to maintain these uses. Hydroelectric power generation is a non-consumptive use of the Kekaha system water. After generating hydroelectric power at the Waiawa facility, water flows from to down-ditch users of irrigation water on the Mana Plain, including KAA members and the other licensees. The power is used to lower the water table for farming and to protect the military and the local community from flooding.

GENERAL OBJECTIONS

Each and every response to the foregoing Information Requests are subject to the objections set forth below.

1. Kekaha Agriculture Association ("KAA"), BASF Plant Science LP ("BASF"), Pioneer Hi-Bred International, Inc. ("Pioneer"), Sunrise Capital, Inc. ("Sunrise"), Syngenta Hawaii, LLC ("Syngenta"), and Wines of Kauai, L.L.C. ("Wines of Kauai"), object to each Information Request to the extent that it seeks information or documents containing trade secrets, and proprietary commercial and/or financial information, on the grounds that the information or documents are subject to a Non-Disclosure Agreement, the disclosure of such proprietary commercial and financial information on a public basis or to entities engaged in competing businesses could adversely impact BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai's transactions with customers, adversely impact BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai's costs of doing business, and result in higher costs to customers, and the uncontrolled disclosure of proprietary information would give providers of competitive services information useful in making their own marketing decisions, without expending the time and money necessary to gather and develop the data, and would allow providers of competitive services to profit or otherwise derive benefits at the expense of BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai and their customers.

2. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent it purports to expand the obligations of KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai beyond the legal authority of the State of Hawaii Commission on Water Resource Management ("Commission").

3. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it seeks information that is protected from disclosure by the attorney-client privilege, and/or to the extent the request seeks information that reflects the mental impressions, conclusions, opinions, or legal theories of the KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai and their attorneys, which is also protected from disclosure by the attorney work product doctrine.

5. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it seeks information or documents within the sole knowledge or possession of other parties in this proceeding.

6. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it seeks information or documents that are beyond the scope of the issues in this proceeding.

7. BASF, Pioneer, and Syngenta are large corporations with employees located in many different locations. These documents are kept in numerous locations and frequently are moved from site to site as employees change jobs or as the business is reorganized. Therefore, it is possible that not every relevant document may have been consulted in developing BASF, Pioneer, and Syngenta's responses. Rather, these responses provide information that BASF, Pioneer, and Syngenta obtained after a reasonable and diligent search conducted in connection

with this Information Request. To the extent that the Information Request proposes to require more, BASF, Pioneer, and Syngenta object on the grounds that compliance would impose an undue burden or expense on BASF, Pioneer, and Syngenta.

8. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request seeking all documents and other information relating to a particular subject, unless otherwise noted in the response on the grounds that such requests generally are overly broad and unduly burdensome.

9. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it is vague, ambiguous, overly broad, imprecise, or utilizes terms that are subject to multiple interpretations but are not properly defined or explained for purposes of such information requests.

10. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it is unlimited in time or not limited to the time frame relevant to this proceeding.

11. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it seeks information that is not relevant to the subject matter of this docket and is not reasonably calculated to lead to the discovery of admissible evidence.

12. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it seeks documents not within the present possession, custody, or control of KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai, their agents, employees, representatives, and attorneys, or purports to expand the obligations of KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai beyond the permissible scope of discovery in this proceeding.

13. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request to the extent that it seeks documents or information easily available because it is already on file with the Commission or otherwise part of the public record.

14. BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request that seeks information regarding KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai's confidential security measures designed and implemented to protect KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai's assets, including but not limited to measures associated with physical security.

15. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request that asks KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai to make computations, compute ratios, reclassify, trend, calculate, or otherwise rework data contained in its files or records.

16. KAA, BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai expressly reserve and do not waive any and all objections they may have to the admissibility, authenticity or relevancy of the information provided in its responses.

17. In the event any document or information within the scope of any privilege or objection is disclosed, its disclosure is inadvertent and shall not constitute a waiver of the privilege or objection.

18. BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai object to each Information Request seeking internal communications, audit and/or management reports that reveal internal deliberations, analyses, appraisals and recommendations regarding the adequacy and effectiveness of the organization's system of internal controls, risk management practices, corporate governance, and/or BASF, Pioneer, Sunrise, Syngenta and Wines of Kauai's potential rights, remedies and strategies on public policy grounds.

BASF'S RESPONSE TO CWRM-IR-1

In response to the Commission's Information Request No. 1 ("CWRM-IR-1") to KAA and ADC. BASF has undertaken a review of its business records for the years 2010 through 2014. and is working to develop an estimate of BASF's water use from the Kekaha system during the years 2010 through 2014. As noted in KAA's response to CWRM-IR-1. actual water use is not metered by KAA or BASF. BASF has been working diligently to produce an accurate estimate of its historical water use in Kekaha but requires, and respectfully requests, a short extension of time in which to answer the Commission's Information Request. BASF expects to be in a position to provide such an estimate no later than Friday. July 17.

PIONEER HI-BRED'S RESPONSE TO CWRM-IR-1

Pioneer provides the following estimates of its water use for calendar years 2010, 2011 and 2012 for its farming operations on fields that Pioneer leases from the ADC on Kauai. Pioneer cultivated corn on these fields during these years. Pioneer is not providing estimates of water use for calendar years 2013 and 2014 because Pioneer's water use during these years in the Kekaha area was atypical. Estimates for these years would yield skewed results, thus they are not reasonably calculated to lead to the discovery of admissible evidence. Pioneer is committed to conserving water resources to the extent practicable. To that end, Pioneer utilizes low flow drip irrigation to ensure that water is not wasted.

As to Pioneer's water use estimates for 2010, 2011 and 2012, Pioneer stresses that Pioneer's water is not metered, and the numbers provided are estimates. Although they are based on business records and assumptions Pioneer uses in planning its farming operations, the estimates can deviate substantially from actual water use due to unpredictable circumstances such as the amount, intensity or seasonality of rainfall, pest infestations and other environmental conditions, market factors and regulatory developments. By providing these estimates, Pioneer does not concede their relevance or that the estimates can be used as a predictive tool. Actual water use may be substantially greater or substantially less than the estimated amounts. The estimates apply only to water used for irrigation. Water use for other farming-related needs, such as dust control, are not included. To the extent a response to this Interrogatory requires the disclosure of confidential business information, Pioneer objects to such disclosure and reserves all rights to the protection afforded to confidential business information under Hawai'i law.

Pioneer objects to any use of the estimates it is providing to predict future water usage by Pioneer. The seed products and acreage planted by Pioneer can and frequently does vary from

year to year. The watering season for different products can vary in length. Cover crop requirements for fallow fields vary from time to time due to environmental reasons as well as requirements imposed by regulators and/or the ADC. Pioneer's water use for its seed farming operations as presently conducted on Kauai is highly dynamic for business, climatic, regulatory and other reasons.

Pioneer further objects to any use of the estimates it is providing to predict future water usage by any other person or entity who farms the acreage Pioneer presently leases from the ADC. Seed farming is a highly specialized agricultural use that requires field separation and other farming practices that are different from or not applied at all by other farming operations. Pioneer may, in the future, sublease or release fields whose water use is reflected in the 2010, 2011 and 2012 estimates. Pioneer's water use estimates for 2010, 2011 and 2012 have no bearing on water use by farmers of other crops who may farm these same fields in the future. The crops farmed by Pioneer during the period of inquiry on the fields leased from the ADC (corn and a variety of cover crops) use far less water than other crops that could be cultivated on these fields. Diversified agriculture is a core value protected by Hawai'i's constitution (*see* Haw. Const. art. XI, § 3: "[t]he State shall conserve and protect agricultural lands, promote diversified agriculture," and "assure the availability of agriculturally suitable lands") and is a fundamental goal of the ADC. Thus, technically and legally, the water estimates provided herein are irrelevant to issues raised by Complainants in this proceeding.

Subject to and without waiving these objections and qualifications, Pioneer provides the following table containing and explaining Pioneer's estimates of its yearly water use on fields leased from the ADC on Kauai for 2010, 2011 and 2012. As Pioneer's analysis is ongoing, it reserves the right to amend and/or supplement this response.

Pioneer Hi-Bred
Kekaha Water Use Estimates

General water use calculation :

CROP WATER NEEDS:
Using low flow drip irrigation Pioneer applies 0.16 inches of water per hour.
Corn is irrigated for about 81.0 hours to complete a crop.
There are 27,154 gallons in an acre inch of water.

(81.0 hours) X (0.16 inch) = (12.96 inches of water required per crop)
(27,154 gallons/acre inch) X (12.96 inches) = (351,915.84 gallons/acre)
(351,915.84 gallons/acre/day) / (average 88 days to grow crop) = (3,999.04 gallons /day)

crop planted needs an estimated 3,999.04 gallons / day

Exhibit B

Exhibit B

Pioneer Hi-Bred
Kekaha Water Use Estimates

2010

		lease farmable acres	estimated gallons / acre / day			estimated water use of cover crop per acre assuming a 2week irrigation cycle to establish cover crop
		1,400.00	3,999.04			67,183.87
month	days / month	acres of crop growing in field per month	estimated water use/day for crop	estimated water use/month for crop	estimated acres of cover crop growing in field	estimated water use of cover crop per month
Jan	31	269.54	1,077,901.24	33,414,938.49	1,130.46	75,948,679.94
Feb	28	329.67	1,318,363.52	36,914,178.47	1,070.33	
Mar	31	263.88	1,055,266.68	32,713,266.93	65.79	4,420,026.94
Apr	30	232.50	929,776.80	27,893,304.00	31.38	2,108,229.90
May	31	101.00	403,903.04	12,520,994.24	131.50	8,834,679.17
Jun	30	60.13	240,462.28	7,213,868.26	40.87	2,745,804.85
Jul	31		0.00	0.00	1,400.00	94,057,420.80
Aug	31		0.00	0.00	1,400.00	
Sept	30	5.17	20,675.04	620,251.10	5.17	347,340.62
Oct	31	64.49	257,898.09	7,994,840.78	59.32	3,985,347.29
Nov	30	153.70	614,652.45	18,439,573.44	89.21	5,993,473.22
Dec	31	305.73	1,222,626.50	37,901,421.48	152.03	10,213,964.06

2010 estimated crop planting (acres)	2010 estimated annual water use for crop (gallons)	2010 estimated annual water use for cover (gallons)	2010 estimated total water use for crop area (gallons)
405.10	215,626,637.18	208,654,966.79	424,281,603.97

Exhibit B

Pioneer Hi-Bred
Kekaha Water Use Estimates

2011

		lease farmable acres	estimated gallons / acre / day			estimated water use of cover crop per acre assuming a 2week irrigation cycle to establish cover crop
		1,400.00	3,999.04			67,183.87
month	days / month	acres of crop growing in field per month	estimated water use/day for crop	estimated water use/month for crop	estimated acres of cover crop growing in field	estimated water use of cover crop per month
Jan	31	356.32	1,424,937.93	44,173,075.92	1,043.68	70,118,463.53
Feb	28	370.67	1,482,324.16	41,505,076.39	1,029.33	
Mar	31	364.29	1,456,810.28	45,161,118.73	6.38	428,633.10
Apr	30	285.49	1,141,685.93	34,250,577.89	78.80	5,294,089.11
May	31	133.46	533,711.88	16,545,068.23	152.03	10,213,964.06
Jun	30	63.35	253,339.18	7,600,175.52	70.11	4,710,261.27
Jul	31	10.41	41,630.01	1,290,530.20	1,389.59	93,358,036.69
Aug	31		0.00	0.00	1,400.00	
Sept	30		0.00	0.00	0.00	0.00
Oct	31	24.30	97,176.67	3,012,476.83	24.30	1,632,568.09
Nov	30	95.97	383,787.87	11,513,636.06	71.67	4,815,068.11
Dec	31	179.88	719,347.32	22,299,766.77	83.91	5,637,398.70

2011 estimated crop planting (acres)	2011 estimated annual water use for crop (gallons)	2011 estimated annual water use for cover (gallons)	2011 estimated total water use for crop area (gallons)
246.37	227,351,502.54	196,208,482.66	423,559,985.20

Exhibit B

Pioneer Hi-Bred
Kekaha Water Use Estimates

2012

		lease farmable acres	estimated gallons / acre / day			estimated water use of cover crop per acre assuming a 2week irrigation cycle to establish cover crop
		1,400.00	3,999.04			67,183.87
month	days / month	acres of crop growing in field per month	estimated water use/day for crop	estimated water use/month for crop	estimated acres of cover crop growing in field	estimated water use of cover crop per month
Jan	31	258.93	1,035,471.43	32,099,614.24	1,141.07	76,661,500.82
Feb	29	266.13	1,064,264.52	30,863,670.94	1,133.87	
Mar	31	241.83	967,087.84	29,979,723.14	24.30	1,632,568.09
Apr	30	170.16	680,476.65	20,414,299.39	71.67	4,815,068.11
May	31	86.25	344,917.20	10,692,433.20	83.91	5,637,398.70
Jun	30		0.00	0.00	86.25	5,794,608.96
Jul	31		0.00	0.00	1,400.00	94,057,420.80
Aug	31		0.00	0.00	1,400.00	
Sept	30	11.28	45,109.17	1,353,275.14	11.28	757,834.08
Oct	31	123.87	495,361.08	15,356,193.63	112.59	7,564,232.15
Nov	30	202.63	810,325.48	24,309,764.26	78.76	5,291,401.76
Dec	31	257.50	1,029,752.80	31,922,336.80	54.87	3,686,379.06

2012 estimated crop planting (acres)	2012 estimated annual water use for crop (gallons)	2012 estimated annual water use for cover (gallons)	2012 estimated total water use for crop area (gallons)
343.77	196,991,310.74	205,898,412.52	402,889,723.25

SYNGENTA'S RESPONSE TO CWRM-IR-1

In response to the Commission's Information Request No. 1 ("CWRM-IR-1") to KAA and ADC. Syngenta has undertaken a review of its business records for the years 2010 through 2014, and is working to develop an estimate of Syngenta's water use from the Kekaha system during the years 2010 through 2014. As noted in KAA's response to CWRM-IR-1, actual water use is not metered by KAA or Syngenta. Syngenta has been working diligently to produce an accurate estimate of its historical water use in Kekaha but requires, and respectfully requests, a short extension of time in which to answer the Commission's Information Request. Syngenta expects to be in a position to provide such an estimate no later than Friday, July 17.

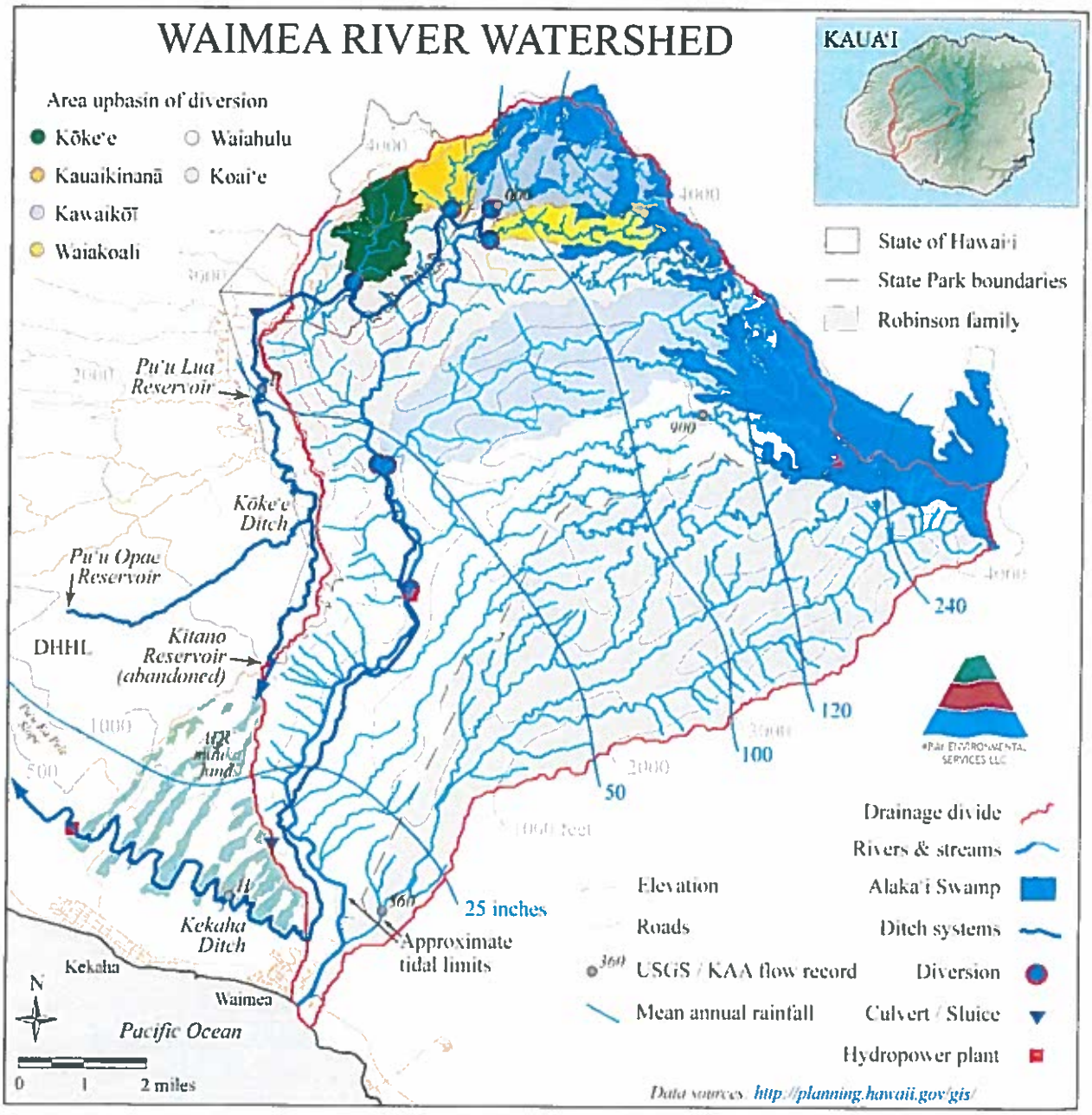

WAIMEA RIVER WATERSHED
KAUA'I
Area upbasin of diversion
Kōke'e
Waiahulu
Kauaikinanā
Koai'e
Kawaikōī
Waiakoali
State of Hawai'i
State Park boundaries
Robinson family
Pu'u Lua Reservoir
Kōke'e Ditch
Pu'u Opae Reservoir
DHHL
Kitano Reservoir (abandoned)
Kekaha Ditch
Kekaha
Waimea
Pacific Ocean
N
0 1 2 miles
25 inches
Approximate tidal limits
50
100
120
240
Drainage divide
Rivers & streams
Elevation
Alaka'i Swamp
Roads
Ditch systems
USGS / KAA flow record
Diversion
Mean annual rainfall
Culvert / Sluice
Hydropower plant
Data sources: http://planning.hawaii.gov/gis/

Exhibit D

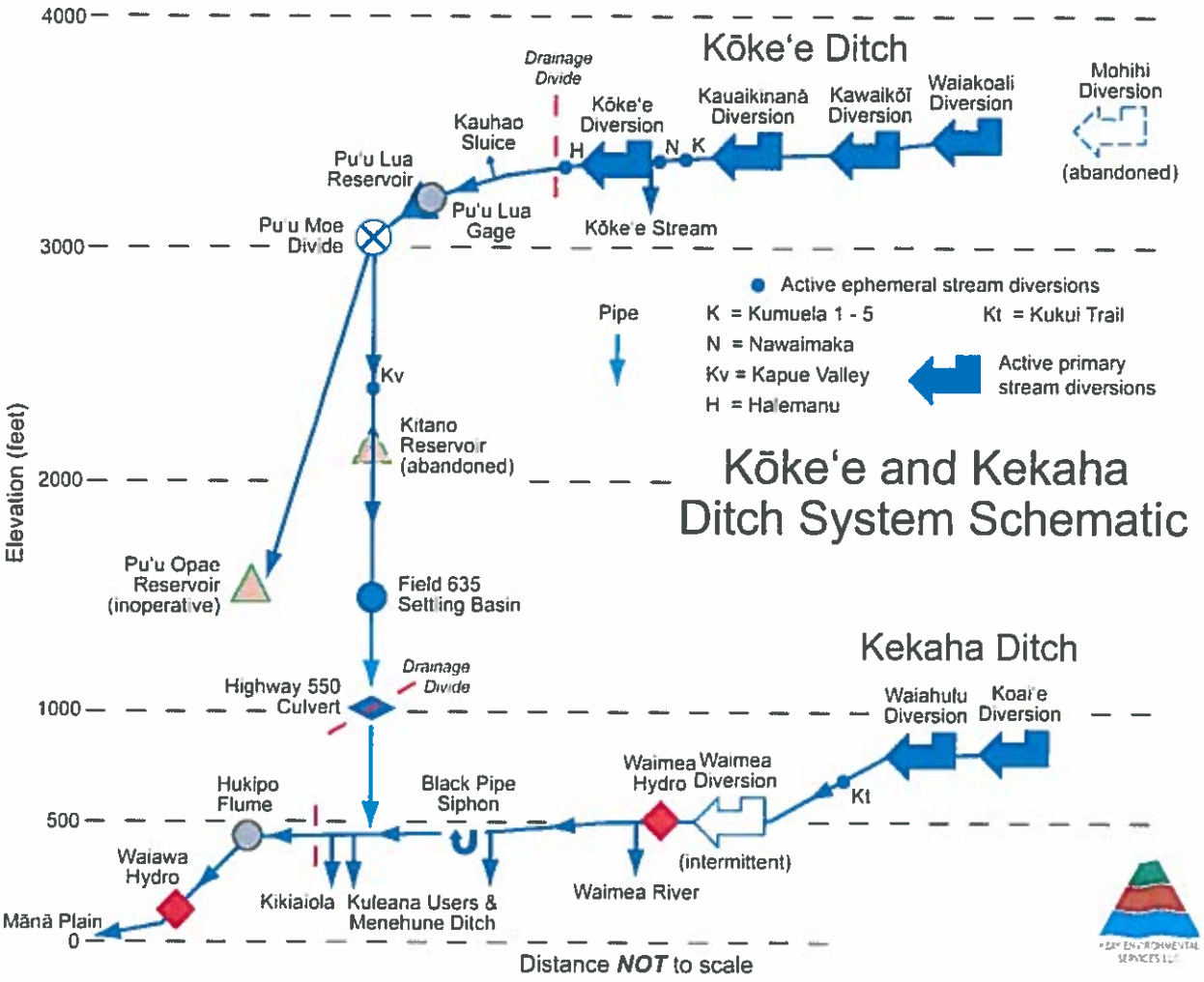
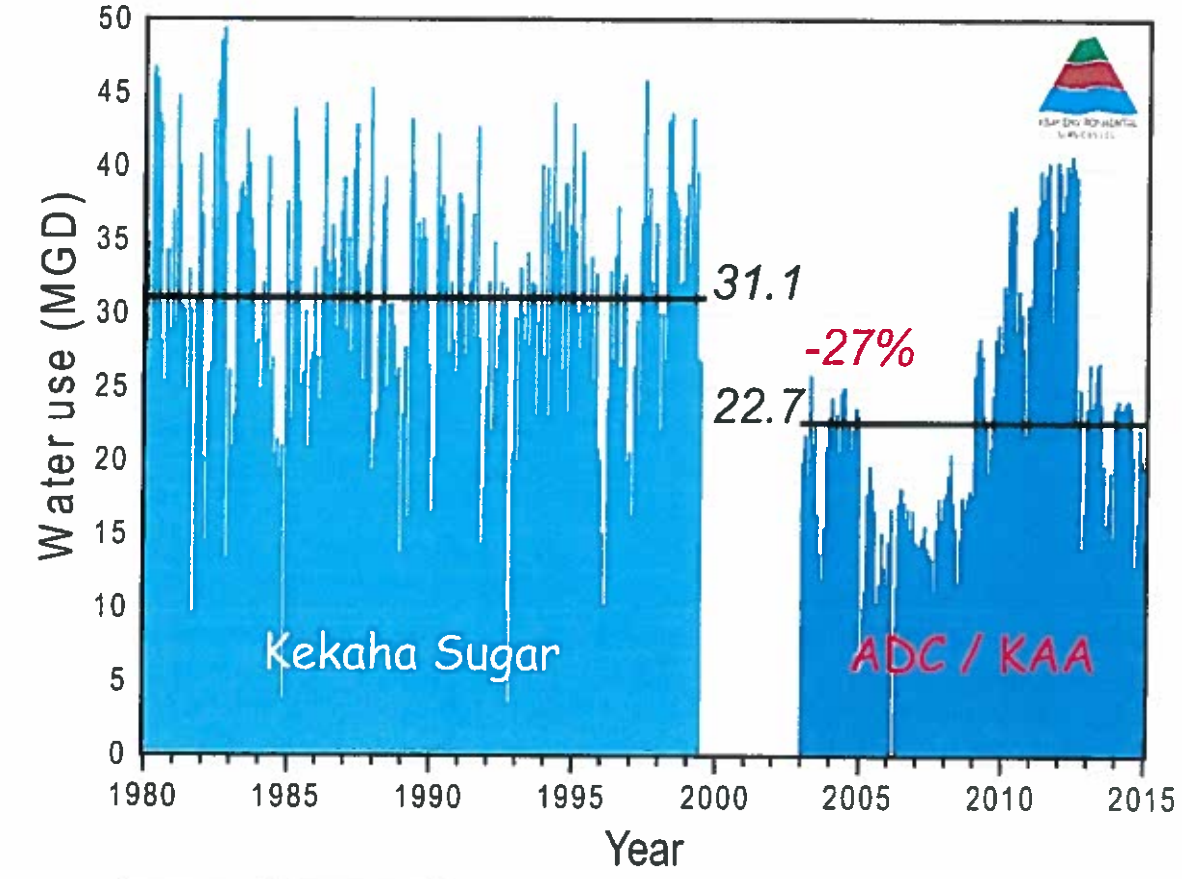

Kōke'e Ditch
Kōke'e and Kekaha Ditch System Schematic
Kekaha Ditch
Elevation (feet)
4000
3000
2000
1000
500
0
Drainage Divide
Kōke'e Diversion
Kauaikinanā Diversion
Kawaikōī Diversion
Waiakoali Diversion
Mohihi Diversion
(abandoned)
Kauhao Sluice
Pu'u Lua Reservoir
Pu'u Lua Gage
Pu'u Moe Divide
Kōke'e Stream
H
N
K
Active ephemeral stream diversions
Pipe
K = Kumuela 1 - 5
N = Nawaimaka
Kv = Kapue Valley
H = Halemanu
Kt = Kukui Trail
Active primary stream diversions
Kv
Kitano Reservoir (abandoned)
Pu'u Opae Reservoir (inoperative)
Field 635 Settling Basin
Highway 550 Culvert
Waiahulu Diversion
Koa'e Diversion
Waimea Hydro
Waimea Diversion
Kt
Hukipo Flume
Black Pipe Siphon
(intermittent)
Waiawa Hydro
Waimea River
Kikiaiola
Kuleana Users & Menehune Ditch
Mānā Plain
Distance NOT to scale

Exhibit E


Water use (MGD)
50
45
40
35
30
25
20
15
10
5
0
1980
1985
1990
1995
2000
2005
2010
2015
Year
31.1
-27%
22.7
Kekaha Sugar
ADC / KAA

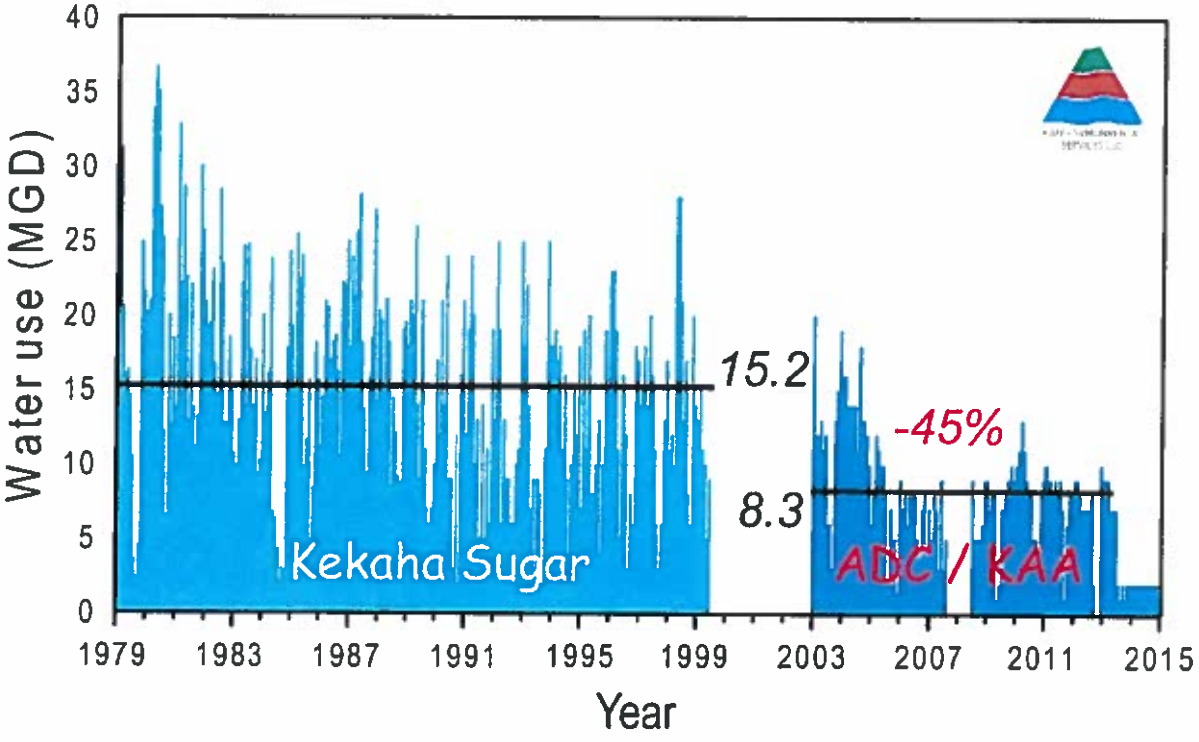

Water use (MGD)
40
35
30
25
20
15
10
5
0
1979
1983
1987
1991
1995
1999
2003
2007
2011
2015
Year
15.2
-45%
8.3
Kekaha Sugar
ADC / KAA

Exhibit F

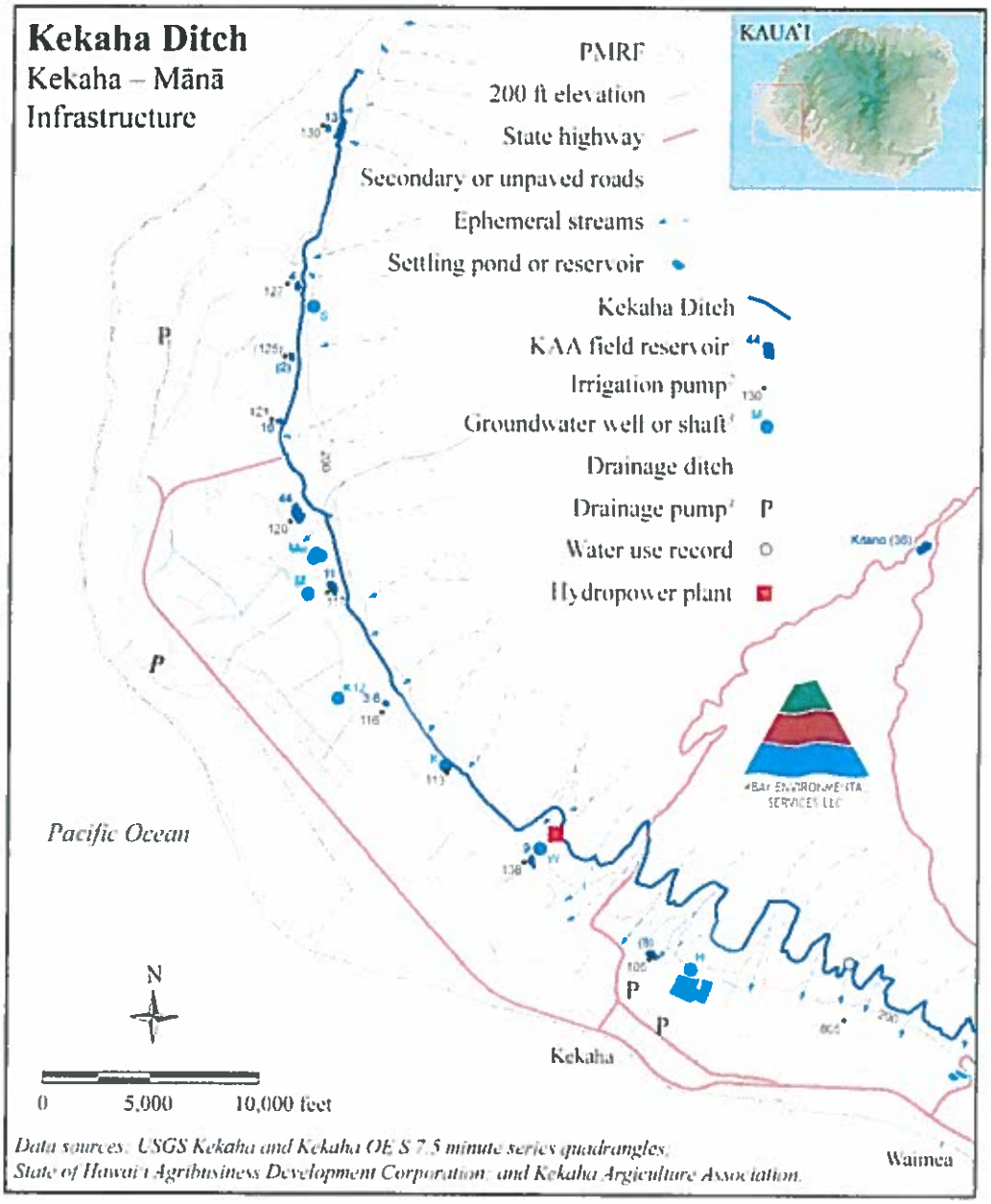
		Waiawa (kWh)	Average (MGD)	Waimea (kWh)	Average (MGD)	Total Produced (kWh)
2010	Jan	254,880	18.7	297,530	21.7	552,410
	Feb	292,401	17.8	207,629	18.4	500,030
	Mar	270,288	20.7	540,825	31.9	811,113
	Apr	287,959	20.9	448,460	30.4	737,419
	May	294,541	20.8	408,302	24.2	702,843
	June	160,881	15.0	*151,030*	16.8	*311,911*
	July	226,868	17.7	284,413	27.1	511,281
	Aug	190,051	17.2	271,522	21.3	461,603
	Sept	187,560	17.3	247,522	19.3	435,082
	Oct	128,999	12.6	124,315	15.8	253,314
	Nov	167,140	20.4	217,952	19.7	385,092
	Dec	58,051	16.7	360,065	23.5	418,116
2011	Jan	304,936	21.8	407,905	28.5	712,841
	Feb	291,561	22.4	422,075	31.9	713,636
	Mar	328,568	22.3	415,158	29.0	743,726
	Apr	350,076	22.9	486,993	30.7	837,069
	May	289,013	23.7	430,149	29.0	719,162
	June	337,950	22.8	440,983	29.5	778,933
	July	264,930	20.5	428,089	27.7	693,019
	Aug	217,420	18.7	244,997	23.6	462,417
	Sept	107,841	18.1	196,486	18.2	304,327
	Oct	237,502	18.3	206,786	19.8	444,288
	Nov	325,558	21.7	423,061	28.6	748,619
	Dec	326,990	22.9	467,804	32.3	794,794
2012	Jan	281,970	21.9	262,966	24.1	544,936
	Feb	334,350	23.0	389,280	28.0	723,630
	Mar	351,295	23.2	342,126	31.5	693,421
	Apr	324,675	22.9	421,063	30.9	745,738
	May	325,869	21.5	378,075	26.3	703,944
	June	250,311	18.9	286,955	22.3	537,266
	July	226,024	17.9	275,559	23.3	501,583
	Aug	88,643	16.6	149,880	19.4	238,523
	Sept	237,127	18.7	314,746	23.9	551,873
	Oct	106,110	12.0	79,901	14.7	186,011
	Nov	124,486	12.4	79,061	13.9	203,547
	Dec	241,669	18.7	309,876	22.9	551,545

Kekaha Agriculture Association Hydropower Production, 2010 – 2014

		Waiawa (kWh)	Average (MGD)	Waimea (kWh)	Average (MGD)	Total Produced (kWh)
2013	Jan	303,729	20.7	376,706	27.8	680,435
	Feb	253,591	20.1	323,538	26.0	577,129
	Mar	269,800	19.9	354,266	26.2	624,066
	Apr	280,125	20.7	332,062	26.7	612,187
	May	314,145	21.5	423,771	29.6	737,916
	June	274,161	19.2	281,176	22.3	555,337
	July	207,029	17.5	197,072	19.9	404,101
	Aug	175,185	14.7	199,938	17.1	375,123
	Sept	152,060	14.1	121,854	17.6	273,914
	Oct	111,600	14.4	79,901	13.9	191,501
	Nov	*180,752*	15.8	152,178	20.0	*332,930*
	Dec	280,395	20.7	407,902	28.2	688,297
2014	Jan	313,313	21.1	418,960	31.0	732,273
	Feb	291,416	21.2	*500,128*	33.3	*791,544*
	Mar	311,805	21.5	*472,506*	32.0	*784,311*
	Apr	320,485	20.7	*431,367*	30.1	*751,852*
	May	237,487	20.3	*366,943*	27.0	*604,430*
	June	266,379	20.5	*365,986*	27.0	*632,365*
	July	253,295	18.7	*232,472*	20.6	*485,767*
	Aug	147,458	13.8	*212,895*	19.7	*360,353*
	Sept	126,113	12.8	*208,595*	19.5	*334,708*
	Oct	175,230	17.1	*362,193*	26.8	*537,423*
	Nov	154,696	16.7	*331,803*	25.3	*486,499*
	Dec	165,758	17.0	*317,336*	24.7	*483,094*

Kekaha Agriculture Association Hydropower Production, 2010 – 2014 (continued)

Notes: kWh are monthly metered totals. Average (MGD) is the monthly average of the daily noon readings made at each power plant. Italics indicate estimated values for power production (Waiawa, Nov 2013, and Waimea, June 2010 and February through December 2014) derived from the relations between the average flow and total monthly power production (Waiawa R^2 = 0.90; Waimea R^2 = 0.88).



[1] Number indicates orginal capacity [MG] and parentheses reservoir is no longer in use.

[2] Number indicates field location and parentheses pumps no longer in use: 130, 2 @ 40 hp = 2000 gpm; 127, 3 @ 40 hp = 3000 gmp; (125, 2 @ 40 hp = 2000 gpm); 121, 3 @ 40 hp = 3000 gpm; 120, 3 @ 40 hp = 3000 gpm; 117, 3 @ 40 hp = 3000 gpm; 116, 2 @ 40 hp = 2000 gpm; 113 [shaft 2-0044-015], 2 @ 40 hp VDF = 900 gpm; 108, 2 @ 50 hp VDF = 3800 gpm; 105 [shaft 2-5842-003], 2 @ 60 hp VDF = 3500 gpm; 805, gravity = 1000 gpm.

[3] Groundwater wells: Mw = Mānā wells [2-0145-010, -012, -013]; M = Mānā well [2-0145-016]; K12 = Kaunalewa 12 [2-0144-010 *inactive*].
Groundwater shafts: S = Saki Mānā [2-0345-004]; K = Kaunalewa [2-0044-015]; W = Waiawa [2-5943-001]; Huluhulunui [2-5842-003].

[4] Bold italic type indicates Kawaiele pumps: 2 @ 200 hp = 56000 gpm; 100 hp = 14000 gpm.

Field	Number of pumps	Pump output (hp)	Combined flow rate (gpm)	Owner/User
105	2[1]	60	3500	BASF, Pioneer
108	2	50	3800	BASF, Pioneer, Syngenta
113	2[2]	40	900	Pioneer
116	2	40	2000	BASF, Syngenta
117	3	40	3000	Syngenta
120	3	40	3000	Syngenta
121	3	40	3000	BASF
125	2	40	2000	None
127	3	40	3000	Syngenta
130	2	40	2000	Syngenta
805	Gravity	–	1000	Syngenta

Kekaha Agriculture Association Irrigation Pump Specifications

[1] Water source: Hulahulanui shaft [2-5842-003]
[2] Water source: Kaunalewa shaft [2-0044-015]